

CHAPTER 6

CLEAN AIR ACT REQUIREMENTS

Introduction

Federal Clean Air Act Requirements

California Clean Air Act Requirements

INTRODUCTION

The purpose of the 2007 revision to the AQMP for the South Coast Air Basin is to set forth a comprehensive program that will lead the Basin and those portions of the Salton Sea Air Basin under the District's jurisdiction into compliance with all federal and state air quality planning requirements. Specifically, the 2007 AQMP revision is designed to satisfy the SIP submittal requirements of the federal CAA to demonstrate attainment of the new 8-hour ozone and PM_{2.5} ambient air quality standards, the California CAA triennial update requirements and fulfill the District's commitment to update transportation emission budgets based on the latest approved motor vehicle emissions model and planning assumptions. Specific requirements related to the planning requirements for portions of the Salton Sea Air Basin under the District's jurisdiction are included in the Final 2007 AQMP and can be found in Chapter 8 – Future Air Quality – Desert Nonattainment Area. The Final Plan will be submitted to U.S. EPA as SIP revisions once approved by the District's Governing Board and CARB.

FEDERAL CLEAN AIR ACT REQUIREMENTS

In November 1990, Congress enacted a series of amendments to the CAA intended to intensify air pollution control efforts across the nation. One of the primary goals of the 1990 CAA Amendments was an overhaul of the planning provisions for those areas not currently meeting NAAQS. The CAA identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to attain or to meet interim milestones. There are several sets of general planning requirements, both for nonattainment areas [Section 172(c)] and for implementation plans in general [Section 110(a)(2)]. These requirements are listed and briefly described in Chapter 1 (Tables 1-4 and 1-5). The general provisions apply to all applicable pollutants unless superseded by pollutant-specific requirements.

The following sections discuss the federal CAA requirements for ozone, PM_{2.5}, CO, and NO₂.

Ozone Planning Requirements

The U.S. EPA promulgated the 8-hour ozone standard in July 1997, which was followed by legal actions, and eventually upheld in March 2002. U.S. EPA finalized Phase 1 of the ozone implementation rule in April 2004. This rule set forth the classification scheme for nonattainment areas and continued obligations with respect to the existing 1-hour ozone requirements. As described by the Phase 1 rule, the Basin is classified as Severe 17 with an attainment date of June 2021, while the portion of the Salton Sea Air

Basin under the District’s jurisdiction (Coachella Valley Planning Area) is classified as serious, with an attainment date of June 2013. On November 9, 2005, the U.S. EPA followed up its Phase 1 implementation rule with the Phase 2 rule. The Phase 2 rule outlines the emission controls and planning requirements regions must address in their implementation plans. This section describes how the Final 2007 AQMP meets the major 8-hour ozone planning requirements of this Phase 2 rule for the Basin. 8-hour ozone Planning requirements for the Coachella Valley Planning Area will be addressed in Chapter 8 of the Final 2007 AQMP. The requirements specifically addressed for the Basin are:

1. attainment demonstration and modeling;
2. reasonable further progress;
3. reasonably available control technology (RACT);
4. reasonably available control measures (RACM);.
5. new source review (NSR);
6. contingency measures; and
7. transportation control measures

Ozone Attainment Demonstration and Modeling

The CAA requires areas classified as nonattainment to attain the 8-hour ozone standard as expeditiously as practicable and within the CAA’s deadlines. For the Basin, which is classified as Severe-17, the deadline for achieving the 8-hour standard is June 2021. The Phase 2 rule provides the timing and guidelines and identifies the modeling guidance to make the demonstration required. As required by the Phase 2 rule, areas required to submit an attainment demonstration must do so no later than three years after the effective date of designation for the 8-hour ozone standard. Thus, the District must submit the Final 2007 AQMP to U.S. EPA by June of 2007. Under Section 181(b)(3) of the CAA, areas may elect to request a voluntary reclassification to the next higher classification. The District is requesting that CARB formally submit a request to EPA for voluntary redesignation (bump-up) of the South Coast Air Basin from a designation of “severe-17” to “extreme” for 8-hour average ozone and modify the attainment date to June 15, 2024. In addition, the District is also requesting a bump up for the Coachella Valley from “serious” to “severe 15” and modify the attainment date to June 15, 2019. A discussion of this action is included in Chapter 12 of the Final 2007 AQMP. A summary of the 8-hour ozone attainment demonstration is provided in Chapter 5. The ozone attainment demonstration is fully described in Appendix V – Modeling and Attainment Demonstration.

Reasonable Further Progress (RFP)

The CAA requires SIPs for most nonattainment areas to demonstrate reasonable further progress (RFP) toward attainment through emission reductions phased in from the time of the SIP submission out to the attainment date. The reasonable further progress requirements in the CAA are intended to ensure that each ozone nonattainment area provide for sufficient precursor emission reductions to attain the ozone national ambient air quality standard. Specifically, Section 182(b)(1)(A) requires that each moderate or above area provide for VOC reductions of at least 15 percent from baseline emissions within six years from the baseline year (i.e., 2002). Furthermore, Section 182(c)(2)(B) requires that serious and above areas provide VOC and/or NO_x reductions of an additional 3 percent per year starting at the end of the baseline year and out to their attainment year. However, U.S. EPA in its Phase 2 rule specified that areas which have already completed and received approval for their 15 percent VOC Rate of Progress (ROP) for the 1-hour ozone standard will not be required to do another 15 percent VOC-only reduction plan for the 8-hour ozone standard. Therefore, the District is only required to provide for VOC and/or NO_x reductions of 3 percent per year from the 2002 baseline year averaged over each consecutive three-year period beginning in 2008 until the Basin’s attainment date (i.e., June 2023). Table 6-1 shows the percent emission reductions for both VOC and NO_x emissions necessary to meet the 3 percent requirement. Tables 6-2A and 6-2B summarize the RFP calculations. Figures 6-1A and 6-1B depict the target level and projected baseline RFP demonstration.

For each of the milestone years the District is able to show that the required progress is met on the basis of reductions from the existing regulatory program using a combination of VOC and NO_x reductions. No reductions from the proposed control measures in the Plan are needed for progress purposes. Up until the year 2017, projected VOC baseline emissions are sufficient to meet the CAA requirements. For the milestone years 2017, 2020, and 2023 the baseline VOC emission levels are below the target levels. Beginning in 2017, projected NO_x baseline emissions are needed to show compliance with the targeted VOC thresholds.

TABLE 6-1

Percent of VOC and NO_x Emission Reductions from the 2002 Baseline to meet RFP Requirements

Year	VOC	NO_x	CAA*
2008	18.0	0.0	18.0
2011	27.0	0.0	27.0
2014	36.0	0.0	36.0
2017	39.0	6.0	45.0
2020	40.0	14.0	54.0
2023	40.0	23.0	63.0

* The percent VOC and NO_x reductions must equal the CAA percent reduction requirements listed here.

TABLE 6-2A

Summary of Reasonable Further Progress Calculations - VOC

ROW	CALCULATION STEP ^a	2008	2011	2014	2017	2020	2023
1	2002 Base Year Emissions ^b	896.7	896.7	896.7	896.7	896.7	896.7
2	Required Reduction (%) ^c	18%	27%	36%	45%	54%	63%
3	Emission Reductions Needed ^d	161.4	242.1	322.8	403.5	484.2	564.9
4	Target Level ^e	735.3	654.6	573.9	493.2	412.5	331.8
5	Projected Baseline ^{f, g}	654.9	603.1	569.1	549.5	538.4	536.0
6	Percent Reduction Achieved (%) ^h	27%	33%	37%	39%	40%	40%
7	Percent VOC Shortfall (%) ⁱ	0%	0%	0%	6%	14%	23%
8	Percent VOC Shortfall Previously Provided by NO _x Substitution (%) ^j	0%	0%	0%	0%	6%	14%
9	Actual Percent VOC Shortfall Provided by NO _x Substitution (%) ^k	0%	0%	0%	6%	8%	9%

^a Units are in tons per day (summer) unless otherwise noted; ^b Contains only anthropogenic emissions; ^c 3% per year (total VOC reductions from 2002 baseline year); ^d [(Row 1) x (Row 2)]/100; ^e (Row 1) – (Row 3); ^f Projected baseline emissions shown in Appendix III taking into account existing rules and projected growth.; ^g The projected baseline in Tables 6-2A includes the motor vehicle emissions depicted in Tables 6-8 and 6-9 showing that the motor vehicle emissions are below the RFP targets; ^h [(1-(Row 5)/(Row 1))] x 100; ⁱ (Row 2) – (Row 6); ^j Percentage of VOC emissions from previous milestone year subject to NO_x substitution, which can be carried over to following year in order to reduce the actual VOC substitution required; ^k (Row 7) – (Row 8)

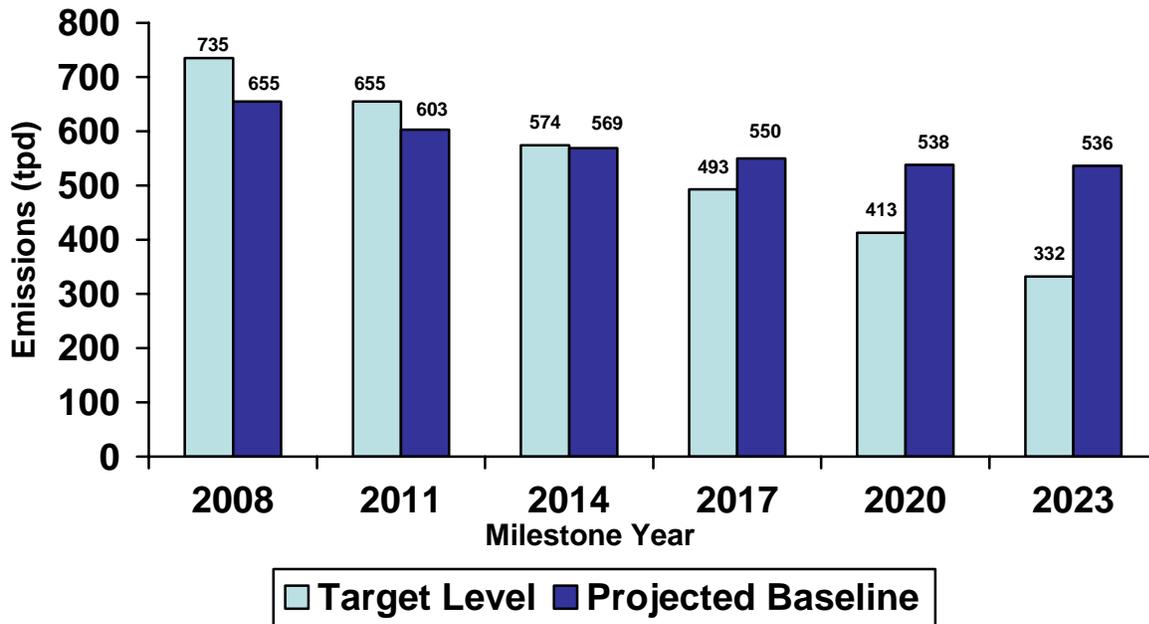


FIGURE 6-1A
Reasonable Further Progress - VOC

TABLE 6-2B
Summary of Reasonable Further Progress Calculations - NOx

ROW	CALCULATION STEP ^a	2008	2011	2014	2017	2020	2023
1	2002 Base Year Emissions ^b	1078.5	1078.5	1078.5	1078.5	1078.5	1078.5
2	Actual Percent VOC Shortfall Provided by NOx Substitution (%)	0%	0%	0%	6%	8%	9%
3	Additional 3% Reduction Needed for Contingency Measures (%) ^c	3%	3%	3%	3%	3%	3%
4	Previous Year NOx Reductions (%) ^d	0%	3%	3%	3%	9%	17%
5	Total Percent NOx Reductions Needed ^e	3%	3%	3%	9%	17%	26%
6	Emission Reductions Needed ^f	32.4	32.4	32.4	97.1	183.3	280.4
7	Target Level ^g	1,046.1	1,046.1	1,046.1	981.4	895.2	798.1
8	Projected Baseline ^h	862.8	738.5	650.3	578.4	523.9	505.6
9	Percent Reduction Achieved (%) ⁱ	20%	32%	40%	46%	51%	53%

^a Units are in tons per day (summer) unless otherwise noted; ^b Contains only anthropogenic emissions; ^c Additional reductions representing 1 years worth of CAA RFP reductions used to backstop contingency measure implementation; ^d Represents NOx reductions unavailable from previous milestone years; ^e (Row 2) + (Row 4), for year 2008: (Row 2) + (Row 4) + 3% contingency carryover; ^f [(Row 1) x (Row 5)]/100; ^g (Row 1) – (Row 6); ^h Projected baseline emissions shown in Appendix III taking into account existing rules and projected growth, the projected baseline in Tables 6-2B includes the motor vehicle emissions depicted in Tables 6-8 and 6-9 showing that the motor vehicle emissions are below the RFP targets; ⁱ [(1-(Row 8)/(Row 1))] x 100

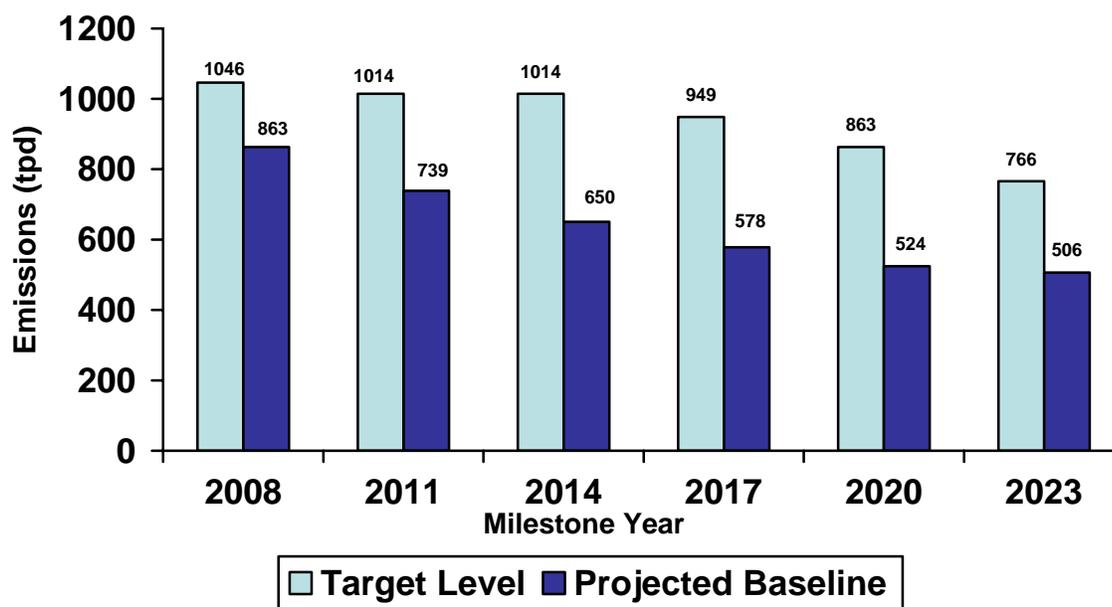


FIGURE 6-1B
Reasonable Further Progress - NOx

Reasonably Available Control Technology (RACT)

The CAA requires SIPs for nonattainment areas to require at least emission controls that are economically and technologically feasible. RACT is defined as the lowest emission limit that a particular source is capable of meeting through the application of control technology that is reasonably achievable considering technological and economic feasibility. Under the Phase 2 rule, U.S. EPA specified that areas which are subject to subpart 2 of the CAA must submit a RACT determination within 27 months after designation. AQMD was required to submit its RACT determination by September 15, 2006. On July 7, 2006, the AQMD Governing Board adopted the District's RACT determination and forwarded it to CARB for subsequent submittal to U.S. EPA by the deadline date.

Reasonably Available Control Measures (RACM)

For each nonattainment area required to submit an attainment demonstration, Section 172(c)(1) and (c)(2) of the CAA requires the region to demonstrate that it has adopted all control measures necessary to show that it will attain the 8-hour ozone standard as expeditiously as practicable and to meet any RFP requirements. In order to comply with this provision, the District must identify and evaluate all measures it has implemented or plans to implement in the future and compare them with measures implemented by other agencies within and outside of the state. During the recently completed evaluation process for the District's RACT determination, the District concluded that: (1) all Control Technique Guideline (CTG) and non-CTG sources in the Basin were subject to SIP approved rules; and (2) all District rules fulfilled RACT for the 8-hour ozone standard. In addition, pursuant to California Health and Safety Code Section 39614 (SB 656), the District evaluated a statewide list of feasible and cost-effective control measures to reduce directly emitted particulate matter (PM10 and PM2.5) and their precursor emissions (e.g., NOx). The District concluded that for the majority of stationary and area source categories, the District was identified as having the most stringent rules in California. However, one control measure (Wood Burning Fireplaces/Heaters) from the statewide list was identified for adoption by the District and is included in the Final 2007 AQMP for near-term adoption. Under the RACM guidelines, transportation control measures must be included in the analysis. Consequently, SCAG has completed a RACM determination for transportation control measures in the Final 2007 AQMP, included in Appendix IV-C. The District staff has completed its RACM analysis on its existing rules and proposed control measures in approved SIPs, and it can be found in Appendix VI Final 2007 AQMP.

New Source Review

New source review (NSR) for point sources of ozone precursors is presently addressed through the District's NSR and RECLAIM programs (Regulations XIII and XX).

Contingency Measures

The federal CAA requires ozone contingency measures to be implemented in the event of failure to meet milestone emission reduction targets and/or failure to attain the standard by the attainment date in 2023 (CAA Section 172(c)(9)). A discussion of contingency measures is included in the Chapter 9 – Contingency Measures of the Final 2007 AQMP. The full descriptions of each of the contingency measures will be contained in Appendix IV-A of the Final 2007 AQMP. The U.S. EPA has recommended that contingency measures provide emission reductions equivalent to one years average increment of RFP in order to ensure continuation of progress towards attainment of the national standard at a rate similar to that specified under RFP requirements. In the case of the 8-hour ozone standards this rate is 3 percent per year. In order to ensure that progress continues in case of failing to meet a milestone target, an additional 3 percent of NOx emission reductions have been factored into the RFP calculations. This additional 3 percent reduction also provides a backstop for the contingency measures contained in Chapter 9.

Section 182(e)(5) of the CAA allows areas classified as “Extreme” to submit reduction strategies which rely on advanced technologies as part of their ozone demonstration. Since the District is requesting a “bump up” to the “Extreme” classification under the provisions of 181(b)(3), these so called “black box” reduction strategies are included the District’s Plan as long-term measures. Under Section 182(e)(5)(B) of the CAA, areas including “black box” measures in their SIP must also adopt contingency measures to be implemented if the anticipated technologies do not achieve the planned reductions. No contingency measures which address the long-term measures are contained in this Plan. However, the District is committing to adopt and submit to U.S. EPA, contingency measures to address these planned reductions from the long-term measures, no later than three years before such measures are scheduled to be implemented.

Transportation Control Measures

Section 182 (d)(1)(A) of the CAA requires the District to include transportation control strategies and TCMs in the Plan that offset any growth in emissions from growth in vehicle trips and vehicle miles traveled and attain reduction of mobile source emissions. Such control measures must be developed in accordance with the guidelines listed in Section 108(f) of the CAA. The programs listed in Section 108(f) of the CAA include, but are not limited to, public transit improvement projects, traffic flow improvement projects, the construction of high occupancy vehicle (HOV) facilities and other mobile source emission reduction programs. TCMs have been developed for the Final 2007 AQMP and are described in Appendix IV-C – Regional Transportation Strategy & Control Measures. TCMs included in the Final 2007 AQMP have been developed to meet the requirements of Section 182(d)(1)(A) and 108(f) of the CAA and include the capital-based and non-capital-based facilities, projects and programs contained in the Regional Transportation Plan (RTP) and programmed through the Regional

Transportation Implementation Plan (RTIP) process. As an additional measure of reducing mobile source emissions, Section 182(d)(1)(B) of the CAA allows the implementation of employer-based trip reduction programs that are aimed at improving the average vehicle occupancy (AVO) rates. As an alternative to trip reduction programs, Section 182(d)(1)(B) also allows the substitution of these programs with alternative programs that achieve equivalent emission reductions. Rule 2202 - On-Road Motor Vehicle Mitigation Options, adopted in December 1995, was developed to comply with CAA Section 182(d)(1)(B); emission reductions from Rule 2202 are reflected in the baseline inventory.

PM2.5 Planning Requirements

Results of ambient air quality monitoring data indicate that the Basin exceeds federal and state standards for PM2.5. These microscopically fine particles can originate from several industrial processes, including direct emissions and atmospheric chemical reactions which convert gases into particles (referred to as “secondary” particulates), and from a variety of fugitive dust sources, both natural and man-made. Mobile sources also contribute directly to ambient PM2.5 levels through tailpipe emissions including PM2.5 and precursor pollutants and, indirectly, through resuspension of road dust.

The U.S. EPA promulgated the PM2.5 standards in July 1997, followed by legal actions, and eventually upheld in March 2002. U.S. EPA issued designations in December 2004, and they became effective on April 5, 2005. Under the 1990 CAA Amendments and U.S. EPA’s “Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards,” each state having a nonattainment area must submit to U.S. EPA an attainment demonstration three years after the designations became effective. The U.S. EPA recently issued its final PM2.5 implementation rule which calls for SIPs by April 2008 and attainment by 2015. The final date for submittal of attainment demonstrations is April 5, 2008. The District has elected to submit a PM2.5 attainment demonstration for the Basin concurrently with their 8-hour Ozone attainment demonstration because many of the control strategies that reduce PM2.5 precursor emissions (e.g., NOx) are also needed to help attain the 8-Hour ozone standard. In fact the attainment date for the PM2.5 standard is earlier than that for the 8-hour ozone standard. It becomes imperative that the District takes an integrated approach in designing the attainment plan. In January 2006, U.S. EPA proposed to lower the 24-hour PM2.5 standard from 65 ug/m³ to 35 ug/m³. U.S. EPA has recently finalized this change. This chapter does not address the revised standard; Chapter 10 – Future Requirements of the Final 2007 AQMP will discuss this change.

Unlike the 8-hour ozone standard, area designations for the PM2.5 standard did not have a classification system (e.g., serious, severe) and were designated as attainment, non-attainment, or unclassifiable. For the Basin and the portions of the Salton Sea Air Basin under the District’s jurisdiction, the regions were designated nonattainment and

unclassifiable, respectively. The initial attainment date for areas such as the Basin is April 2010. Unclassifiable regions such as the Coachella Valley Planning Area do not require a planning demonstration for the federal standard and are not addressed in this document. Projected air quality data (with planned controls) for the Basin shows that the region will not be able to meet the April 2010 deadline. Under Section 172 of the CAA, U.S. EPA may grant an area an extension of the initial attainment date for a period of one to five years. In the case of the Basin, the District plans to request the full five-year extension until April 2015 as part of this plan submittal to U.S. EPA.

Current PM2.5 Requirements

For areas such as the Basin that are classified nonattainment for PM2.5, Section 172 of subpart 1 applies. Section 172(c) requires states with nonattainment areas to submit an attainment demonstration. Section 172(c)(2) requires that nonattainment areas demonstrate Reasonable Further Progress (RFP). Under subpart I of the CAA, all nonattainment areas must include in their SIPs contingency measures. Section 172(c)(1) of the CAA requires nonattainment areas to provide for implementation of all reasonably available control measures (RACM) as expeditiously as possible, including through the adoption of reasonably available control technology (RACT). Section 172 of the CAA requires the implementation of a new source review program including the use of “best available control technology” (BACT) for point sources of PM2.5 and precursor emissions (i.e., precursors of secondary particulates). It should be noted that federal BACT is equivalent to California best available retrofit technology (BARCT). All the preceding requirements are addressed individually in the sections that follow.

PM2.5 Attainment Demonstration

Section 172(c) of the CAA requires a PM2.5 attainment demonstration. This attainment demonstration consists of: (1) technical analyses that locate, identify, and quantify sources of emissions that contribute to violations of the PM2.5 standard; (2) analysis of future year emission reductions and air quality improvement resulting from adopted and proposed local control measures; (3) adopted emission reduction measures with schedules for implementation; and (4) analysis supporting the region’s proposed attainment date by performing a detailed modeling analysis. Chapter 3 of the Final 2007 AQMP discusses baseline and future emissions inventories in the Basin, while Chapters 4 – Control Strategy and 7 – Implementation include the proposed control measures (Chapter 4) and schedule (Chapter 7). The modeling results of the attainment demonstration are summarized in Chapter 5.

Reasonable Further Progress (RFP)

Section 172(c)(2) of the CAA requires that nonattainment area plans show sufficient annual incremental emissions reductions as are necessary to ensure that the ambient air quality standard is attained by the applicable date. Emission reductions required under an RFP plan for PM2.5 may be either directly emitted PM2.5 or an applicable precursor air pollutant such as NOx or SOx. The baseline year for purposes of tracking RFP is

2002. U.S. EPA requires that the RFP plan show generally linear progress according to emission reduction milestones the region establishes for 2010 and every three years thereafter until the attainment year. Emission reductions and program milestone years used in the RFP plan must be based on the prior years' emissions. Since the District is requesting an extension for attainment of the PM2.5 standard out to 2015, the years 2009, 2012, and 2014 are used to determine RFP. The PM2.5 milestone targets for RFP are shown in Table 6-3. Table 6-3A summarizes the RFP calculations. As shown in Table 6-3A there is a shortfall for directly emitted PM2.5 and NOx emissions in milestone years 2009 and 2014. This shortfall is based on a linear rate of reduction from 2002 to 2014. However, U.S. EPA does not necessarily require a strictly linear rate of reduction to demonstrate RFP, and will accept progress toward attainment based on a generally linear rate of reduction. In addition, the rate of reduction shown in Tables 6-3 and 6-3A contain all feasible reductions that are possible based on the short time-frame from now until 2014 and the additional funding that would be needed to significantly increase the turnover of existing mobile source fleets to achieve the necessary reductions.

Table 6-3
PM2.5 Attainment Year Targets
(Annual Average - Tons per Day)

Pollutant	2002	2009	2012	2014
PM2.5	99	92	89	87
NOx	1,093	720	561	454
SOx	53	33	25	19
VOC	844	625	532	469

TABLE 6-3ASummary of Reasonable Further Progress Calculations ^{a, b}

Row	Calculation Step	PM2.5	NOx	SOx	VOC
1	2002 Baseline Inventory (tpd)	99	1093	53	844
2	Annual Percent Change Needed to Show Linear Progress (%) ^c	1.01	4.87	5.35	3.7
3	2009 Target Needed to Show Linear Progress (tpd) ^d	92	720	33	625
4	2009 Remaining Emissions with Plan (tpd) ^e	99	813	28	578
5	Projected Shortfall (tpd) ^f	7	93	0	0
6	2012 Target Needed to Show Linear Progress (tpd) ^g	89	561	25	532
7	2012 Remaining Emissions with Plan (tpd) ^e	92	565	21	505
8	Projected Shortfall (tpd) ^h	3	4	0	0
9	2014 Remaining Emissions with Plan ^e	87	459	19	464

^a Units are in tons per day (annual average) unless otherwise noted; ^b Contains only anthropogenic emissions; ^c $[(\text{Row 1}) - (\text{Row 9})] / (\text{Row 2}) / 12$; ^d $(\text{Row 1}) - ((\text{Row 1}) \times (\text{Row 2}) \times 7)$; ^e The projected baseline in Tables 6-3A includes the motor vehicle emissions depicted in Tables 6-8 and 6-9 showing that the motor vehicle emissions are below the RFP targets; ^f $(\text{Row 4}) - (\text{Row 3})$; ^g $(\text{Row 1}) - ((\text{Row 1}) \times (\text{Row 2}) \times 10)$; ^h $(\text{Row 6}) - (\text{Row 7})$

Reasonably Available Control Measures (RACM) and Reasonably Available Control Technology (RACT) Requirements

Section 172(c)(1) of the CAA requires nonattainment areas to provide for implementation of all reasonably available control measures (RACM) as expeditiously as possible, including through the adoption of reasonably available control technology (RACT). The District staff has completed its RACM analysis on its existing rules and proposed control measures in approved SIPs, and it can be found in Appendix VI of the Final 2007 AQMP.

New Source Review for Point Sources

As mentioned in previous SIP submittals, new source review (NSR) for point sources of PM2.5 and PM2.5 precursors is presently addressed through the District's NSR and RECLAIM programs (Regulations XIII and XX).

Transportation Control Measures

As part of the requirement to demonstrate that RACM has been implemented, transportation control measures meeting the CAA requirements must be included in the plan. Previous SIPs, including the 1994, 1997, and 2003 California Ozone SIP have included transportation control measures. Updated transportation control measures

necessary for attainment of the federal PM_{2.5} and 8-hour ozone standards are described in Appendix IV-C.

Contingency Measures for PM_{2.5}

The federal CAA requires PM_{2.5} contingency measures to be implemented in the event of failure to meet milestone emission reduction targets and/or failure to attain the standard by the attainment date in 2014 (CAA Section 172(c)(9)). A discussion of contingency measures is included in Chapter 9 – Contingency Measures of the Final 2007 AQMP. The full descriptions of each of the contingency measures are contained in Appendix IV-A, Section 2 of the Final 2007 AQMP.

Carbon Monoxide Attainment Demonstration

The South Coast Basin has historically had a persistent CO problem. However, there has been considerable improvement in CO air quality in the Basin from 1976 to 2005. In 2001, the Basin met both the federal and state 8-hour CO standards for the first time at all monitoring stations. The 2003 AQMP revision to the CO plan served a dual purpose: it replaced the 1997 attainment demonstration that lapsed at the end of 2000, and it provided the basis for a CO maintenance plan in the future. In 2004, the DISTRICT formally requested U.S. EPA to redesignate the Basin as in attainment with the CO ambient air quality standard. On February 14, 2007, U.S. EPA proposed to approve the 2005 CO redesignation request and maintenance plan (Federal Register, Vol. 72, No 30, Page 6986-6998). The Final 2007 AQMP serves as an update to the maintenance plan submitted as part of the 2003 AQMP. It shows that continuous attainment occurred through the third quarter of 2006. The update to the CO maintenance plan is further described in Chapter 5 – Future Air Quality, and Appendix V - Modeling and Attainment Demonstration.

Section 175A(d) of the CAA requires maintenance plans contain contingency measures, if deemed necessary by the U.S. EPA, to assure that the region will promptly correct any violation occurring after redesignation of an area as an attainment area. Due to the continuing improvement in CO air quality it is unlikely that the CO standard would be exceeded in the future. Therefore, no CO contingency measures are included in the Final 2007 AQMP.

Nitrogen Dioxide Maintenance Plan

The federal annual NO₂ standard was met for the first time in 1992 and the standard has been met every year since. The South Coast Air Basin was redesignated as an attainment area in 1998. Section 175A(a) of the CAA states that any district that submits a request for redesignation of a nonattainment area to attainment must submit a revision of the applicable SIP that provides for maintenance for at least 10 years after the

redesignation. In addition, Section 175A(b) requires that 8 years after redesignation of an area to attainment status, the area must submit an additional revision to the NO₂ plan for maintaining the NO₂ standard for an additional 10-year period after the original 10-year maintenance cycle. It has been 8 years since the Basin was redesignated as attainment for NO₂ and the Final 2007 AQMP serves as an update to the original maintenance plan. Based on the ambient nitrogen dioxide measurements and the projected baseline future-year emissions, the Basin will maintain the federal nitrogen dioxide air quality standard. As with the update to the CO maintenance plan, the update to the NO₂ maintenance plan is further described in Chapter 5 – Future Air Quality, and Appendix V - Modeling and Attainment Demonstration.

CALIFORNIA CLEAN AIR ACT REQUIREMENTS

The Basin is designated as in nonattainment with the state ambient air quality standards for ozone, PM₁₀, and PM_{2.5}. The California Clean Air Act (CCAA) requires that a plan for attaining the ozone standard be reviewed and revised every three years (H&SC 40925). The Final 2007 AQMP satisfies this triennial update requirement. The CCAA established a number of legal mandates to facilitate achieving health-based state air quality standards at the earliest practicable date. The following CCAA requirements are addressed in the remainder of this chapter:

- (1) Demonstrate the overall effectiveness of the air quality program;
- (2) Reduce nonattainment pollutants at a rate of five percent per year, or include all feasible measures and an expeditious adoption schedule;
- (3) Reduce Population Exposure to severe nonattainment pollutants according to a prescribed schedule; and
- (4) Rank control measures by cost-effectiveness.

Plan Effectiveness

The CCAA requires, beginning on December 31, 1994 and every three years thereafter, that the District assess its progress toward attainment of the state ambient air quality standards [H&SC 40924(b)] and that this assessment be incorporated into the District's triennial plan revision. Trends in the following air quality indicators are used to demonstrate the effectiveness of the District's program:

- (1) VOC, and NO_x, emissions; and
- (2) ozone exceedance days and Basin maximum annual average PM10 and PM2.5 concentrations
- (3) Ozone population exposure

Trends in the Basin-wide annual average rate of reduction of VOC, and NO_x, emissions since 1990 are shown in Appendix III – Base and Future Year Emissions Inventories. From 1990 to 2006, emissions of VOC, and NO_x have decreased overall by 61 percent and 40 percent, respectively.

The number of days exceeding state standards in 1990 through 2005 for ozone, and the trends in maximum recorded PM10 and PM2.5 concentration levels are illustrated in Figure 6-2. Over this time period, it is evident that air quality has improved in the Basin. The number of days exceeding the state ozone standard of 0.09 ppm from 1990 to 2005 is shown in Figure 6-2. Figure 6-2 shows a 45 percent decrease in the number of exceedance days. However, recent air quality monitoring has shown a leveling off of ozone concentrations in the Basin. This leveling off in ozone concentration runs counter to the fact that emissions continue to decline. To examine this issue in more detail, the District is planning a roundtable discussion on the current state of ozone air quality in October 2006.

Also shown in Figure 6-2 are the trends in Basin maximum PM10 and PM2.5 annual average concentrations. Basin maximum annual PM10 concentrations have decreased continuously since 1990 from a high of nearly 80 µg/m³ to the current level of just above 50 µg/m³. PM2.5 concentrations have decreased nearly 30 percent since 1999. The state annual standards are 20 µg/m³ and 12 µg/m³ for PM10 and PM2.5, respectively.

NO₂ and CO air quality have also improved substantially since 1990. NO₂ and CO metrics are not shown since the Basin currently meets all state and federal NO₂ and CO standards. The reader is referred to Appendix II – Current Air Quality for a more comprehensive discussion of local air quality trends.

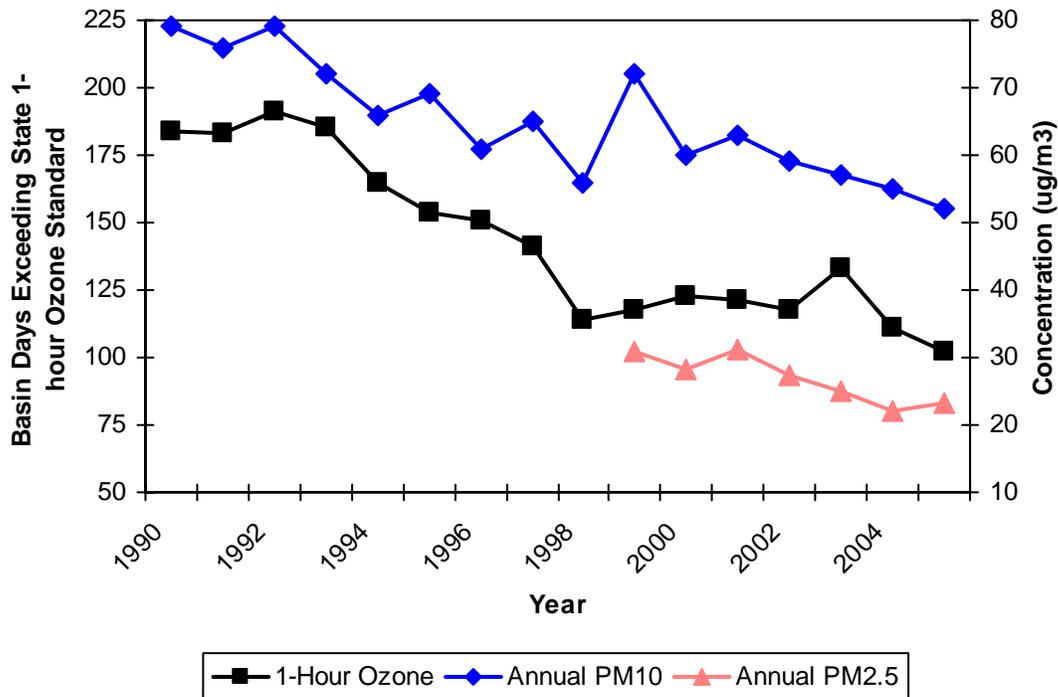


FIGURE 6-2

Ozone, PM10, and PM2.5 Trends Since 1990

Emission Reductions

The CCAA requires that each district plan be designed to achieve a reduction in district-wide emissions of 5 percent or more per year for each non-attainment pollutant or its precursors, averaged every consecutive three-year period (H&SC 40914). If this cannot be achieved, a plan may instead show that it has implemented all feasible measures as expeditiously as possible. Furthermore, for each district that is designated nonattainment for both state and federal ambient air quality standards for a single pollutant subject to the planning requirements (i.e., ozone), reductions in emissions shall be calculated with respect to the actual emissions during the baseline year applicable to the implementation plan required by the federal CAA. This baseline year is 2002.

The planning inventory 2002 baseline emissions and estimated emission reductions for the reporting year 2005 are presented in Table 6-4. These estimates are based on the controlled emissions. As seen in the table, the existing control strategy falls short of the CCAA emission reduction goals (i.e., five percent per year for all nonattainment pollutants) even with the implementation of maximum feasible controls. Nonetheless, the strategy represents “all feasible control measures” and an “expeditious adoption schedule” as permitted under H&S Code 40914.

TABLE 6-4

Summary of 2007 AQMP Emissions Based on Planning Inventory Emissions (tons/day)*

Year	Summer Ozone Inventory	
	VOC	NO _x
2002 Baseline	897	1,079
Emission Reductions		
2005	796 (11%)	1,020 (5%)
CCAA Requirement	(15%)	(15%)

Population Exposure

The CCAA also requires a reduction in overall population exposure to criteria pollutants. Specifically, exposure to the designated severe nonattainment pollutants (i.e., ozone) above standards must be reduced by at least:

- (1) 25 percent by December 31, 1994;
- (2) 40 percent by December 31, 1997; and
- (3) 50 percent by December 31, 2000.

Reductions are to be calculated based on per-capita exposure and the severity of exceedances. For the Basin, this provision is applicable to ozone [H&S Code 40920(c)]. The definition of exposure is the number of persons exposed to a specific pollutant concentration level above the state standard times the number of hours exposed. The per-capita exposure is the population exposure (units of pphm-persons-hours) divided by the total population. While this requirement has already been met in previous AQMPs, the exposure demonstration is provided again in the Final 2007 AQMP for consistency.

The Regional Human Exposure (REHEX) model is used to estimate per-capita exposure reduction. It considers population mobility; time spent indoors, outdoors and in transit; exposure by age classification; and activity pattern by season and weekday/weekend.

An analysis using the REHEX model indicates that the CCAA Amendments exposure reduction targets have been achieved for ozone with a margin of safety. Figure 6-3 summarizes the results and compares exposure reductions to the targets. It should be noted that the CCAA exposure requirement for 2000 is shown for 2005, since it is not required beyond 2000.

The REHEX model also allows more detailed exposure reduction estimates disaggregated by age group and county. These results are summarized in Figures 6-4 and 6-5, respectively. As shown, the greatest exposure reduction for an individual age class is for children, who have longer exposure to outdoor concentrations; the geographic location with the most improvement for all age groups is that comprised of the two inland counties.

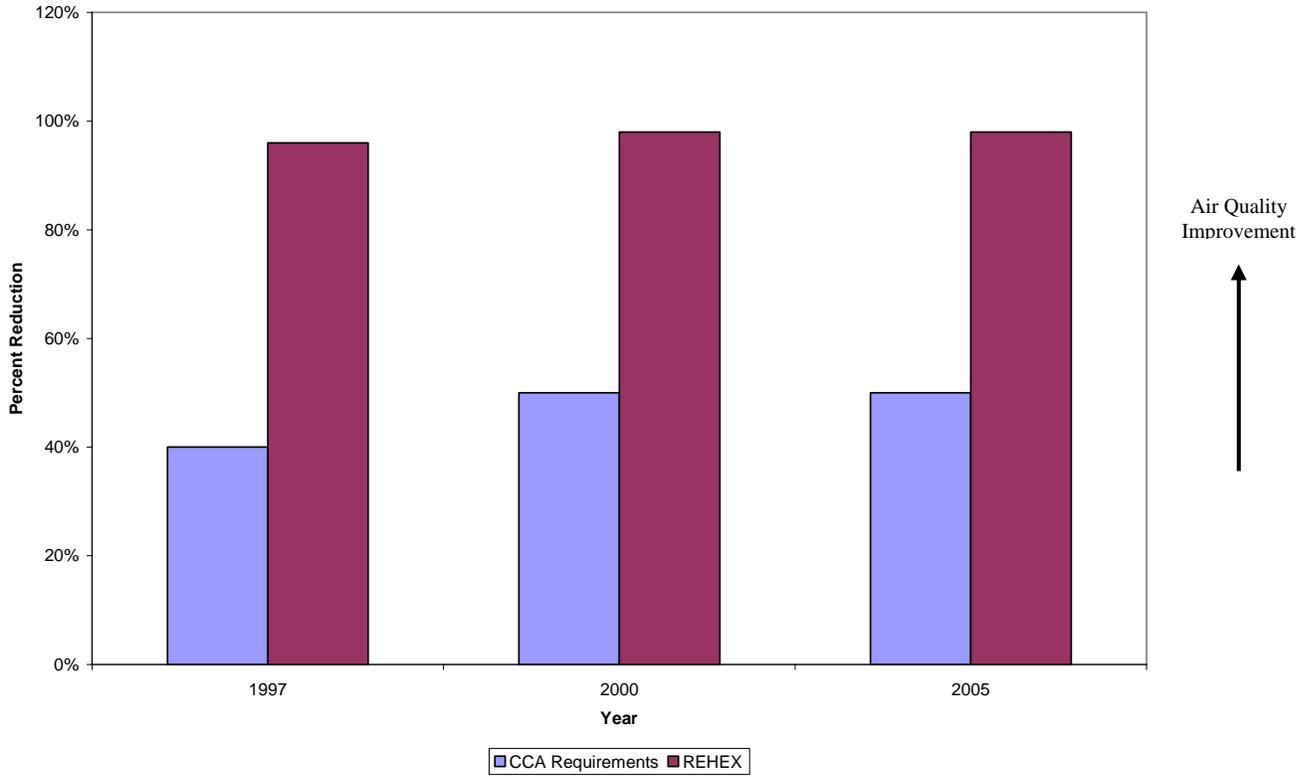


FIGURE 6-3
Percent Reductions in Annual Average Per-Capita Exposure to Ozone

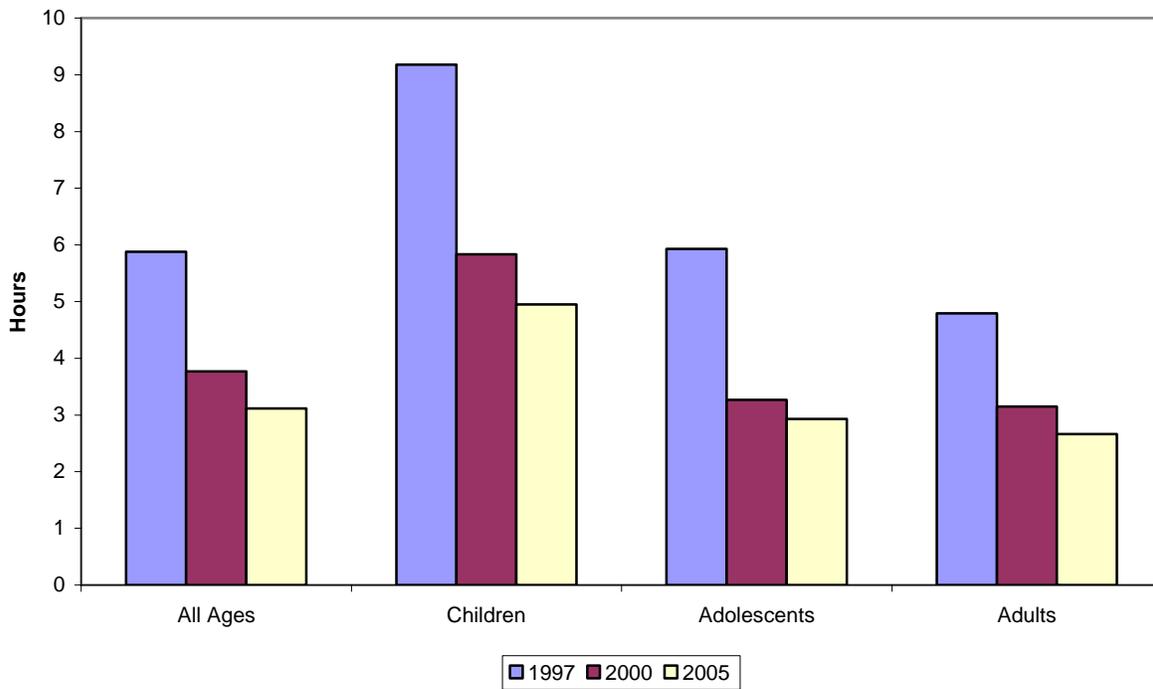


FIGURE 6-4
Per-Capita Ozone Exposure Above the State Standard by Age Group

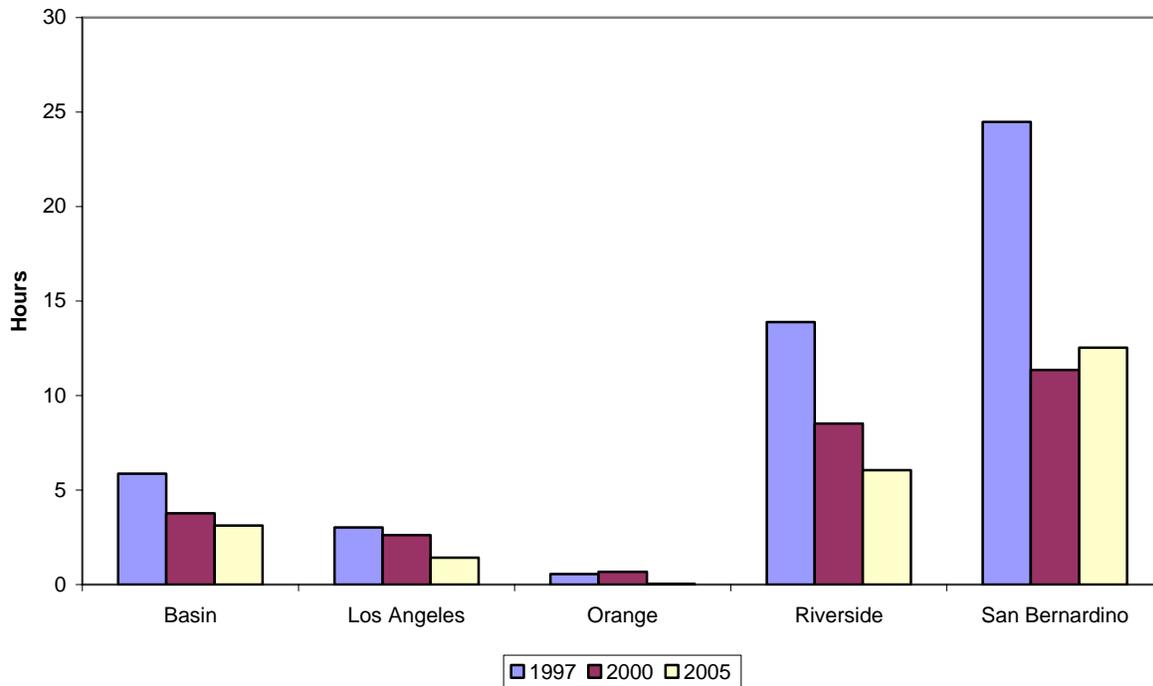


FIGURE 6-5
Per-Capita Ozone Exposure Above the State Standard by County

Cost Effectiveness Ranking

The CCAA requires that each plan revision shall include an assessment of the cost effectiveness of available and proposed control measures and shall contain a list which ranks the control measures from the least cost-effective to the most cost-effective. Table 6-5 provides a list of stationary source control measures ranked by cost-effectiveness. Table 6-6 provides a list of mobile source control measures including those proposed by both CARB and the District.

In developing an adoption and implementation schedule for a specific control measure, the district shall consider the relative cost effectiveness of the measure as well as other factors including, but not limited to, technological feasibility, total emission reduction potential, the rate of reduction, public acceptability, and enforceability. The implementation schedule is provided in Chapter 7 –Implementation.

TABLE 6-5Cost-Effectiveness Ranking of District's Stationary Source Control Measures ^{a,b}

Measure Number	Description	Dollars/Ton	Ranking by Cost Effectiveness ^{a, b}
CTS-03	Consumer Products Labeling and Emissions Reductions from Use of Consumer Products at Institutional and Commercial Facilities [VOC]	No Additional Cost	1
CTS-01	Industrial Lubricants [VOC]	\$1,000 - \$5,000	2
FUG-02	Emission Reductions from Gasoline Transfer and Dispensing Facilities [VOC]	\$1,673	3
MCS-08	Clean Air Act Emission Fees for Major Stationary Sources [VOC, NO _x] ^c	\$5,000	4
FUG-04	Emission Reductions from Pipeline and Storage Tank Degassing [VOC]	\$2,500 - \$22,900	5
CMB-01	NO _x Reduction from Non-RECLAIM Ovens, Dryers, and Furnaces [NO _x]	\$4,000 - \$13,000	6
CMB-03	Further NO _x Reductions from Space Heaters [NO _x]	\$10,000	7
CMB-02	Reduction of Emissions in RECLAIM [SO _x]	\$10,100 - \$16,000	8
MCS-01	Facility Modernization [NO _x] [VOC] [PM2.5]	\$10,600 - \$17,000 \$10,000 \$19,000	9
BCM-03	Emission Reductions from Wood Burning Fireplaces and Wood Stoves [PM2.5]	\$11,000 - \$17,000	10
FLX-02	Petroleum Refinery Pilot Program [VOC] [PM2.5]	\$12,800	11
BCM-05	Pm Emission Reductions from Under-Fired Charbroilers [PM2.5]	\$13,000 - \$15,000	12

^a The cost-effectiveness values of these measures are based on the Discount Cash Flow methodology and four percent real interest rate.

^b Where a range exists, the ranking was done based on the low end of the range.

^c Implementation of this measure is subject to appeal court decision; fees needed to be adjusted for inflation per CAA at the time of implementation

TABLE 6-6
 Cost-Effectiveness Ranking of Mobile Source Control Measures ^{a,b}

Measure Number	Description	Dollars/Ton	Ranking by Cost Effectiveness ^{a, b}
CARB Proposed Control Measures			
ARB-OFFRD-3	Clean Up Existing Harbor Craft [VOC, NOx, PM]	\$600	1
ARB-OFFRD-5	New Emiss Stds for Recreational Boats [VOC, NOx]	\$2,100 - \$4,700	2
ARB-OFFRD-4	Cleaner In-Use Off-Road Equipment [VOC, NOx, PM]	\$5,900 - \$8,100	3
ARB-ONRD-1	Smog Check Enhancements [VOC, NOx, PM]	\$6,700 - \$12,000	4
ARB-ONRD-4	Cleaner In-Use Heavy-Duty Trucks [VOC, NOx, PM]	\$11,000	5
ARB-OFFRD-2	Accelerate Introduction of Cleaner Line-Haul Locomotives [VOC, NOx, PM]	\$15,900	6
ARB-ONRD-5	Port Truck Modernization [NOx, PM]	\$17,500	7
ARB-ONRD-2	Expanded Vehicle Retirement [VOC, NOx, PM]	\$17,700	8
ARB-OFFRD-1	Marine Vessels – Fuel, Aux. & Main Eng. [VOC, NOx]	\$30,300	9
ARB-OFFRD-6	Expanded Off-Road Rec. Vehicle Emission Standards [VOC]	\$55,700 - \$95,200	10
ARB-ONRD-3	Modifications to Reformulated Gasoline Program [VOC]	Not Estimated	
ARB-CONS-1	Consumer Products [VOC]	Not Estimated	
District Proposed Control Measures for CARB's selection to Meet Additional Reduction Commitment			
SCONRD-2	Deployment of On-Board Diagnostics (Phase III) in Light-and Medium-Duty Vehicles [VOC, NOx]	Savings	1
SCOFFRD-6	Accelerated Turnover Pleasure Craft [VOC, NOx]	\$850	2
SCOFFRD-4	Emission Reductions from Ground Support Equipment [VOC, NOx]	\$2,400	3
SCOFFRD-3	Further Emission Reductions from Locomotives [NOx, PM]	\$5,100	4
SCOFFRD-5	Further Emission Reductions from Truck Refrigeration Units [NOx, PM]	\$6,400	5

TABLE 6-6 (continued)

Cost-Effectiveness Ranking of Mobile Source Control Measures ^{a,b}

Measure Number	Description	Dollars/Ton	Ranking by Cost Effectiveness
SCOFFRD-1	Construction/Industrial Equipment Fleet Modernization [VOC, NOx, PM]	\$9,100	6
SC-FUEL-1	Further Emission Reductions from Gasoline Fuels [NOx, SOx]	\$10,000	7
SC-FUEL-2	Greater Use of Diesel Fuels Alternatives [NOx, SOx, PM]	\$10,500	8
MOB-05	AB 923 Light-Duty Vehicle High-Emitter Identification Program [VOC, NOx]	\$14,300	9
MOB-06	AB 923 Medium-Duty Vehicle High-Emitter Identification Program [VOC, NOx]	\$14,300	10
SCONRD-3	Further Emission Reductions from Heavy-Duty Vehicles [NOx, PM]	\$15,000	11
SCOFFRD-2	Further Emission Reductions from Cargo Handling Equipment [NOx, PM]	\$16,800	12
SCONRD-4	Further Emissions Reductions from Port Trucks [NOx, PM]	\$19,200	13

^a The cost-effectiveness values of these measures are based on the Discount Cash Flow methodology and four percent real interest rate.

^b Where a range exists, the ranking was done based on the low end of the range.

TRANSPORTATION CONFORMITY BUDGETS

The Final 2007 AQMP sets forth the strategy for achieving the federal 8-hour ozone, PM_{2.5}, and maintaining the federal CO and NO₂ standards. For on-road mobile sources, Section 176(c) of the CAA requires that transportation plans and programs do not cause or contribute to any new violation of a standard, increase the frequency or severity of any existing violation, or delay the timely attainment of the air quality standards. Therefore, on-road mobile sources must "conform" to the attainment demonstration contained in the SIP.

U.S. EPA's transportation conformity rule, found in 40 CFR parts 51 and 93, details the requirements for establishing motor vehicle emissions budgets in SIPs for the purpose of ensuring the conformity of transportation plans and programs with the SIP attainment demonstration. The on-road motor vehicle emissions budgets act as a "ceiling" for future on-road mobile source emissions. Exceedances of the budget indicate an inconsistency with the SIP, and could jeopardize the flow of federal funds for transportation improvements in the region. As required by the CAA, a comparison of

regional on-road mobile source emissions to these budgets will occur during the periodic updates of regional transportation plans and programs.

The on-road motor vehicle emissions estimates for the Final 2007 AQMP were analyzed using EMFAC2007 for estimating on-road mobile source emissions in conjunction with the most recent motor vehicle activity data from SCAG. For the Final 2007 AQMP, on-road motor vehicle emissions forecasts are provided in Tables 6-7 and 6-8 for specific milestone years. Table 6-7 shows the budgets for the PM_{2.5} standard, while the budgets for the 8-hour ozone standard are shown in Table 6-8. The District is retaining the 1-hour ozone on-road budgets because of the recent ruling on the 1-hour standard, and are shown in Table 6-9. The ozone emissions budgets for VOC and NO_x are derived from the summer planning inventory and the reductions from defined new measures in the 2007 SIP. The PM_{2.5} emissions budgets for PM_{2.5}, and the PM_{2.5} precursors VOC and NO_x, are derived from the annual average inventory. These budgets reflect existing control programs and new commitments for technology and transportation control measures. The CO and NO₂ emissions budgets established in the Final 2007 AQMP are also provided for base year 2002 and are shown in Tables 6-10 and 6-11. The baseline winter planning inventories for CO and NO₂ indicate that the region will continue to meet the budgets for these two pollutants.

This approach is consistent with U.S. EPA's transportation conformity rule, which provides that if emissions budgets rely on new control measures, these measures should be specified in the SIP and the emissions reductions from each control measure should be quantified and supported by agency commitments for adoption and implementation schedules. Moreover, the rule provides that conformity analyses by transportation agencies may not take credit for measures which have not been implemented unless the measures are "projects, programs, or activities" in the SIP supported by written implementation commitments by the responsible agencies (62 FR 43780, 40 CFR 93, subpart A).

The emissions budgets for ozone and PM_{2.5} are provided here for up to the respective attainment year. However, since transportation analyses are needed beyond the attainment dates, the carrying capacities for PM_{2.5} and ozone attainment demonstration also serve as the budgets for future years (e.g., 2030 for PM_{2.5} and ozone). Ozone precursor emissions from motor vehicles are projected to continue declining through these extended periods.

Under section 182(d)(1)(A) of the CAA, regions classified as "Severe" or above must demonstrate that the emissions from motor vehicles decline each year through their attainment year (i.e., 2024). Table 6-12 shows the annual decline in motor vehicle emissions out to 2030.

TABLE 6-7

Motor Vehicle Emissions Budgets: PM2.5
(Annual Average - Tons Per Day)*

		2009	2012	2014	2023	2030
VOC	Baseline Inventory	196.0	162.1	144.1	99.0	83.2
	New Defined Mobile Source Measures**	3.5	21.7	22.1	14.0	11.9
Mobile Source Emission Budgets***		193	141	122	85	72
NOx	Baseline Inventory	427.1	337.1	292.0	164.0	132.3
	New Defined Mobile Source Measures**	6.2	82.7	98.6	46.9	38.5
Mobile Source Emission Budgets***		421	255	194	118	94
PM2.5	Baseline Inventory	17.8	17.2	16.8	16.0	16.6
	Re-entrained road dust (paved)	18.6	18.8	19.0	20.8	21.4
	Re-entrained road dust (unpaved)	1.0	1.0	1.0	1.0	1.0
	Road Construction dust	0.2	0.2	0.2	0.2	0.3
	Adjusted Inventory	37.6	37.2	37.0	38.0	39.3
	New Defined Mobile Source Measures**	0.5	4.5	5.1	2.3	2.2
Mobile Source Emission Budgets***		38	33	32	36	38

* 2030 budget is applicable to all future years beyond 2030.

** Based on CARB's Proposed State Strategy for California's 2007 SIP and the District staff's proposed measures affecting on-road mobile categories (w/o long-term strategies)

*** Rounded up to the nearest ton. PM2.5 emissions are expected to continue to increase in 2023 and beyond due to increases in VMT. This increase is nominal and will be offset by decreases in NOx emissions such that the 2014 PM2.5 ambient air quality standard will be maintained.

TABLE 6-8

Motor Vehicle Emissions Budgets: 8 Hour Ozone
(Summer Planning - Tons Per Day)*

		2008	2011	2014	2017	2020	2023
VOC	Baseline Inventory	213.8	175.3	147.9	129.2	114.0	103.2
	New Defined Mobile Source Measures**	3.9	22.0	22.7	21.3	18.0	14.5
	Mobile Source Emissions***	210	154	126	108	96	89
NOx	Baseline Inventory	441.3	354.5	286.8	231.5	183.6	161.3
	New Defined Mobile Source Measures**	3.3	68.8	98.1	75.2	61.9	46.5
	Mobile Source Emissions***	438	286	189	157	122	115

* 2023 budget is applicable to all future years beyond 2023.

** Based on CARB's Proposed State Strategy for California's 2007 SIP and the District staff's proposed measures affecting on-road mobile categories (w/o long-term strategies)

*** Rounded up to the nearest ton.

TABLE 6-9

Motor Vehicle Emissions Budgets: 1 Hour Ozone
(Summer Planning - Tons Per Day)*

		2008	2010
VOC	Baseline Inventory	213.7	185.7
	New Defined Mobile Source Measures**	3.9	21.5
	Mobile Source Emissions***	210	165
NOx	Baseline Inventory	441.3	379.3
	New Defined Mobile Source Measures**	3.3	50.5
	Mobile Source Emissions***	438	329

* 2010 budget is applicable to all future years beyond 2010.

** Based on CARB's Proposed State Strategy for California's 2007 SIP and the District staff's proposed measures affecting on-road mobile categories (w/o long term strategies)

*** Rounded up to the nearest ton.

TABLE 6-10

Preliminary Motor Vehicle Emissions Budgets: Carbon Monoxide
(Winter Planning - Tons Per Day)*

		2005	2010	2015	2020
CO	Baseline Inventory	2,888	2,137	2,137	2,137
	New Defined Mobile Source Measures	0.0	0.0	0.0	0.0
Mobile Source Emission Budgets**		2,888	2,137	2,137	2,137

* 2015 budget being the last year of the maintenance plan is applicable to future years

** Rounded up to the nearest ton.

TABLE 6-11

Motor Vehicle Emissions Budgets: Nitrogen Dioxide
(Winter Planning - Tons Per Day)*

		2002
NO₂	Baseline Inventory	682.0
	New Defined Mobile Source Measures	0.0
Mobile Source Emission Budgets**		682

* 2002 budget is applicable to all future years and beyond 2020

** Rounded up to the nearest ton.

TABLE 6-12
 Motor Vehicle Emissions
 (Summer Planning - Tons Per Day)*

Year	Baseline		Remaining	
	VOC	NO _x	VOC	NO _x
2002	360	611	360	611
2003	341	595	341	595
2004	321	579	321	579
2005	302	563	302	563
2006	273	518	273	518
2007	243	472	243	472
2008	214	441	210	438
2009	199	419	195	413
2010	186	379	164	330
2011	176	355	154	291
2012	166	331	144	252
2013	157	309	135	219
2014	148	287	126	191
2015	142	269	119	174
2016	135	250	113	162
2017	129	232	109	160
2018	124	216	101	135
2019	119	200	96	120
2020	114	184	93	112
2021	110	176	88	78
2022	107	169	85	52
2023	103	161	86	27
2024	95	146	76	24

* Values shown in bold are results from model runs, while others are derived from interpolation.

PORT EMISSIONS

Port related sources such as ships, trucks, cargo handling equipment, harbor craft, and locomotives are a major contributor to the emissions inventory in the Basin. In April 2006, CARB adopted its Emission Reduction Plan for Ports and Goods Movement in California (GMP) which established the framework for actions to reduce the air quality and health impacts from the Ports and other goods movement activities in the state. In November 2006, both ports approved the San Pedro Bay Ports Clean Air Action Plan (CAAP) which set out emission reduction goals and control strategies necessary to reduce the emissions from port-related sources. Emission reductions from port-related sources are required in order to show attainment with the ambient air quality standards

for both PM_{2.5} and 8-hour standard. The Final 2007 AQMP contains port-related measures that build upon both the GMP and CAAP with enhancements by the District to reflect the reductions needed for attainment. Specifically, the Final 2007 AQMP proposes locomotives go beyond the GMP and achieves consistency with the CAAP by requiring all locomotives operating in the Basin to be Tier 3 equivalent by 2014. For ocean going vessels, the Final 2007 AQMP is consistent with the GMP by proposing that all ships operating within 40 nautical miles operate on 0.2 percent sulfur fuel beginning in 2008, with another reduction to 0.1 percent sulfur beginning in 2010. In addition, the final plan calls out for ships to comply with the vessel speed reduction proposal specified in the CAAP, as well as similar retrofit penetration rates for 2014 and 2020 to what is called for in the GMP. The estimated emission reductions and final emissions targets needed from port-related sources to demonstrate attainment are shown in Table 6-13. The AQMD will continue to work with the Ports of Los Angeles and Long Beach to further refine these targets as new information becomes available and amend the AQMP as appropriate.

TABLE 6-13
Port Emissions Targets (tpd)*

		2002	2014	2023**
NO_x	Baseline Inventory	117.6	117.4	136.5
	Emission Reductions		57.8	90.6
	Port Emissions Targets	117.6	59.6	45.9
SO_x	Baseline Inventory	24.1	22.1	33.1
	Emission Reductions		20.0	29.5
	Port Emissions Targets	24.1	2.1	3.6
PM_{2.5}	Baseline Inventory	6.5	5.4	6.3
	Emission Reductions		3.7	4.9
	Port Emissions Targets	6.5	1.7	1.4

* Port emissions estimated by assigning all ships, harbor craft, and port-related cargo handling equipment emissions to port inventory. Emissions from trucks and locomotives operating at the ports are based on the percentage of international goods movement compared to all goods movement (international plus domestic) emissions from CARB's GMP statewide estimate for trucks and locomotives.

** The 2023 targets for NO_x do not include the "black-box" reductions as part of the ozone attainment strategy. As more defined measures are developed in future plan revisions, the 2023 and future year budgets will be revised accordingly.