South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

SCAQMD SPECIAL MEETING IN LOS ANGELES

A G E N D A

MEETING, OCTOBER 2, 2015

A meeting of the South Coast Air Quality Management District Board will be held at 9:00 a.m., in the Biltmore Bowl at the Millennium Biltmore Hotel Los Angeles, 506 South Grand Avenue, Los Angeles, California.

Questions About an Agenda Item

- The name and telephone number of the appropriate staff person to call for additional information or to resolve concerns is listed for each agenda item.
- In preparation for the meeting, you are encouraged to obtain whatever clarifying information may be needed to allow the Board to move expeditiously in its deliberations.

Meeting Procedures

- The public meeting of the SCAQMD Governing Board begins at 9:00a.m. The Governing Board generally will consider items in the order listed on the agenda. However, any item may be considered in any order.
- After taking action on any agenda item not requiring a public hearing, the Board may reconsider or amend the item at any time during the meeting.

Questions About Progress of the Meeting

- During the meeting, the public may call the Clerk of the Board's Office at (909) 396-2500 for the number of the agenda item the Board is currently discussing.

The agenda and documents in the agenda packet will be made available upon request in appropriate alternative formats to assist persons with a disability. Disability-related accommodations will also be made available to allow participation in the Board meeting. Any accommodations must be requested as soon as practicable. Requests will be accommodated to the extent feasible. Please telephone the Clerk of the Boards Office at (909) 396-2500 from 7:00 a.m. to 5:30 p.m. Tuesday through Friday.

All documents (i) constituting non-exempt public records, (ii) relating to an item on the agenda, and (iii) having been distributed to at least a majority of the Governing Board after the agenda is posted, are available prior to the meeting for public review at the South Coast Air Quality Management District Clerk of the Board's Office, 21865 Copley Drive, Diamond Bar, CA 91765.

The Agenda is subject to revisions. For the latest version of agenda items herein or missing agenda items, check the District's web page (www.aqmd.gov) or contact the Clerk of the Board, (909) 396-2500. Copies of revised agendas will also be available at the Board meeting.

CALL TO ORDER

- Pledge of Allegiance
- Opening Comments: William A. Burke, Ed.D., Chair
  Other Board Members
  Barry R. Wallerstein, D. Env., Executive Officer
- Swearing in of Reappointed Board Member Dr. Clark E. Parker, Sr.
- Election of Chair and Vice Chair for Terms January 2016 – January 2018

Staff/Phone (909) 396-

CONSENT CALENDAR (Items 1 through 23)

Note: Consent Calendar items held for discussion will be moved to Item No. 24

1. Approve Minutes of September 4, 2015 Board Meeting **McDaniel/2500**

2. Set Public Hearings to Consider Amendments and/or Adoption to SCAQMD Rules and Regulations **Wallerstein/3131**

   November 6, 2015:

   A. Amend Regulation XX - Regional Clean Air Incentives Market (RECLAIM) **Fine/2239**

      Proposed amendments to Regulation XX (RECLAIM) will achieve additional NOx reductions pursuant to the 2012 AQMP Control Measure #2012CMB-01. The proposed amendments also address requirements for demonstrating Best Available Retrofit Control Technology equivalency in accordance with California Health and Safety Code §40440. A portion of the RECLAIM Trading Credit (RTC) reductions for power producing facilities may be placed into an adjustment account where the RTCs could be used for compliance purposes, such as meeting new source review holding requirements and emergency power generation needs. In addition to rule clarifications, other changes would include a delay in Relative Accuracy Test Audit due dates. (Reviewed: Stationary Source Committee, March 21, 2014 and July 24, 2015 and Special Stationary Source Committee, September 23, 2015)

B. Amend Rule 1156 - Further Emission Reductions from Cement Manufacturing Facilities **Fine/2239**

The proposed amendment seeks to minimize hexavalent chromium (Cr+6) emissions and risk from cement manufacturing operations and the property after facility closure while streamlining Cr+6 ambient monitoring. The proposed amendments will establish the conditions under which monitoring can be reduced or eliminated. In addition, the proposed amendments include a proposed modification to the fence-line ambient Cr+6 threshold to reflect changes made by the Office of Environmental Health Hazard Assessment to risk assessment guidelines, as well as proposing minor revisions. (Reviewed: Stationary Source Committee, April 17, May 15 and September 18, 2015)

December 4, 2015:

C. Amend Rule 1110.2 - Emissions from Gaseous- and Liquid-Fueled Engines **Fine/2239**

SCAQMD staff has met with several biogas engine operators that have committed to installing control equipment for biogas engines. However, some installations will take longer than expected and will reach full compliance after the current deadline of January 1, 2016. Additionally, U.S. EPA has raised concerns regarding the approvability of Rule 1110.2 into the State Implementation Plan because the current breakdown provisions in the rule allow unlimited emissions during breakdowns that are not subject to any enforcement action if they are reported. The proposed amendments would extend the compliance date for all biogas engines, provide a compliance option for additional time with the payment of a compliance flexibility fee, and address U.S. EPA's concerns on equipment breakdowns and potential excess emissions without enforcement by proposing a tiered approach where different levels of exceedances are defined and the number of incidences would be limited per calendar quarter. (Reviewed: Stationary Source Committee, September 18, 2015)

Budget/Fiscal Impact

3. Execute Contracts to Implement Two Major Recommendations by Abt Associates to Enhance Socioeconomic Assessments **Fine/2239**

To assist in implementation of two major recommendations by Abt Associates, Inc. to enhance SCAQMD socioeconomic assessments, two RFPs were released on June 5, 2015. The purpose of the first RFP was to review sectoral economic impact analyses for small scale/small business impacts, and a total of four bids were received. The second RFP solicited proposals to review environmental justice methodologies and application tools, and a total of three bids were received. Two separate review panels were formed, each consisting of SCAQMD staff and two external topic experts. Using the prescribed evaluation criteria to consider cost and technical qualifications, Industrial Economics, Inc.(IEc) received the highest overall score for its submitted proposals in response to both RFPs. This action is to award a contract for sectoral economic impact analysis to IEc in the amount of $49,994. This action is also to award a contract for environmental justice methodologies review to IEc in the amount of $74,116. The combined total of both contracts will not exceed $124,110. Funding is available in the General Fund Undesignated Fund Balance. (Reviewed: Administrative Committee, September 11, 2015; Recommended for Approval)

4. Execute Contract for Enhancement of Web-Based Annual Emissions Reporting Tool **Whynot/3104**

At its July 10, 2015 meeting, the Board approved the release of an RFP for Enhancement of Web-Based Annual Emission Reporting Tool that includes enhancements to the existing tool features based on user feedback. One proposal was received in response to the solicitation and that firm is highly qualified. This action is to award the contract to Ecotek Consulting Inc. for Enhancement of Web-Based Annual Emission Reporting Tool at a total cost not to exceed $150,000, which is included in the Planning, Rule Development, and Area Sources FY 2015-16 Budget. (Reviewed: Administrative Committee, September 11, 2015; Recommended for Approval)

5. Execute Contract to Cosponsor Hydrogen Station Equipment Performance Project **Miyasato/3249**

The California Department of Food and Agriculture, Division of Measurement Standards (DMS) is requesting cofunding for the Hydrogen Station Equipment Performance (HyStEP) project to develop and operate equipment used to evaluate station performance pursuant to SAE Standard J2601. This action is to execute a contract with DMS to cosponsor the HyStEP project in an amount not to exceed $100,000 from the Clean Fuels Fund (31). (Reviewed: Technology Committee, September 18, 2015; Recommended for Approval)

6. Execute Contract for Renewable Natural Gas Production and Vehicle Demonstration Project

Miyasato/3249

In order to fuel their fleet of natural gas solid waste collection vehicles, CR&R Environmental Services (CR&R) is producing biomethane, a renewable natural gas (RNG), at its material recovery facility in Perris, CA. CR&R proposes to expand their current RNG production with the addition of a second anaerobic digester. This expansion would displace 890,000 gallons of fossil-based fuel annually used in their vehicles and additional RNG produced would be injected into the Southern California Gas Company pipeline. CR&R is also interested in demonstrating the use of RNG with the next generation natural gas engine that achieves 90 percent lower NOx emissions than the existing 2010 heavy-duty engine exhaust emissions standard. This action is to execute a contract with CR&R in an amount not to exceed $900,000 from the Clean Fuels Fund (31) to cost-share construction of a second anaerobic digester and demonstrate the use of RNG with the next generation natural gas engine. (Reviewed: Technology Committee, September 18, 2015; Recommended for Approval)

7. Recognize Funds and Amend Contracts to Extend Implementation of Enhanced Fleet Modernization Program

Miyasato/3249

On December 5, 2014, the Board recognized funds and authorized contracts to implement the Enhanced Fleet Modernization Program (EFMP) and EFMP Plus-Up, which provides increasing incentives to eligible low- and middle-income owners of older vehicles to scrap their existing vehicle and receive a voucher to help acquire a newer vehicle or cover the cost of alternative mobility options. The EFMP is well received by the public and already oversubscribed. Staff has requested $21,400,000 from CARB to extend implementation of the EFMP. These actions are to: 1) recognize up to $21,400,000 in grants as approved by CARB to extend implementation of the EFMP and authorize the Executive Officer to accept grant terms and conditions; 2) amend four contracts in an amount not to exceed $1,000,000 from the HEROS II Special Revenue Fund (56); 3) authorize the Executive Officer to allocate up to an additional $300,000 from the HEROS II Special Revenue Fund (56) to increase any of the four contracts on an as-needed basis; and 4) authorize the Executive Officer to approve vouchers to qualified program participants up to $30,592,000. (Reviewed: Technology Committee, September 18, 2015; Recommended for Approval)

8. Execute Contracts for FY 2014-15 “Year 17” Carl Moyer Program and SOON Provision

Minassian/2641

On June 3, 2015, proposals were received in response to the Program Announcements issued for the “Year 17” Carl Moyer Program and the SOON Provision. These actions are to execute contracts for the “Year 17” Carl Moyer Program and the SOON Provision in an amount not to exceed $27,092,992, comprised of $24,419,832 from the SB 1107 Fund (32), $2,521,963 from the AB 923 Fund (80) and $151,197 in accrued interest from the Carl Moyer Program Fund (32). This action is to also execute contracts for projects from a backup list upon availability of funds from returned or partially completed projects. (Reviewed: Technology Committee, September 18, 2015; Recommended for Approval)

9. Approve Awards for School Bus Replacements and Retrofits **Minassian/2641**

At its March 6, 2015 meeting, the Board issued a Program Announcement to solicit applications for replacement and retrofit of school buses. These actions are to approve awards to replace pre-1994 diesel school buses with new alternative fuel buses and to retrofit 1994 and newer buses with particulate traps in an amount not to exceed $25,136,000 from the Carl Moyer Program AB 923 Fund (80). (Reviewed: Technology Committee, September 18, 2015; Recommended for Approval)

10. Recognize Revenue and Appropriate Funds to Support Air Quality Sensor Performance Evaluation Center Program **Tisopulos/3123**

SCAQMD applied for U.S. EPA "Community-Scale Air Toxics Ambient Monitoring" funds for FY 2015-16 through FY 2017-18 and was awarded $569,682 to study air toxic emissions from refineries and the spatial and temporal distribution of such emissions over impacted local communities, utilizing next generation monitoring technologies. This action is to recognize $569,682 in revenue into the General Fund and appropriate $508,729 to the Science & Technology Advancement Budget (exclusive of the $60,953 in Salaries and Benefits), to support the Air Quality Sensor Performance Evaluation Center Program. (Reviewed: Technology Committee, September 18, 2015; Recommended for Approval)

11. Execute Contract for Security Guard Services at Diamond Bar Headquarters **Johnson/3018**

The current contract for Diamond Bar headquarters security guard services expires on November 30, 2015. On June 5, 2015, the Board approved release of an RFP to solicit proposals from firms interested in providing these services. This action is to execute a three-year contract with Contact Security, Inc., for a total amount not to exceed $1,466,418. Funding has been included in the FY 2015-16 Budget and will be requested in successive fiscal years. (Reviewed: Administrative Committee, September 11, 2015; Recommended for Approval)

12. Amend Contracts to Provide Short- and Long-Term Systems Development, Maintenance and Support Services **Marlia/3148**

SCAQMD currently has contracts with several companies for short- and long-term systems development, maintenance and support services. These contracts are periodically amended to add budgeted funds as additional needs are defined. This action is to amend the contracts approved by the Board to add additional funding of $345,000 for needed development and maintenance work. (Reviewed: Administrative Committee, September 11, 2015; Recommended for Approval)

13. Execute Contract for Community Outreach with Los Angeles Sentinel, Inc. **Smith/3242**

This action is to partner with Los Angeles Sentinel, Inc. to increase the SCAQMD's visibility and broaden public awareness of agency programs in key Los Angeles urban communities through publication of a 4-page broadsheet full-color newspaper wrap for a cost not to exceed $50,000. (Reviewed: Administrative Committee, September 11, 2015; Recommended for Approval)

14. Execute Contract for Consultant Services for SCAQMD Environmental Justice Outreach and Initiatives **Smith/3242**

At the July 10, 2015 meeting, the Board approved release of an RFP to solicit proposals to provide assistance with community and stakeholder outreach efforts related to SCAQMD's Environmental Justice Program, including but not limited to, the Environmental Justice Community Partnership Initiative. This action is to execute a contract with Lee Andrews Group in an amount not to exceed $160,000. The contract will be for one year, beginning in November 2015, and may be extended for up to two one-year terms, upon satisfactory performance, at the Board's discretion. (Reviewed: Administrative Committee, September 11, 2015; Recommended for Approval)

15. Approve Contract Awards and Allocation Approved by MSRC **Pettis**

As part of their FYs 2014-16 AB 2766 Discretionary Fund Work Program, the MSRC approved eleven new contracts under the Local Government Program and one new contract under the Alternative Fuel Infrastructure Program. The MSRC also approved a funding allocation towards the Enhanced Fleet Modernization Program, with the funds to support vehicle replacement, transit and car-sharing vouchers. At this time the MSRC seeks Board approval of the contract awards and allocation. (Reviewed: Mobile Source Air Pollution Reduction Review Committee, September 17, 2015; Recommended for Approval)

Action Item/No Fiscal Impact

16. Amend SCAQMD Conflict of Interest Code and Incorporate Code, as Amended, into SCAQMD Administrative Code **Wiese/3460**

This action is to amend the SCAQMD Conflict of Interest Code (Code), pursuant to Government Code Section 87306(a). Under the Code, individuals holding designated positions are required to disclose certain financial interests. The proposed amendments will add and delete designated positions subject to the Code's requirements. The proposed amendments will also revise the Disclosure Categories, assign the Disclosure Categories to the designated positions, and make minor clarifications to the Code. This action is also to incorporate the Code, as amended, into the SCAQMD Administrative Code. (Reviewed: Administrative Committee, September 11, 2015; Recommended for Approval)

Items 17 through 23 - Information Only/Receive and File

17. Legislative and Public Affairs Report **Smith/3242**

This report highlights the August 2015 outreach activities of Legislative and Public Affairs, which include: Environmental Justice Update, Community Events/Public Meetings, Business Assistance, and Outreach to Business and Federal, State, and Local Government. (No Committee Review)

18. Hearing Board Report **Camarena/2500**

This reports the actions taken by the Hearing Board during the period of August 1 through August 31, 2015. (No Committee Review)

19. Civil Filings and Civil Penalties Report **Wiese/3460**

This reports the monthly penalties from July 1 through August 31, 2015, and legal actions filed by the General Counsel's Office from July 1 through August 31, 2015. An Index of District Rules is attached with the penalty reports. (Reviewed: Stationary Source Committee, September 18, 2015)

20. Lead Agency Projects and Environmental Documents Received by SCAQMD **Whynot/3104**

This report provides, for the Board's consideration, a listing of CEQA documents received by the SCAQMD between August 1, 2015 and August 31, 2015, and those projects for which the SCAQMD is acting as lead agency pursuant to CEQA. (Reviewed: Mobile Source Committee, September 18, 2015)

21. Rule and Control Measure Forecast **Fine/2239**

This report highlights SCAQMD rulemaking activities and public workshops potentially scheduled for the year 2015 and portions of 2016. (No Committee Review)

22. Report of RFPs Scheduled for Release in October **O'Kelly/2828**

This report summarizes the RFPs for budgeted services over $75,000 scheduled to be released for advertisement for the month of October. (Reviewed: Administrative Committee, September 11, 2015; Recommended for Approval)

23. Status Report on Major Projects for Information Management Scheduled to Start During First Six Months of FY 2015-16 **Marlia/3148**

Information Management is responsible for data systems management services in support of all SCAQMD operations. This action is to provide the monthly status report on major automation contracts and projects to be initiated by Information Management during the first six months of FY 2015-16. (No Committee Review)

24. Items Deferred from Consent Calendar

BOARD CALENDAR

25. Administrative Committee (Receive & File) **Chair: Burke** **Wallerstein/3131**

26. Mobile Source Committee (Receive & File) **Chair: Parker** **Fine/2239**

27. Stationary Source Committee (Receive & File) **Chair: Yates** **Nazemi/2662**

28. Special Stationary Source Committee (Receive & File) **Chair: Yates** **Nazemi/2662**

29. Technology Committee (Receive & File) **Chair: J. Benoit** **Miyasato/3249**

30. Mobile Source Air Pollution Reduction Review Committee (Receive & File) **Board Liaison: Antonovich** **Hogo/3184**

31. California Air Resources Board Monthly Report (Receive & File) **Board Rep: Mitchell** **McDaniel/2500**

Staff Presentation/Board Discussion

32. 2016 Air Quality Management Plan White Papers **Fine/2239**

Eight of ten 2016 AQMP white papers were released for final public review at the September 2015 Board meeting. An opportunity for public comments is being provided today. In addition, the draft final Energy Outlook White Paper is being released today for a final public review, and the Board will receive public comments at the November 6, 2015 Board Meeting. Each topic was presented to the appropriate Board Committee for review.

PUBLIC HEARINGS

33. Adopt Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities ***(Continued from September 4, 2015 Board Meeting)*** **Fine/2239**

On October 15, 2008, the U.S. EPA lowered the National Ambient Air Quality Standard (NAAQS) for lead from 1.5 µg/m3 to 0.15 µg/m3 averaged over a rolling 3-month period to protect public health and the environment. The SCAQMD staff is proposing Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities to further protect public health from exposure to lead and to help ensure and maintain attainment of the lead NAAQS. The SCAQMD staff is proposing an initial ambient air lead concentration limit of 0.150 µg/m3 averaged over any consecutive 30 days which will be lowered to a final limit of 0.100 µg/m3 by 2018. The proposed rule also establishes requirements for enclosures, point source lead emission limits, source testing, ambient air monitoring, housekeeping and maintenance activities, and submittal and implementation of a Compliance Plan if the facility exceeds ambient air lead concentration limits set forth in the rule. This action is to adopt the resolution: 1) Certifying the Final Environmental Assessment for Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities; and 2) Adopting Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities. (Reviewed: Stationary Source Committee, May 15, June 19 and September 18, 2015)

34. Amend Rule 1106 – Marine Coating Operations, as set forth in Proposed Amended Rule 1106 - Marine and Pleasure Craft Coating Operations, and Rescind Rule 1106.1 – Pleasure Craft Coating Operations **Fine/2239**

The proposed amendment is two-fold, first, Rule 1106.1 is proposed to be rescinded and second, Rule 1106 will subsume the requirements of Rule 1106.1 - Pleasure Craft Coating Operations, revise VOC content limits for pretreatment wash primers, antenna, repair and maintenance thermoplastic, inorganic zinc, and specialty marking coatings in order to align limits with U.S. EPA Control Techniques Guidelines and other California air districts, and add new categories for marine aluminum antifoulant, mist, nonskid and organic zinc coatings and marine deck primer sealant. The proposed amendment also adds provisions for pollution prevention measures, enhanced enforceability, and to promote clarity and consistency. This action is to adopt the resolution: 1) Certifying the Final Supplemental Environmental Assessment for Proposed Amended Rule 1106 - Marine and Pleasure Craft Coating Operations and rescinding of Rule 1106.1 – Pleasure Craft Coating Operations; 2) Amending Rule 1106 - Marine and Pleasure Craft Coating Operations; and 3) Rescinding Rule 1106.1 - Pleasure Craft Coating Operations. (Reviewed: Stationary Source Committee, July 24, 2015)

OTHER BUSINESS

35. Recognize Revenue to Develop and Demonstrate Catenary Zero-Emission Goods Movement System **Miyasato/3249**

The Board previously awarded a $13.5 million contract to Siemens Industry Inc. to develop and demonstrate the overhead catenary system technology. The Board recognized $11 million in anticipated revenue from funding partners and transferred $13.5 million from the Clean Fuels Fund (31) into the Advanced Technology Goods Movement Fund (61) to cover the entire project including SCAQMD's $2.5 million cost-share. To date, $5 million has been received from funding partners. This action is to recognize $2 million in cofunding revenue from the Los Angeles County Metropolitan Transportation Authority. (No Committee Review)

PUBLIC COMMENT PERIOD – (Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3)

BOARD MEMBER TRAVEL – (*No Written Material*)

Board member travel reports have been filed with the Clerk of the Boards, and copies are available upon request.

CLOSED SESSION - (*No Written Material*) **Wiese/3460**

CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION

It is necessary for the Board to recess to closed session pursuant to Government Code section 54956.9(a) and 54956.9(d)(1) to confer with its counsel regarding pending litigation which has been initiated formally and to which the SCAQMD is a party. The actions are:

- California Nozzle Specialists, Inc. v. SCAQMD, Los Angeles County Superior Court Case No. BS152037 (Public Records Act);
- People of the State of California, ex rel SCAQMD v. Exide Technologies, Inc., Los Angeles Superior Court Case No. BC533528;
- In the Matter of SCAQMD v. Exide Technologies, Inc., SCAQMD Hearing Board Case No. 3151-29 (Order for Abatement);
- Exide Technologies, Inc., Petition for Variance, SCAQMD Hearing Board Case No. 3151-31;
- In re: Exide Technologies, Inc., U.S. Bankruptcy Court for the District of Delaware Case No. 13-11482 (KJC) (Bankruptcy case);
- Fast Lane Transportation, Inc. et al. v. City of Los Angeles, et al., Contra Costa County Superior Court Case No. MSN14-0300 (formerly South Coast Air Quality Management District v. City of Los Angeles, et al., Los Angeles Superior Court Case No. BS 143381) (SCIG);

- Friends of the Eel River v. North Coast Railway Authority, California Supreme Court Case No. S222472 (amicus brief);
- Physicians for Social Responsibility, et al. v. U.S. EPA, U.S. Court of Appeals, Ninth Circuit, Case No. 14-73362 (1-Hour ozone);
- SCAQMD v. City of Moreno Valley, et al., Riverside County Superior Court, Case No. RIC 1511213 (World Logistics);
- SCAQMD v. U.S. EPA, U.S. Court of Appeals, Ninth Circuit, Case No. 13-73936 (Morongo Redesignation);
- SCAQMD v. U.S. EPA, U.S. Court of Appeals, Ninth Circuit, Case No. 15-71600 (Pechanga Redesignation);
- Sierra Club v. County of Fresno, California Supreme Court Case No. S219783 (amicus brief);
- Sierra Club, et al. v. U.S. EPA, U.S. District Court for Northern District of California Case No. 3:14-CV-04596 (PM2.5 designation to serious); and
- WildEarth Guardians v. U.S. EPA, D.C. Circuit Court Case No. 14-1145 (PM2.5 moderate designation).

CONFERENCE WITH LEGAL COUNSEL – INITIATING LITIGATION

It is also necessary for the Board to recess to closed session pursuant to Government Code section 54956.9(a) and 54956.9(d)(4) to consider initiation of litigation (two cases).

CONFERENCE WITH LABOR NEGOTIATORS

In addition, it is also necessary for the Board to recess to closed session pursuant to Government Code section 54957.6 to confer regarding upcoming labor negotiations with:

- designated representatives regarding represented employee salaries and benefits or other mandatory subjects within the scope of representation [Negotiator: William Johnson; Represented Employees: Teamsters Local 911 & SCAQMD Professional Employees Association];

and to confer with:

- labor negotiators regarding unrepresented employees [Agency Designated Representative: William Johnson; Unrepresented Employees: Designated Deputies and Management and Confidential employees].

ADJOURNMENT

PUBLIC COMMENTS

Members of the public are afforded an opportunity to speak on any listed item before or during consideration of that item. Please notify the Clerk of the Board, (909) 396-2500, if you wish to do so. All agendas are posted at SCAQMD Headquarters, 21865 Copley Drive, Diamond Bar, California, at least 72 hours in advance of the meeting. At the end of the agenda, an opportunity is also provided for the public to speak on any subject within the SCAQMD's authority. Speakers may be limited to three (3) minutes each.

Note that on items listed on the Consent Calendar and the balance of the agenda any motion, including action, can be taken (consideration is not limited to listed recommended actions). Additional matters can be added and action taken by two-thirds vote, or in the case of an emergency, by a majority vote. Matters raised under Public Comments may not be acted upon at that meeting other than as provided above.

Written comments will be accepted by the Board and made part of the record, provided 25 copies are presented to the Clerk of the Board. Electronic submittals to cob@aqmd.gov of 10 pages or less including attachment, in MS WORD, plain or HTML format will also be accepted by the Board and made part of the record if received no later than 5:00 p.m., on the Tuesday prior to the Board meeting.

ACRONYMS

AQIP = Air Quality Investment Program
AQMP = Air Quality Management Plan
AVR = Average Vehicle Ridership
BACT = Best Available Control Technology
Cal/EPA = California Environmental Protection Agency
CARB = California Air Resources Board
CEMS = Continuous Emissions Monitoring Systems
CEC = California Energy Commission
CEQA = California Environmental Quality Act
CE-CERT =College of Engineering-Center for Environmental Research and Technology
CNG = Compressed Natural Gas
CO = Carbon Monoxide
CTG = Control Techniques Guideline
DOE = Department of Energy
EV = Electric Vehicle
FY = Fiscal Year
GHG = Greenhouse Gas
HRA = Health Risk Assessment
LEV = Low Emission Vehicle
LNG = Liquefied Natural Gas
MATES = Multiple Air Toxics Exposure Study
MOU = Memorandum of Understanding
MSERCs = Mobile Source Emission Reduction Credits
MSRC = Mobile Source (Air Pollution Reduction) Review Committee
NATTS =National Air Toxics Trends Station
NESHAPS = National Emission Standards for Hazardous Air Pollutants
NGV = Natural Gas Vehicle
NOx = Oxides of Nitrogen
NSPS = New Source Performance Standards
NSR = New Source Review
OEHHA = Office of Environmental Health Hazard Assessment
PAMS = Photochemical Assessment Monitoring Stations
PAR = Proposed Amended Rule
PEV = Plug-In Electric Vehicle
PHEV = Plug-In Hybrid Electric Vehicle
PM10 = Particulate Matter $\leq$ 10 microns
PM2.5 = Particulate Matter $\leq$ 2.5 microns
PR = Proposed Rule
RFP = Request for Proposals
RFQ = Request for Quotations
SCAG = Southern California Association of Governments
SIP = State Implementation Plan
SOx = Oxides of Sulfur
SOON = Surplus Off-Road Opt-In for NOx
SULEV = Super Ultra Low Emission Vehicle
TCM = Transportation Control Measure
ULEV = Ultra Low Emission Vehicle
U.S. EPA = United States Environmental Protection Agency
VOC = Volatile Organic Compound
VMT = Vehicle Miles Traveled
ZEV = Zero Emission Vehicle

Back to Agenda

BOARD MEETING DATE: October 2, 2015 AGENDA NO. 1

MINUTES: Governing Board Monthly Meeting

SYNOPSIS: Attached are the Minutes of the September 4, 2015 meeting.

RECOMMENDED ACTION:
Approve Minutes of the September 4, 2015 Board Meeting.

Saundra McDaniel,
Clerk of the Boards

SM:dg

FRIDAY, SEPTEMBER 4, 2015

Notice having been duly given, the regular meeting of the South Coast Air Quality Management District Board was held at District Headquarters, 21865 Copley Drive, Diamond Bar, California. Members present:

William A. Burke, Ed.D., Chairman
Speaker of the Assembly Appointee

Mayor Dennis R. Yates, Vice Chairman
Cities of San Bernardino County

Mayor Michael D. Antonovich
County of Los Angeles

Mayor Ben Benoit
Cities of Riverside County

Supervisor John J. Benoit
County of Riverside

Councilmember Joe Buscaino (left at 11:10 a.m.)
City of Los Angeles

Councilmember Michael A. Cacciotti
Cities of Los Angeles County – Eastern Region

Dr. Joseph K. Lyou
Governor's Appointee

Councilmember Judith Mitchell
Cities of Los Angeles County – Western Region

Supervisor Shawn Nelson (arrived at 9:15 a.m.)
County of Orange

Dr. Clark E. Parker, Sr.
Senate Rules Committee Appointee

Mayor Miguel A. Pulido (left at 10:40 a.m.)
Cities of Orange County

Supervisor Janice Rutherford
County of San Bernardino

CALL TO ORDER: Chairman Burke called the meeting to order at 9:00 a.m.

- Pledge of Allegiance: Led by Councilman Cacciotti.

- Opening Comments

Councilwoman Mitchell. Announced that she attended the Women in Green Forum on August 26, 2015 and was encouraged to see the many ideas entrepreneurial women are introducing to green enterprise. She explained that she also attended the Asilomar 2015 Conference on Transportation and Energy Policy in a Volatile World on August 18-21, 2015; noted that Dr. Lyou was also in attendance and served as a panel moderator; and commented on one topic of interest which was companies such as Lyft and Uber that utilize software platforms that match excess capacity with a need in the community and how that might be applied to other areas.

Dr. Lyou. Confirmed that he also attended the Asilomar Conference and displayed a photograph of the attendees.

Dr. Parker. Explained that on August 31, 2015 he went, along with Chairman Burke, to meetings in Sacramento and shared with some of the legislators points of view that have been expressed by the Board in regard to the impact SB 350 will have on the Basin.

Chairman Burke. Noted that on August 16, 2015 he attended, along with Dr. Parker, an event sponsored by SCAQMD called the Regalettes An Afternoon in White in Los Angeles; and explained that the organization provides scholarships to minority college students, as well as additional outreach efforts within the community.

CONSENT CALENDAR

1. Approve Minutes of July 10, 2015 Board Meeting

2. Set Public Hearings October 2, 2015 to Consider Amendments and/or Adoption to SCAQMD Rules and Regulations

   A. Amend Rule 1106 – Marine and Pleasure Craft Coating Operations and Rescind Rule 1106.1 – Pleasure Craft Coating Operations

Budget/Fiscal Impact

3. Recognize and Appropriate Funds and Execute Contract for EV Charging Stations and Service at SCAQMD Headquarters and Release RFP for Installation

4. Execute Contracts for FY 2013-14 “Year 16” Carl Moyer Multidistrict Program and Transfer Funds for Multidistrict Truck Projects under Voucher Incentive Program

5. Execute Contracts to Cosponsor Sustainable Transportation Energy Pathways 2015-2018 Program

6. Establish Residential EV Charging Incentive Pilot Program

7. Recognize Revenue and Appropriate Funds for AB 1318 Weatherization Projects

8. Execute Contract for Tier 4 Passenger Locomotives

9. Execute Contract for CEQA Consultant Assistance

10. Replace Cleveland Range Food Steamer in Cafeteria

11. Authorize Purchase of Audio-Visual System Upgrades in Hearing Board and GB Rooms

12. Approve Contribution for Endowment to University of California Riverside to Support County of Riverside, University of California Riverside, University of California Riverside CE-CERT, City of Riverside, and Riverside Public Utilities Proposal for CARB’s Southern California Consolidation Project

13. Revise Procurement Policy and Procedure

14. Authorize Executive Officer to Execute Agreement to Transfer Oversight of BP/SCAQMD Public Benefits Program to Board, Approve Administrative Changes to Existing Program Contracts, and Execute Contract for Air Pollution Health Effects Study

15. Appropriate Funds from Designation for Litigation and Enforcement and Authorize Amending/Initiating Contracts with Outside Counsel and Specialized Legal Counsel and Services

16. Approve Contract Awards and Allocation Approved by MSRC

Items 17 through 25 - Information Only/Receive and File

17. Legislative and Public Affairs Report

18. Hearing Board Report

19. Civil Filings and Civil Penalties Report

20. Report of RFPs Scheduled for Release in September

21. FY 2014-15 Contract Activity

22. Summary of Changes to FY 2014-15 Approved Budget

23. Lead Agency Projects and Environmental Documents Received by SCAQMD

24. Rule and Control Measure Forecast

25. Status Report on Major Projects for Information Management Scheduled to Start During First Six Months of FY 2015-16

Dr. Lyou announced his abstention on Item No. 3 because NRG/eVgo is a potential source of income to him, on Item No. 5 because Chevron, Sempra, and General Motors are potential sources of income to him, on Item No. 7 because Southern California Gas Company and Southern California Edison are potential sources of income to him, on Item No. 8 because METRO is a potential source of income to him, on Item No. 12 because Riverside Public Utilities/City of Riverside is a potential source of income to him, and on Item No. 16 because LADWP and The Better World Group are potential sources of income to him.

Supervisor Antonovich announced that he serves as a Board Member for the Southern California Regional Rail Authority which is involved with Item No. 8.

Supervisor Benoit announced that he serves as a Supervisor for Riverside County which is involved with Item No. 12.

Councilwoman Mitchell announced her abstention on Item No. 12 because she serves on the Subcommittee for Site Selection for CARB.

Mayor Pulido announced that he serves on the Board of Directors for the Orange County Transportation Authority which is involved with Item No. 16.

Councilman Cacciotti announced that he serves as a Council Member for the City of South Pasadena which is involved with Item No. 16

Agenda Items 2, 3, 8, 12 and 23 were withheld for comment and discussion.

MOVED BY PULIDO, SECONDED BY J. BENOIT, AGENDA ITEMS 1, 4 THROUGH 7, 9 THROUGH 11, 13 THROUGH 22, 24 AND 25 APPROVED AS RECOMMENDED, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Buscaino, Cacciotti, Lyou *(except Items #5, #7 and #16)*, Mitchell, Parker, Pulido, Rutherford and Yates.

NOES: None.

ABSTAIN: Lyou *(Items #5, #7 and #16 only).*

ABSENT: Nelson.

26. Items Deferred from Consent Calendar

2. Set Public Hearings October 2, 2015 to Consider Amendments and/or Adoption to SCAQMD Rules and Regulations

A. Amend Rule 1106 – Marine and Pleasure Craft Coating Operations and Rescind Rule 1106.1 – Pleasure Craft Coating Operations

Dr. Lyou noted some concerns expressed by the UV/EB industry that the rule amendments are lacking a certain definition and also do not address a specific test method that would potentially be used in the future.

Dr. Philip Fine, DEO/Planning and Rules, responded that staff is continuing to look at the possibility of including the requested information in the rule proposal.

MOVED BY CACCIOTTI, SECONDED BY LYOU, AGENDA ITEM 2 APPROVED AS RECOMMENDED, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Buscaino, Cacciotti, Lyou, Mitchell, Nelson, Parker, Pulido, Rutherford and Yates.

NOES: None.

ABSENT: None.

3. Recognize and Appropriate Funds and Execute Contract for EV Charging Stations and Service at SCAQMD Headquarters and Release RFP for Installation

Dr. Lyou left the room during discussion of Items 3, 8 and 12.

Councilman Cacciotti expressed support for this item and asked staff to explain the proposal.

Dr. Matt Miyasato, DEO/Technology Advancement, explained that the proposal will greatly expand the charging infrastructure at District Headquarters.

Mayor Yates inquired whether Southern California Edison was advised of these proposed additions of electric chargers.

Dr. Miyasato replied that the project included performing an engineering study to ensure there is sufficient electrical supply to support the additional chargers. The study indicated the need for some transformer upgrades, the cost of which will be included in the project.

Supervisor Benoit noted that since this widespread workplace charging is a relatively new area of focus, it would be prudent to work with SCAQMD employees to establish a policy on how and when these spots are to be utilized.

MOVED BY CACCIOTTI, SECONDED BY PULIDO, AGENDA ITEM 3 APPROVED AS RECOMMENDED, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Buscaino, Cacciotti, Mitchell, Nelson, Parker, Pulido, Rutherford and Yates.

NOES: None.

ABSTAIN: Lyou.

ABSENT: None.

8. Execute Contract for Tier 4 Passenger Locomotives

Supervisor Nelson announced that he serves as a Board Member for the Southern California Regional Rail Authority which is involved with Item No. 8.

Dr. Tom Williams, Sierra Club Transportation Committee, addressed the Board on Agenda Item No. 8 and stressed the need for additional Tier 4 locomotives to be utilized.

MOVED BY CACCIOTTI, SECONDED BY B. BENOIT, AGENDA ITEM 8 APPROVED AS RECOMMENDED, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Buscaino, Cacciotti, Mitchell, Nelson, Parker, Pulido, Rutherford and Yates.

NOES: None.

ABSTAIN: Lyou.

ABSENT: None.

12. Approve Contribution for Endowment to University of California Riverside to Support County of Riverside, University of California Riverside, University of California Riverside CE-CERT, City of Riverside, and Riverside Public Utilities Proposal for CARB's Southern California Consolidation Project

Councilwoman Mitchell left the room during discussion of Item No. 12.

Nicole David, CE-CERT, explained the impact the proposed contribution will have on mobility issues in the region and educational opportunities for CARB and SCAQMD staff.

Supervisor Benoit applauded CE-CERT for their work throughout the years on environmental issues and explained the importance of this partnership with them.

MOVED BY J. BENOIT, SECONDED BY B. BENOIT, AGENDA ITEM 12 APPROVED AS RECOMMENDED, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Buscaino, Cacciotti, Nelson, Parker, Rutherford and Yates.

NOES: None.

ABSTAIN: Lyou and Mitchell.

ABSENT: Pulido.

23. Lead Agency Projects and Environmental Documents Received by SCAQMD

Dr. Tom Williams, Sierra Club Transportation Committee, expressed agreement with SCAQMD's comments in response to the draft EIR for the 710 tunnel vent project.

MOVED BY CACCIOTTI, SECONDED BY LYOU, AGENDA ITEM 23 APPROVED AS RECOMMENDED, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Buscaino, Cacciotti, Lyou, Mitchell, Nelson, Parker, Rutherford and Yates.

NOES: None.

ABSENT: Pulido.

BOARD CALENDAR

27. Administrative Committee

28. Special Administrative Committee

29. Legislative Committee

30. Mobile Source Committee

31. Stationary Source Committee

32. Technology Committee

33. Special Technology Committee

34. Mobile Source Air Pollution Reduction Review Committee

35. California Air Resources Board Monthly Report

MOVED BY YATES, SECONDED BY CACCIOTTI, AGENDA ITEMS 27 THROUGH 35 APPROVED AS RECOMMENDED, RECEIVING AND FILING THE COMMITTEE, MSRC AND CARB REPORTS, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Buscaino, Cacciotti, Lyou, Mitchell, Nelson, Parker, Rutherford and Yates.

NOES: None.

ABSENT: Pulido.

36. Status Report on Regulation XIII – New Source Review

Mohsen Nazemi, DEO/Engineering and Compliance, explained that this a routine report brought to the Board each year.

MOVED BY CACCIOTTI, SECONDED BY PARKER, AGENDA ITEM 36 APPROVED AS RECOMMENDED, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Buscaino, Cacciotti, Lyou, Mitchell, Nelson, Parker, Rutherford and Yates.

NOES: None.

ABSENT: Pulido.

PUBLIC HEARINGS

37. Amend Rule 1148.1 – Oil and Gas Production Wells ***(Continued from July 10, 2015 Board Meeting)***

Dr. Parker proposed changes to the rule language concerning the distance of control equipment to address stakeholder concerns.

The public hearing was opened and the following individuals addressed the Board on Agenda Item 37.

SHAMS HASAN, E & B Natural Resources
PAT GORSKY, Freeport-McMoran Oil and Gas
CANDACE SALWAY, Freeport-McMoran Oil and Gas
*SANDRA BURKHART, Western States Petroleum Association
BLAIR KNOX, California Independent Petroleum Association

Expressed support for the proposal with the changes suggested by Dr. Parker and thanked staff for continuing to work with stakeholders. *(Submitted Written Comments)

JIM STEWART, Sierra Club
ANGELICA GONZALEZ, Sierra Club
DR. TOM WILLIAMS, Citizens Coalition for Safe Community

Expressed disappointment with the new proposal; and urged the Board to do all it can to protect public health from oil drilling operations.

MICHAEL SALMAN, Associate Professor UCLA

Requested that the Board direct staff to develop an amendment to address flaring at well sites and explore the possibility of supporting a demonstration project using fuel cells as an ultra-low emission way to deal with gas that cannot be put into the pipeline. (Submitted Written Comments)

MARIA RAMOS
TERESA FLORES

Explained the negative health effects residents near the oil fields face; and asked that steps be taken to reduce the odors that come from the sources close to homes.

BAHRAM FAZELI, Communities for a Better Environment
ALICIA RIVERA, Communities for a Better Environment
YVONNE WATSON, Sierra Club
SAMUEL SUKATON Sierra Club
RABEYA SEN, Esperanza Community Housing Corporation

Expressed disappointment that the proposal is now being amended to appease the industry and disregard the input of the community members throughout the past few months.

There being no further public testimony on this item, the public hearing was closed.

Dr. Wallerstein noted that the reference to 1500 feet appears six times in the Rule, and Dr. Parker's proposal affects one of those areas. The industry has now agreed to accept the 1500 feet requirement at the five other references, as well as the trigger of two violation notices. He added that the amendment will keep the current standard of daily inspections if the operation is within 328 feet of a receptor, and adds that in the event an operation located from a distance of 328 feet to 1500 feet receives two notices of violation they must perform daily inspections.

In response to Councilwoman Mitchell's request for a response to Mr. Salman's comments about flaring, Dr. Wallerstein confirmed that he intends to have staff look at the possibility of utilizing fuel cells; and noted that CARB is working on a methane regulation that would potentially affect the burning of methane from oil production fields, so the Board will be hearing more about this issue and staff will include any developments in the report to the Stationary Source Committee regarding rule implementation.

Supervisor Nelson suggested directing staff to bring an item before the Stationary Source Committee to discuss odor nuisance issues, so that policy direction can be given on how to handle the matters in the future.

Chairman Burke directed staff to address this matter as requested by Supervisor Nelson and other Board Members on prior occasions.

Dr. Lyou stressed the importance of continuing to address mitigation measures to address issues that have been identified with certain production facilities.

Dr. Parker noted that his amendment seeks to balance the concerns of both businesses and the community members that the Board is charged with protecting.

MOVED BY J. BENOIT, SECONDED BY PARKER, AGENDA ITEM NO. 37 APPROVED AS RECOMMENDED BY STAFF WITH THE MODIFICATIONS PER MOTION OF BOARD MEMBER PARKER NOTED BELOW, ADOPTING RESOLUTION NO. 15-17 CERTIFYING THE FINAL ENVIRONMENTAL ASSESSMENT FOR AMENDED RULE 1148.1 AND AMENDING RULE 1148.1 - OIL AND GAS PRODUCTION WELLS, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Buscaino, Cacciotti, Nelson, Parker, Pulido, Rutherford and Yates.

NOES: Lyou and Mitchell.

ABSENT: None.

Bottom of Page 7, within paragraph (e)(1):

(C) Any stuffing box or produced gas handling and control equipment located ~~**1,500 feet**~~ **328 feet (100 meters)** or less from a sensitive receptor daily. Receptor distance shall be determined as the distance measured from the stuffing box or produced gas handling and control equipment to the property line of the nearest sensitive receptor.

(D) Any stuffing box or produced gas handling and control equipment located between 328 feet (100 meters) and 1,500 feet from a sensitive receptor daily for any facility receiving Notice(s) of Violation for Rule 402 and/or H&S Code § 41700 for odor nuisance occurring on two (2) or more days. Receptor distance shall be determined as the distance measured from the stuffing box or produced gas handling and control equipment to the property line of the nearest sensitive receptor.

Bottom of Page 10, within paragraph (g)(1):

(A) Receipt of ~~**a**~~ Notice**(s)** of Violation for Rule 402 **and/or H&S Code § 41700 for odor nuisance occurring on two (2) or more days** ~~Nuisance~~, ~~**as a result of odors**~~; or

(Mayor Pulido left at 10:40 a.m.)

38. Amend Rule 1148.2 - Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers ***(Continued from July 10, 2015 Board Meeting for Board Deliberation and Action Only)***

Dr. Parker proposed an amendment to strike a balance between the community member requests and input from industry, by setting the notice requirement to no less than 48 hours.

Dr. Lyou noted that providing notice to the communities is of the utmost importance and proposed an amendment to the motion that would reduce the number of extensions per drilling incident from five to three and change the language of the resolution to not exclude injections wells and direct staff to treat injection wells and production wells the same.

Kurt Wiese, General Counsel, noted that Dr. Lyou's proposed amendment constitutes a substantial change to the meaning of the rule which would require re-noticing of the rule with that amendment before the Board could consider it.

Dr. Lyou explained if he had been aware that staff was going to make a distinction between injection wells and production wells, he would have raised the issue previously.

Ms. Nakamura explained that when the rule was originally drafted it did not include water injection wells, as it was presented that those particular wells did not have flow back fluid, which was the primary concern at that time. She added that during this round of amendments to Rule 1148.2 the issue of notifications for water injection wells came up again and that is why there is a commitment to return to the Stationary Source Committee to address the water injection wells.

Dr. Wallerstein noted that the resolution included mention of looking at injection wells in the future and coming back to the Board on that issue, which would not have been expressed if it was believed to already be included in the rule.

DR. LYOU MOVED TO APPROVE THE STAFF RECOMMENDATION FOR ITEM NO. 38 WITH THE MODIFICATION TO REDUCE THE NUMBER OF POTENTIAL EXTENSIONS FOR DRILLING ACTIVITY TO THREE PER INCIDENT AND DIRECTING STAFF TO TREAT PRODUCTION AND INJECTION WELLS ALIKE, SECONDED BY COUNCILMAN CACCIOTTI BUT FAILED BY THE FOLLOWING VOTE:

AYES: Lyou.

NOES: Antonovich, B. Benoit, J. Benoit, Burke, Cacciotti, Lyou, Mitchell, Nelson, Parker and Rutherford.

ABSENT: Pulido and Yates.

Councilwoman Mitchell noted that the Board could direct staff to address injection wells in the future and should utilize the standard procedure for rule development to ensure proper procedures have been followed.

MOVED BY J. BENOIT, SECONDED BY PARKER, AGENDA ITEM NO. 38 APPROVED AS RECOMMENDED BY STAFF WITH THE MODIFICATIONS PROPOSED BY BOARD MEMBER PARKER NOTED BELOW, ADOPTING RESOLUTION NO. 15-18 DETERMINING THAT AMENDED RULE 1148.2 IS EXEMPT FROM THE REQUIREMENTS OF CEQA AND AMENDING RULE 1148.2 - NOTIFICATION AND REPORTING REQUIREMENTS FOR OIL AND GAS WELLS AND CHEMICAL SUPPLIERS, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Buscaino, Cacciotti, Mitchell, Nelson, Parker, Rutherford and Yates.

NOES: Lyou.

ABSENT: Pulido.

Modify paragraph (d)(1) of the Rule by adding the ***bold italic single underlined*** language and deleting the ~~***bold italic single strikeout***~~ language as follows:

(1) ~~Beginning June 4, 2013, the~~ The operator of an onshore oil or gas well shall electronically notify the Executive Officer, using a format approved by the Executive Officer, of the following information, no more than ten (10) calendar days and no less than ~~24~~***~~72~~ 48*** hours prior to the start of drilling, well completion, or rework of an onshore oil or gas well:

Modify paragraph (d)(2) of the Rule by adding the ***bold italic single underlined*** language and deleting the ~~***bold italic single strikeout***~~ language as follows:

(2) If the start date for the drilling, well completion, or rework ~~*as notified by the operator of an onshore*~~ of an onshore oil or gas well notification submitted to the Executive Officer pursuant to subparagraph (d)(1)(E) is anticipated to occur before the originally projected noticed start date and time, the operator shall electronically notify the Executive Officer at least ~~*72*~~ ***48*** hours prior to the new start date and time.~~:~~

Modify adopting resolution for PAR 1148.2 to change references to the notification period from 72 hours to **48 hours**.

(Councilman Buscaino left at 11:10 a.m.)

39. Amend Rule 1156 – Further Emission Reductions from Cement Manufacturing Facilities

Tracy Goss, Planning and Rules Manager, gave the staff presentation.

The public hearing was opened and the following individuals addressed the Board on Agenda Item 39.

DAVID PERKINS, Riverside Cement Company

Noted significant concerns with the proposed amendment, including the following: 1) the background concentrations can be skewed by offsite sources and other factors; 2) they have not been provided with sufficient time or information to understand the OEHHA standard used to set the new fence line standard; 3) there is a lack of clarity regarding the monitoring process after closure of a facility; 4) they believe that the rule exceeds the agency's authority; and (5) requested the item be continued. (Submitted Written Comments)

MICHAEL MEINEN, Riverside Cement
HOWARD BALENTINE, AECOM

Explained there are many complexities with their site and expressed concerns that the facility could not meet the proposed monitoring standard. They reiterated concerns with the lack of availability of information to be able to duplicate calculations used to develop the rule and stated that the rule contains too much Executive Officer discretion.

JUDITH PRAITIS, Sidley Austin LLP

Expressed opposition to the rule which she believes exceeds the SCAQMD's authority. She also stated that the process lacks transparency, the rule could result in premature closing of a lawful business, includes a subjective basis for discontinuing monitoring and facility closure requirements, and requested a 90-day extension.

JAY GRADY, CalPortland Company

Expressed support for the rule and thanked staff for their efforts to address their concerns.

JIM STEWART, Sierra Club
ANGELICA GONZALEZ, Sierra Club

Applauded the use of updated OEHHA standards to include the increased health effects that toxic air contaminants have on children; and expressed support for the rule that helps to minimize chromium emissions and protect local communities.

Supervisor Rutherford asked staff to address the concerns raised by Riverside Cement regarding the lack of being able to replicate calculations and that their emission levels exceed the standard even on days when they are not in operation.

Dr. Fine explained that staff has met with the facility on multiple occasions and gone through the calculations, and has provided them with detailed information on the calculations based on the revised OEHHA guidance. In regards to the exceedances, he noted that winds do not always blow in one direction over a 24-hour period. The facility is responsible for controlling dust emissions from their facility even if they are not operational.

Mayor Yates noted that as Chairman of the Stationary Source Committee he was surprised to see this matter set for hearing because the last time it was before the committee was in April and there were quite a few disparities between the stakeholders view and the staff proposal. He cautioned against setting a precedent of bringing items to the full Board with multiple unresolved issues.

Dr. Wallerstein noted that numerous meetings with stakeholders has not resulted in an agreeable solution and discussions are now at an impasse, so the proposal was brought to the Board for their consideration.

Chairman Burke agreed that the rule should go back to the Stationary Source Committee for further review.

AT THE CHAIRMAN'S DIRECTION, AGENDA ITEM 39 WAS REFERRED BACK TO THE STATIONARY SOURCE COMMITTEE FOR FURTHER REVIEW.

40. Adopt Proposed Rule 415 - Odors from Rendering Facilities

Staff recommended that the hearing on Rule 415 be continued to the November 6, 2015 meeting.

Mayor Yates noted that there has been an extended length of time since the Stationary Source has heard this matter as well.

Chairman Burke confirmed that the rule should go back to the Stationary Source Committee for further review.

AT THE CHAIRMAN'S DIRECTION, AGENDA ITEM 40 WAS REFERRED BACK TO THE STATIONARY SOURCE COMMITTEE FOR FURTHER REVIEW.

41. Amend Rule 1420.1 – Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Recycling Facilities

Susan Nakamura, Director of Strategic Initiatives, gave the staff presentation.

The public hearing was opened and the following individuals addressed the Board on Agenda Item 41.

LUIS CEBALLOS, Clean Air Coalition of North Whittier and Avocado Heights

Noted his concern for the lead and arsenic emissions that are being released by Quemetco and affecting local neighborhoods and schools; and stressed the importance of protecting future generations from harmful pollutants.

REBECCA OVERMYER-VELAZQUEZ, Clean Air Coalition of North Whittier and Avocado Heights
MARILYN KAMIMURA, Clean Air Coalition of North Whittier and Avocado Heights

Stressed that there has been a history of lead deposition in their community since 1959 that has not been addressed; reiterated that no level of lead is safe for children; and urged the Board to place even stricter regulations on Quemetco to limit their emissions of lead into the environment. They added that they strictly oppose the application Quemetco has filed to expand their operation by 25 percent.

Dr. Wallerstein noted that, if approved, this proposal will make Rule 1420.1 the strictest rule of its kind in the country.

DUNCAN MCKEE, Avocado Heights Resident

Noted that he has been a member of the Rule 1420.1 working group since 2010, and while he supports the overall rule, he has the following concerns: 1) Quemetco has demonstrated they can reach lower levels than what is being proposed; 2) the potential lack of accuracy of source testing; and 3) that any expansion by the facility would be extremely detrimental to the surrounding neighborhoods.

JIM STEWART, Sierra Club

Expressed support for further tightening of lead standards and noted the need to take additional action to protect the community members near the Quemetco facility.

There being no further public testimony on this item, the public hearing was closed.

In response to Councilman Cacciotti's inquiry about the status of the request for an increase in production as referenced by the commenters, Mohsen Nazemi explained that the application by Quemetco is undergoing a thorough evaluation prior to a decision being issued.

MOVED BY LYOU, SECONDED BY CACCIOTTI, AGENDA ITEM NO. 41 APPROVED AS RECOMMENDED BY STAFF, ADOPTING RESOLUTION NO. 15-19 CERTIFYING THE FINAL SUBSEQUENT ENVIRONMENTAL ASSESSMENT FOR AMENDED RULE 1420.1 AND AMENDING RULE 1420.1 – EMISSION STANDARDS FOR LEAD AND OTHER TOXIC AIR CONTAMINANTS FROM LARGE LEAD-ACID BATTERY RECYCLING FACILITIES, BY THE FOLLOWING VOTE:

AYES: Antonovich, B. Benoit, J. Benoit, Burke, Cacciotti, Lyou, Mitchell, Nelson, Parker, Rutherford and Yates.

NOES: None.

ABSENT: Buscaino and Pulido.

42. Adopt Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities

MOVED BY CACCIOTTI, SECONDED BY LYOU, and UNANIMOUSLY CARRIED (Absent: Buscaino and Pulido), AGENDA ITEM 42, WAS CONTINUED TO THE OCTOBER 2, 2015 BOARD MEETING.

OTHER BUSINESS

43. 2016 Air Quality Management Plan White Papers

Dr. Tom Williams, Sierra Club Transportation Committee and Citizens Coalition for a Safe Community, highlighted the importance of including the effects of goods movement to and from the Ports of Los Angeles and Long Beach.

In response to Supervisor Rutherford's inquiry about the ability for the public to comment on the drafts, Dr. Fine noted that staff expects to receive input throughout the next month and can implement any changes in that period and provide those updated versions for review and further input by the Board and via public comment at the October 2, 2015 meeting, prior to releasing a final version.

Dr. Lyou suggested placing a link to the White Papers in a visible location on the District's webpage.

RECEIVED AND FILED; NO ACTION NECESSARY.

PUBLIC COMMENT PERIOD – (Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3)

Dr. Tom Williams, LA 32 Neighborhood Council, Sierra Club and Citizens Coalition for a Safe Community, explained that the Board holds a leadership role where they must balance concerns of multiple stakeholders; and urged them to keep the goal of ensuring full attainment to improve air quality and protect public health.

CLOSED SESSION

The Board recessed to closed session at 12:15 p.m., pursuant to Government Code sections:

- 54956.9(a) and 54956.9(d)(1) to confer with its counsel regarding pending litigation which has been initiated formally and to which the District is a party, as follows:

  SCAQMD v. U.S. EPA, U.S. Court of Appeals, Ninth Circuit, Case No. 13-73936 (Morongo Redesignation); and

  SCAQMD v. U.S. EPA, U.S. Court of Appeals, Ninth Circuit, Case No. 15-71600 (Pechanga Redesignation).

- 54956.9(a) and 54956.9(d)(4) to consider initiation of litigation (one case).

Following closed session, General Counsel Kurt Wiese announced that a report of any reportable actions taken in closed session will be filed with the Clerk of the Board and made available upon request.

ADJOURNMENT

There being no further business, the meeting was adjourned by Kurt Wiese at 12:45 p.m.

The foregoing is a true statement of the proceedings held by the South Coast Air Quality Management District Board on September 4, 2015.

Respectfully Submitted,

Denise Garzaro
Senior Deputy Clerk

Date Minutes Approved: _____

_____
Dr. William A. Burke, Chairman

ACRONYMS

AQMP = Air Quality Management Plan
CARB = California Air Resources Board
CEQA = California Environmental Quality Act
CE-CERT = College of Engineering-Center for Environmental Research and Technology
EIR = Environmental Impact Report
EV = Electric Vehicle
FY = Fiscal Year
MSRC = Mobile Source (Air Pollution Reduction) Review Committee
OEHHA = Office of Environmental Health Hazard Assessment
RFP = Request for Proposals

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 2

PROPOSAL: Set Public Hearings to Consider Amendments and/or Adoption to SCAQMD Rules and Regulations

November 6, 2015:

(A) Amend Regulation XX - Regional Clean Air Incentives Market (RECLAIM). Proposed amendments to Regulation XX (RECLAIM) will achieve additional NOx reductions pursuant to the 2012 AQMP Control Measure #2012CMB-01. The proposed amendments also address requirements for demonstrating Best Available Retrofit Control Technology equivalency in accordance with California Health and Safety Code §40440. A portion of the RECLAIM Trading Credit (RTC) reductions for power producing facilities may be placed into an adjustment account where the RTCs could be used for compliance purposes, such as meeting new source review holding requirements and emergency power generation needs. In addition to rule clarifications, other changes would include a delay in Relative Accuracy Test Audit due dates. (Reviewed: Stationary Source Committee, March 21, 2014 and July 24, 2015 and Special Stationary Source Committee, September 23, 2015)

(B) Amend Rule 1156 - Further Emission Reductions from Cement Manufacturing Facilities. The proposed amendment seeks to minimize hexavalent chromium (Cr+6) emissions and risk from cement manufacturing operations and the property after facility closure while streamlining Cr+6 ambient monitoring. The proposed amendments will establish the conditions under which monitoring can be reduced or eliminated. In addition, the proposed amendments include a proposed modification to the fence-line ambient Cr+6 threshold to reflect changes made by the Office of Environmental Health Hazard Assessment to risk assessment guidelines, as well as proposing minor revisions. (Reviewed: Stationary Source Committee, April 17, May 15 and September 18, 2015)

December 4, 2015:

(C) Amend Rule 1110.2 - Emissions from Gaseous- and Liquid-Fueled Engines. SCAQMD staff has met with several biogas engine operators that have committed to installing control equipment for biogas engines. However, some installations will take longer than expected and will reach full compliance after the current deadline of January 1, 2016. Additionally, U.S. EPA has raised concerns regarding the approvability of Rule 1110.2 into the State Implementation Plan because the current breakdown provisions in the rule allow unlimited emissions during breakdowns that are not subject to any enforcement action if they are reported. The proposed amendments would extend the compliance date for all biogas engines, provide a compliance option for additional time with the payment of a compliance flexibility fee, and address U.S. EPA's concerns on equipment breakdowns and potential excess emissions without enforcement by proposing a tiered approach where different levels of exceedances are defined and the number of incidences would be limited per calendar quarter. (Reviewed: Stationary Source Committee, September 18, 2015)

The complete text of the proposed amendments, staff reports and other supporting documents will be available from the District's Public Information Center, (909) 396-2550 and on the Internet (www.aqmd.gov) as of October 7, 2015 for Regulation XX and Rule 1156, and as of November 4, 2015 for Rule 1110.2.

RECOMMENDED ACTION:
Set public hearings November 6, 2015 to amend Regulation XX and Rule 1156, and set public hearing December 4, 2015 to amend Rule 1110.2.

Barry R. Wallerstein, D.Env.
Executive Officer

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Back to Agenda

BOARD MEETING DATE: October 2, 2015 AGENDA NO. 3

PROPOSAL: Execute Contracts to Implement Two Major Recommendations by Abt Associates to Enhance Socioeconomic Assessment

SYNOPSIS: To assist in implementation of two major recommendations by Abt Associates, Inc. to enhance SCAQMD socioeconomic assessments, two RFPs were released on June 5, 2015. The purpose of the first RFP was to review sectoral economic impact analyses for small scale/small business impacts, and a total of four bids were received. The second RFP solicited proposals to review environmental justice methodologies and application tools, and a total of three bids were received. Two separate review panels were formed, each consisting of SCAQMD staff and two external topic experts. Using the prescribed evaluation criteria to consider cost and technical qualifications, Industrial Economics, Inc. (IEc) received the highest overall score for its submitted proposals in response to both RFPs. This action is to award a contract for sectoral economic impact analysis to IEc in the amount of $49,994. This action is also to award a contract for environmental justice methodologies review to IEc in the amount of $74,116. The combined total of both contracts will not exceed $124,110. Funding is available in the General Fund Undesignated Fund Balance.

COMMITTEE: Administrative, September 11, 2015; Recommended for Approval

RECOMMENDED ACTIONS:
Authorize the Executive Officer to execute two separate contracts to Industrial Economics, Inc., in the amounts of $49,994 and $74,116, respectively, for a combined total not to exceed $124,110 and appropriate this amount to the Planning, Rule Development and Area Sources FY 2015-16 Budget, Professional and Special Services account, from the General Fund Undesignated Fund Balance.

Barry R. Wallerstein, D.Env.
Executive Officer

PF:JC:ES

Background
At the October 4, 2013 Board meeting, Abt Associates, Inc. (Abt) was awarded a contract to review SCAQMD socioeconomic assessments and make recommendations for future improvements. Abt completed their review in August 2014 and a link to Abt's report and findings is available on SCAQMD's website at http://www.aqmd.gov/docs/default-source/Agendas/aqmp/scaqmd-report---review-socioeconomic-assessments.pdf?sfvrsn=4. Two of Abt's key recommendations were: first, review additional modeling tools and analysis methods to evaluate potential economic impacts on small industry sectors and small businesses, for which the currently used economic model (REMI) provides a somewhat limited picture; and second, systematically review the environmental justice (EJ) literature and expand the EJ analysis.

To support staff's implementation of these two major recommendations, two separate RFPs were released and advertised following the June 5, 2015 Board meeting. To address small industry sector modeling tools and analyses, RFP #P2015-33 "Review of Sectoral Economic Impact Analysis for Small Scale Impacts" targeted a fixed price contract to be awarded in an amount not to exceed $50,000. RFP #P2015-28R "Review of Environmental Justice Methodologies and Application Tools" had been originally released on April 3, 2015; however, the only submitted proposal was evaluated and determined to be non-responsive. The RFP was re-released on June 5, 2015. RFP #P2015-28R solicited bids for a fixed price contract in an amount not to exceed $75,000, of which up to $60,000 would be allocated solely for the review of literature, methodologies and tools, and up to $15,000 would be allocated solely for the application of recommended methodologies and tools to conduct a sub-county level EJ analysis within the SCAQMD region, if such work is requested by SCAQMD.

Outreach
In accordance with SCAQMD's Procurement Policy and Procedure, a public notice advertising the RFPs and inviting bids were published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin.

Potential bidders may have been notified utilizing SCAQMD's own electronic listing of certified minority vendors. Notice of the RFPs were emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations, and placed on the Internet at SCAQMD's website (http://www.aqmd.gov) where it can be viewed by making the selection "Grants & Bids." Additionally, the RFP was sent to various companies, nonprofits, and research institutions with potential expertise in the subject areas.

Bid Evaluation
A total of four bids for RFP #P2015-33 and a total of three bids for RFP #P2015-28R were received by the deadline on July 7, 2015. One of the bids for RFP #P2015-33 was submitted by a small business and included certification for additional points. Attachments 1 and 2 reflect the evaluation of the submitted proposals in response to RFP #P2015-33 and RFP #P2015-28R, respectively.

Using the prescribed evaluation criteria to consider technical and cost qualifications, three out of four proposals for RFP #2015-33 were considered technically qualified. Among the three proposals, Industrial Economics, Inc. (IEc) received a higher overall score. The review panel noted a good understanding of the scope of work, the proposed technical/management approach, and relevant experience of the project team as important factors that contributed to the higher score. The proposal submitted by RTI International received a similar evaluation with a slightly lower overall score. In addition, the review panel noted that, while the proposal submitted by Resources for the Future would be executed by a renowned researcher with significant expertise in the subject area, the proposal appeared weaker in other evaluation categories.

In response to RFP #P2015-28R, two of the three submitted proposals by UCLA and IEc respectively—were considered technically qualified. Between the two qualified proposals, IEc had a higher overall score and received higher average points in each category. The review panel noted that, while the UCLA project team has considerable expertise and is familiar with EJ issues within the SCAQMD's four-county region, IEc has clearly demonstrated its technical capacity and experience in the most updated EJ analysis as applicable to environmental policy-making at fine spatial resolution. IEc's expertise in BenMAP will also provide SCAQMD staff with helpful guidance related to the application of BenMAP results in EJ analysis. Key project personnel do not overlap between the two IEc proposals.

Panel Composition
The submitted proposals were evaluated by two separate review panels.

For RFP #P2015-33, the panel consisted of one SCAQMD Program Supervisor, a Research Specialist at the California Air Resources Board, and a Manager at the Southern California Association of Governments; one female and two male; two Asian, and one Caucasian.

For RFP #P2015-28R, the panel consisted of one Program Supervisor, one Air Quality Specialist, a Manager at the Southern California Association of Governments, and a Manager at the California Air Resources Board; two female and two male; three Asian and one Hispanic.

Resource Impacts
The costs of the contracts proposed by IEc are $49,994 for sectoral economic impact analysis (RFP #P2015-33) and $74,116 for environmental justice methodologies review (RFP #P2015-28R). The combined total of both contracts will not exceed $124,110. Funding is available from the General Fund Undesignated Fund Balance.

IEc was previously awarded another contract in June 2015 to review health benefits literature with an application to BenMAP (RFP #P2015-27), for the purpose of implementing another key recommendation put forward by Abt. The contract was fixed-priced and awarded in the amount of $72,373.20, with funds from the Planning, Rule Development and Area Sources FY 2014-15 Budget, Professional and Special Services account. In accordance with the SCAQMD Procurement Policy and Procedure, Section VIII.C.4, the contract award was approved by the Executive Officer as the RFP solicited contracting for consulting and professional services, for budgeted items up to $75,000. The key IEc personnel assigned to this ongoing contract are similar to those proposed for RFP #P2015-28R.

Attachments
1. Evaluation of Respondents to RFP #P2015-33
2. Evaluation of Respondents to RFP #P2015-28R

Attachment 1

Evaluation of Bids from Respondents to RFP #2015-33 – "Review of Sectoral Economic Impact Analysis for Small Scale Impacts"

Bidder	Proposed Cost	Cost Points	Technical Expertise Points (Average of 3 Reviewers)	Additional Points	Total Score
1. Resources for the Future	$49,997.60	29.8	58.8	0.0	88.6
2. CFS, LLC	$49,898.72	29.9	50.2*	10.0	90.0
3. RTI International	$49,673.00	30.0	61.3	0.0	91.3
4. Industrial Economics, Inc.	**$49,993.60**	**29.8**	**63.3**	**0.0**	**93.1**
Maximum Possible Points		30.0	70.0	15.0	115.0

*CFS proposal is disqualified for failing to score at least 56 points on technical expertise.

Attachment 2

Evaluation of Bids from Respondents to RFP #2015-28R – "Review of EJ Methodologies and Application Tools"

Bidder	**Proposed Cost**	**Cost Points**	**Technical Expertise Points** (Average of 4 Reviewers)	**Additional Points**	**Total Score**
1. UCLA	$75,000.00	29.6	60.9	0.0	90.5
2. RTI International	$74,501.00	29.8	52.5*	0.0	82.3
3. Industrial Economics, Inc.	**$74,116.40**	**30.0**	**63.6**	**0.0**	**93.6**
Maximum Possible Points		30.0	70.0	15	115.0

*The RTI proposal is disqualified for failing to score at least 56 points on technical expertise.

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 4

PROPOSAL: Execute Contract for Enhancement of Web-Based Annual Emissions Reporting Tool

SYNOPSIS: At its July 10, 2015 meeting, the Board approved the release of an RFP for Enhancement of Web-Based Annual Emission Reporting Tool that includes enhancements to the existing tool features based on user feedback. One proposal was received in response to the solicitation and that firm is highly qualified. This action is to award the contract to Ecotek Consulting Inc. for Enhancement of Web-Based Annual Emission Reporting Tool at a total cost not to exceed $150,000, which is included in the Planning, Rule Development, and Area Sources FY 2015-16 Budget.

COMMITTEE: Administrative, September 11, 2015; Recommended for Approval

RECOMMENDED ACTION:
Authorize the Executive Officer to execute a contract with Ecotek Consulting Inc. for Enhancement of Web-Based Annual Emissions Reporting Tool at a cost not to exceed $150,000.

Barry R. Wallerstein, D.Env.
Executive Officer

PF:JW:IM:ARG

Background

On July 10, 2015, SCAQMD released RFP# P2016-04 for Enhancement of Web-Based Annual Emissions Reporting Tool that includes fixes and upgrades to the existing tool features based on user feedback. Under SCAQMD's Annual Emission Reporting (AER) Program, there are about 1,800 facilities that are required to report criteria and toxics emissions annually to the SCAQMD and pay emission fees in accordance with Rule 301(e) requirements. Additionally, facilities subject to the Air Toxics "Hot Spots" (AB 2588) program are required to report their quadrennial toxics emissions inventory through the AER Program. AB 2588 facilities are included as AER facilities for the

purpose of this Board letter. Consolidation of the AB 2588 toxics emission inventory reporting requirement into the AER program has improved the toxics emissions data quality and minimized required resources by both facilities and the SCAQMD.

In December 2011, the Board approved releasing an RFP to solicit proposals from qualified firms to develop a new AER system with an option to renew the contract for three additional years. In March 2012, the Board approved a contract with Ecotek Consulting Inc. to develop and implement the new AER system, using $103,921 in U.S. EPA grant funds combined with $95,899 in SCAQMD funding. In March 2013, the Board approved amending the contract to secure the second installment of the U.S. EPA funds (totaling $96,079) combined with $50,000 from SCAQMD funding to include additional tasks as required by the U.S. EPA grant. In June 2014, the Board approved amending the contract for the third year for a total amount of $235,370 for program enhancements identified during pilot testing and from user feedback. This action brought the contract total to $581,269 of which $200,000 was funded from a U.S. EPA grant.

The emissions reporting system includes new features such as quality control, enhanced data management, standard and ad hoc reporting, data adjustments, and billing functions as well as integration of greenhouse gas emission reporting. The new reporting tool was available as an option to facilities for testing and reporting 2013 emissions. This new tool is now mandatory, and this year facilities successfully reported their calendar year 2014 emissions and will be required to use the tool for all subsequent annual emissions.

The requested funding will allow Ecotek Consulting Inc. to provide new critical features to the tool, which were suggested by industry stakeholders. These include redesigning the uploading and importing of a facility's permit and emissions profile to resolve data issues discovered during the 2014 emissions reporting period, adding more data validation functionality, modifying the tool's truncating and rounding features to add more precision, and enhancing the SCAQMD administrative functions.

Outreach

In accordance with SCAQMD's Procurement Policy and Procedure, following notice at the July 10, 2015 Governing Board meeting, a public notice advertising the RFP and inviting bids was published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin.

Additionally, potential bidders may have been notified utilizing SCAQMD's own electronic listing of certified minority vendors. Notice of the RFP was emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations, and placed on the Internet at SCAQMD's website (http://www.aqmd.gov).

Bid Evaluation
There was only one proposal received in response to the RFP by the deadline for submittal of 4:00 p.m. on August 12, 2015. The proposal was from Ecotek Consulting Inc. who has been working on the development of the AER web-based program since 2012. The proposal was evaluated and scored by a three-member evaluation panel. The evaluation panel graded Ecotek Consulting Inc. with a final average technical score of 64 (out of a maximum of 70). Since this was the only proposal received, the panel members evaluated this proposal based on its technical factors such as clear understanding of the nature and extent of the work to be performed, and the contractor's experience in developing and designing software programs for emission reporting.

Panel Composition
The evaluation panel consisted of an SCAQMD Program Supervisor from Information Management, an SCAQMD Program Supervisor from Planning, Rule Development, and Area Sources, and an SCAQMD Air Quality Specialist from the Annual Emissions Reporting Group. The panel breakdown was three Asian; three male.

Resource Impacts
The total funding for the work contemplated for this contract is a maximum of $150,000.

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 5

PROPOSAL: Execute Contract to Cosponsor Hydrogen Station Equipment Performance Project

SYNOPSIS: The California Department of Food and Agriculture, Division of Measurement Standards (DMS) is requesting cofunding for the Hydrogen Station Equipment Performance (HyStEP) project to develop and operate equipment used to evaluate station performance pursuant to SAE Standard J2601. This action is to execute a contract with DMS to cosponsor the HyStEP project in an amount not to exceed $100,000 from the Clean Fuels Fund (31).

COMMITTEE: Technology, September 18, 2015; Recommended for Approval

RECOMMENDED ACTION:
Authorize the Chairman to execute a contract with the California Department of Food and Agriculture, Division of Measurement Standards to cosponsor the HyStEP project in an amount not to exceed $100,000 from the Clean Fuels Fund (31).

Barry R. Wallerstein, D.Env.
Executive Officer

MMM:FM:NB:LHM:mg

Background
In 2013, U.S. DOE, along with automakers and other key stakeholders, launched H2USA, a new public-private partnership to address the key challenges of hydrogen infrastructure. To help ensure a safe, fast, full customer fill at commercial hydrogen stations, testing equipment needs to be developed and used to validate or audit fill performance of hydrogen stations to meet SAE Standard J2601 using test methods in CSA HGV 4.3. CARB and DOE are leading an effort to fund, design and build a new Hydrogen Station Equipment Performance (HyStEP) Device that will provide such services. Phase I, which is being overseen by a national project team, is to design, fabricate and initially validate and field test a device. It is currently funded with approximately $881,000 from DOE, Sandia National Laboratories, the National Renewable Energy Laboratory (NREL), Air Liquide Industrial U.S. LP, Toyota, CARB

and Boyd Hydrogen as part of the H2USA H2FIRST Project. The equipment, which is owned by Sandia, was assembled, mounted in a trailer by Powertech, and was validation tested by NREL through September 2015.

Proposal

Phase II is California implementation and being overseen by a California task force, which includes representatives from CARB, CEC, DMS, CaFCP, SCAQMD, Toyota, Mercedes, BMW, Air Liquide, NREL and Sandia. The equipment validation device will be loaned for the California implementation portion for up to a two-year period. The total cost for Phase II is estimated to be approximately $805,000, with $100,000 each in cofunding already committed from both the California Fuel Cell Partnership (CaFCP) and the CEC. CARB is contributing $100,000 for a tow vehicle and in-kind for a staff Air Resources Engineer. Successful testing in California may ultimately lead to certification and/or listing by nationally recognized testing laboratories, reduced time for hydrogen station commissioning and increased deployment of zero-emission vehicles in our region. Some automakers may still choose to conduct their own additional hydrogen station test program, especially in the early years of station development.

This action is to execute a contract with DMS to cosponsor the HyStEP project. DMS has experience with hydrogen station testing for weights and measures accuracy and plans to operate HyStEP in California. The proposed budget will support approximately 150 days of on-site testing with 4 days planned for each station. In this schedule, 38 new stations can be tested and there would be sufficient hydrogen to support estimated throughput demand from fuel cell vehicles through 2016. The HyStEP equipment is scheduled to arrive in California in early fall for a series of shakedown, validation and operational tests. Station validation testing is scheduled to begin late 2015 and continue through 2016. CARB is planning on taking comments and having stakeholder discussions in a series of workshops planned for the summer of 2016 to explore who should have authority of jurisdiction over the fueling protocols in SAE Standard J2601.

Sole Source Justification

Section VIII.B.2 of the Procurement Policy and Procedure identifies four major provisions under which a sole source award may be justified. This request for sole source award is made under provision B.2.d.: Other circumstances exist which in the determination of the Executive Officer require such waiver in the best interest of the SCAQMD. Specifically, these circumstances are B.2.d.(1): Project involving cost-sharing by multiple sponsors. DMS has the authority for certifying weights and measures for fueling stations in California and experience testing hydrogen stations for weights and measures certification. Operation of the HyStEP device for testing the fill performance of hydrogen stations would lay the foundation for SAE J2601 testing in California and the U.S. This project involves cost-sharing by multiple sponsors.

Benefits to SCAQMD

There are several elements to commissioning a hydrogen fueling station. Currently, automakers are testing hydrogen station fill performance with their own specially instrumented fuel cell vehicles, which often takes weeks or months depending on the availability of these vehicles and the degree of reprogramming required. The HyStEP device provides an opportunity to standardize testing such that commissioned stations are ensured to meet safety and performance standards under recommended SAE Standard J2601 using test methods in CSA HGV 4.3, rendering repeat visits from multiple automakers unnecessary. Successful implementation of the HyStEP device by DMS in California should lead to certification by nationally recognized testing laboratories, reduced time for hydrogen station commissioning, and increased deployment of zero-emission vehicles in our region. This proposed project is included in the *Technology Advancement Office Clean Fuels Program 2015 Plan Update* under the category of "Develop and Demonstrate Distributed Hydrogen Production and Fueling Stations."

Resource Impacts

The contract with DMS shall not exceed $100,000 from the Clean Fuels Fund (31). In addition to the $881,000 committed to build and field test HyStEP for Phase I, funding from the following cosponsors for operation in California (Phase II) is anticipated as follows:

HyStEP Phase II Anticipated Funding

Organizations	Anticipated Funding	Percent
CaFCP	$100,000	12.5%
CARB*	$405,000	50.0%
CEC	$100,000	12.5%
Other	$100,000	12.5%
SCAQMD (*requested*)	$100,000	12.5%
Total	$805,000	100%

*cash and in-kind

Sufficient funds are available for the proposed projects from the Clean Fuels Fund (31), established as a special revenue fund resulting from the state-mandated Cleans Fuels Program. The Clean Fuels Program, under Health and Safety Code Sections 40448.5 and 40512 and Vehicle Code Section 9250.11, establishes mechanisms to collect revenues from mobile sources to support projects to increase the utilization of clean fuels, including the development of the necessary advanced enabling technologies. Funds collected from motor vehicles are restricted, by statute, to be used for projects and program activities related to mobile sources that support the objectives of the Clean Fuels Program.

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 6

PROPOSAL: Execute Contract for Renewable Natural Gas Production and Vehicle Demonstration Project

SYNOPSIS: In order to fuel their fleet of natural gas solid waste collection vehicles, CR&R Environmental Services (CR&R) is producing biomethane, a renewable natural gas (RNG), at its material recovery facility in Perris, CA. CR&R proposes to expand their current RNG production with the addition of a second anaerobic digester. This expansion would displace 890,000 gallons of fossil-based fuel annually used in their vehicles and additional RNG produced would be injected into the Southern California Gas Company pipeline. CR&R is also interested in demonstrating the use of RNG with the next generation natural gas engine that achieves 90 percent lower NOx emissions than the existing 2010 heavy-duty engine exhaust emissions standard. This action is to execute a contract with CR&R in an amount not to exceed $900,000 from the Clean Fuels Fund (31) to cost-share construction of a second anaerobic digester and demonstrate the use of RNG with the next generation natural gas engine.

COMMITTEE: Technology, September 18, 2015; Recommended for Approval

RECOMMENDED ACTION:
Authorize the Chairman to execute a contract with CR&R to cost-share construction of a second anaerobic digester to expand RNG production at their material recovery facility in Perris and demonstrate the use of RNG with next generation natural gas engines in an amount not to exceed $900,000 from the Clean Fuels Fund (31).

Barry R. Wallerstein, D.Env.
Executive Officer

MMM:HH:DKS:DRC:PMB

Background
Renewable natural gas (RNG), also known as biomethane, biogas, digester gas or landfill gas, refers to natural gas from unconventional sources where biological processes like anaerobic digestion produce methane from organic matter. Natural gas derived in this fashion is considered "renewable" because the feedstock is part of a continuous organic cycle, namely the decomposition of biological waste products. The feedstock used in the anaerobic digestion system is solid and liquid organic materials derived from green waste, food waste and organic liquid waste products. Anaerobic digestion is part of the waste industry's concept of "zero waste" as the separated digested solids can be composted, utilized for dairy bedding, directly applied to cropland or converted into other products. Nutrients in the liquid stream are used in agriculture as fertilizer.

One such RNG system is a commercially proven technology manufactured by Eisenmann AG in Germany. The system uses a series of biological processes in which microorganisms break down biodegradable material in the absence of oxygen. RNG produced through anaerobic digestion is cleaned to pipeline quality standards and blended with fossil natural gas. This project includes a gas conditioning system to produce pipeline and fuel grade methane. RNG is fully interchangeable with conventional natural gas and can be injected into existing natural gas pipelines and used in natural gas vehicles in the form of CNG or LNG.

CR&R Environmental Services (CR&R), which serves approximately 2.5 million customers within the SCAQMD, has been constructing an anaerobic digestion system at its material recovery facility (MRF) located in Perris, CA. Phase I of CR&R's anaerobic digestion and biomethane facility (ADBF) is nearing completion and is expected to commence operations in the fall of 2015. Phase I will divert 83,000 tons annually of organic solid waste from Southern California landfills while producing 890,000 diesel gallon equivalents (DGEs) of RNG annually. This fuel will be wholly utilized by CR&R's heavy-duty natural gas-powered waste collection vehicles deployed in Riverside and North Orange County. The ADBF project has been designed to support up to three additional expansion phases to increase production of RNG, and staff recommends cost-sharing Phase II.

Currently, the SCAQMD, in collaboration with Cummins Westport Inc. and other partners, is cosponsoring the development of the next generation, on-road heavy-duty natural gas engines in both the 8.9L ISL G and the 11.9L ISX G platforms. It is expected they will achieve a 0.02 g/bhp-hr NOx emissions level, which is 90% less NOx when compared to the current on-road heavy-duty engine standard of 0.2 NOx g/bhp-hr. CR&R is interested in demonstrating the RNG produced at its facility in their

solid waste collection and transfer vehicle fleet using the next generation natural gas-powered engines, and staff recommends cost-sharing this additional project element.

Proposal
CR&R seeks a seamless transition to Phase II of the ADBF expansion to utilize project and construction efficiencies from Phase I and reduce costs associated with construction delays. Phase II will divert an additional 83,000 tons annually from landfills and produce another 890,000 DGEs of RNG annually. The RNG produced from Phase II will exceed CR&R's own vehicle fuel demands, and this RNG supply has received interconnect approval from Southern California Gas Company for introduction into the existing natural gas pipeline system.

CR&R is also proposing to demonstrate RNG produced from this facility into the next generation of heavy-duty natural gas-powered vehicles. The combination of using advanced natural gas engines that achieve 0.02 g NOx/bhp-hr, with the significant GHG and lifecycle emission benefits of RNG, will help demonstrate near-zero on-road heavy-duty engine technology in this region.

This action is to execute a contract with CR&R to cost-share construction of a second anaerobic digester to expand RNG production at CR&R's MRF in Perris and demonstrate next generation natural gas engines in CR&R's solid waste collection and transfer vehicle fleet operating on RNG produced from their ADBF.

Sole Source Justification
Section VIII.B.2 of the Procurement Policy and Procedure identifies four major provisions under which a sole source award may be justified. This request for sole source award is made under provision B.2.d.: Other circumstances exist which in the determination of the Executive Officer require such waiver in the best interest of the SCAQMD. Specifically, these circumstances are B.2.d.(1): Project involving cost-sharing by multiple sponsors. CR&R has secured cost-sharing from CEC and the California Department of Resources Recycling and Recovery (CalRecycle) and is contributing its own significant financial and in-kind resources for the Phase II expansion project at their ADBF in Perris.

Benefits to SCAQMD
Further expansion of CR&R's ADBF in Perris and the demonstration of next generation natural gas-powered on-road heavy duty vehicles using locally produced RNG addresses local, state and federal environmental regulations and goals Locally, this project will result in lower NOx emissions, lower diesel PM emissions and demonstration of viable near-zero emission on-road transportation technology. Statewide, the project addresses the AB 32 Scoping Plan which calls for the reduction of GHG emissions resulting from decomposition of organic wastes in landfills as well as legislation adopted last year (AB 1826) requiring businesses to recycle organic waste

depending upon the amount of waste produced. Nationally, RNG production and the use of RNG for transportation fuels would help displace petroleum-based fuels used in the transportation sector. In addition, the injection of RNG into existing pipeline infrastructure would also displace fossil-based natural gas and the transmission-related impacts from out-of-state produced natural gas and its transportation and pipeline distribution. This expansion project is estimated to displace 15,000 metric tons of GHGs annually. This proposed project is included in the *Technology Advancement Office Clean Fuels Program 2015 Plan Update* under the category of "Infrastructure and Deployment" as "Demonstrate Natural Gas Manufacturing and Distribution Technologies including Renewables."

Resource Impacts
SCAQMD's total cost-share for the project shall not exceed $900,000 from the Clean Fuels Fund (31). Project development costs for both Phases I and II are as follows:

Project Development Costs (Phases I and II)

Funding Sources	Funding Amount	Percent
CalRecycle	$3,000,000	5.4%
CEC	$4,520,000	8.2%
CR&R	$47,000,000	84.8%
SCAQMD (*requested*)	$900,000	1.6%
Total	**$55,420,000**	**100%**

Sufficient funds are available from the Clean Fuels Fund, established as a special revenue fund resulting from the state-mandated Cleans Fuels Program. The Clean Fuels Program, under Health and Safety Code Sections 40448.5 and 40512 and Vehicle Code Section 9250.11, establishes mechanisms to collect revenues from mobile sources to support projects to increase the utilization of clean fuels, including the development of the necessary advanced enabling technologies. Funds collected from motor vehicles are restricted, by statute, to be used for projects and program activities related to mobile sources that support the objectives of the Clean Fuels Program.

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 7

PROPOSAL: Recognize Funds and Amend Contracts to Extend Implementation of Enhanced Fleet Modernization Program

SYNOPSIS: On December 5, 2014, the Board recognized funds and authorized contracts to implement the Enhanced Fleet Modernization Program (EFMP) and EFMP Plus-Up, which provides increasing incentives to eligible low- and middle-income owners of older vehicles to scrap their existing vehicle and receive a voucher to help acquire a newer vehicle or cover the cost of alternative mobility options. The EFMP is well received by the public and already oversubscribed. Staff has requested $21,400,000 from CARB to extend implementation of the EFMP. These actions are to: 1) recognize up to $21,400,000 in grants as approved by CARB to extend implementation of the EFMP and authorize the Executive Officer to accept grant terms and conditions; 2) amend four contracts in an amount not to exceed $1,000,000 from the HEROS II Special Revenue Fund (56); 3) authorize the Executive Officer to allocate up to an additional $300,000 from the HEROS II Special Revenue Fund (56) to increase any of the four contracts on an as-needed basis; and 4) authorize the Executive Officer to approve vouchers to qualified program participants up to $30,592,000.

COMMITTEE: Technology, September 18, 2015; Recommended for Approval

RECOMMENDED ACTIONS:

1. Recognize, upon receipt, up to $1,400,000 from CARB or the California Bureau of Automotive Repair (BAR) into the HEROS II Special Revenue Fund (56) and authorize the Executive Officer to accept terms and conditions of an AB 118 grant award from either CARB or BAR for implementation of the retire and replace component of the EFMP.
2. Recognize, upon receipt, up to $20,000,000 from CARB into the HEROS II Special Revenue Fund (56) and authorize the Executive Officer to accept terms and conditions of a Greenhouse Gas Reduction Fund (GGRF) grant award for implementation of the Vehicle Retirement and Replacement Plus-Up Program.

3. Authorize the Executive Officer to amend contracts with the following entities, increasing contract funding in an amount not to exceed a total of up to $1,000,000 (from the $3,210,000 allowed by CARB for use in administering and conducting outreach for the EFMP and EFMP Plus-Up) from the HEROS II Special Revenue Fund (56) to assist program participants in processing vehicle retirements and identifying replacement vehicles or alternative mobility options:
    a. Foundation for California Community Colleges in an amount not to exceed $250,000;
    b. Opus Inspection in an amount not to exceed $375,000; and
    c. Top Shelf Environmental Consulting, LLC in an amount not to exceed $375,000.
4. Authorize the Executive Officer to allocate up to an additional $300,000 (from the remaining $2,210,000 designated for use in administering and conducting outreach for the EFMP and EFMP Plus-Up) from the HEROS II Special Revenue Fund (56) to increase any of the four contracts currently implementing the EFMP on an as-needed basis depending on workload of each contractor, up to $75,000 per contract.
5. Authorize the Executive Officer to approve vouchers to program participants in an amount up to $30,592,000, which consists of up to $20,257,000 from the HEROS II Special Revenue Fund (56), up to $4,134,000 from the Clean Fuels Fund (31); and up to $6,201,000 from the Mobile Source Air Pollution Reduction Fund (23), contingent upon approval by the MSRC, for a minimum of 3,570 replacement vehicles or alternative mobility options (additional vouchers will depend on voucher monetary level provided to each eligible applicant).

Barry R. Wallerstein, D.Env.
Executive Officer

MMM:HH

Background

On December 5, 2014, the Board recognized $2.4 million in funds from CARB and authorized contracts to implement the Enhanced Fleet Modernization Program (EFMP) and EFMP Plus-Up. The EFMP is authorized by the AB 118 California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (Health and Safety Code Sections 44125-44126). The EFMP is a comprehensive statewide program with two elements: a vehicle retirement only element and a vehicle retire and replacement element. The SCAQMD is implementing the vehicle retire and replacement element of the EFMP using $1.4 million in funding from CARB.

In conjunction with the EFMP, CARB is implementing an additional incentive program called Low Carbon Transportation Fund Investments Vehicle Retirement and Replacement Plus-Up Pilot Project (EFMP Plus-Up). EFMP Plus-Up supplements the EFMP by increasing incentives for certain advanced technology replacement vehicles, including hybrid, plug-in hybrid and zero-emission vehicles, for eligible participants residing in disadvantaged communities. Funding for EFMP Plus-Up comes from the Low Carbon Transportation Greenhouse Gas Emission Reduction Fund (GGRF), and CARB provided an additional $1 million to SCAQMD to implement the EFMP Plus-Up, which the Board also recognized on December 5, 2014.

Additionally, the SCAQMD and MSRC with Board approval augmented the CARB funding with an additional $1,025,000 and $800,000, respectively, for a combined total of $4,225,000 for the EFMP as follows: $825,000 for four contract awards to provide assistance to program participants and program outreach, $70,000 for additional program outreach by SCAQMD and $3,330,000 for replacement vehicle vouchers. The $3,330,000 was estimated to cover between 550 to 992 vouchers for replacement vehicles or alternative mobility options. The face value of the vouchers would depend on the participant's household income, whether the participant resides in a disadvantaged community and type of replacement vehicle. Participants could also choose an alternative mobility option, such as transit passes or participation in car-sharing programs in lieu of a replacement vehicle voucher, thus impacting the total number of vouchers issued.

The four contracts authorized by the Board were set up so the contractors would work together collaboratively to implement the EFMP and EFMP Plus-Up. Table 1 outlines the activities to date by the four contractors.

Table 1: Contractor Activities to Implement the EFMP and EFMP Plus-Up

Contractor	Funding	Activities
Foundation for California Community Colleges (FCCC)	$225,000	• Developed central website "ReplaceYourRide.com" • Established central call center and call-in number • Drafted program operations manual and dealership templates • Conducted vehicle emissions testing • Processed applications
Gladstein, Neandross & Associates (GNA)	$200,000	• Developed "ReplaceYourRide.com" pamphlets • Developed educational materials for use by all contractors • Initiated development of marketing materials
Opus Inspection (Opus)	$200,000	• Conducted remote sensing to identify high-emitting vehicles (identified 8,000 vehicles to date) • Conducted vehicle emissions testing and outreach at community events • Processed applications

Contractor	Funding	Activities
Top Shelf Environmental Consulting, LLC (Top Shelf)	$200,000	• Conducted early outreach at community events (partnered with Communities for a Better Environment) • Processed early applications to test and refine application process • Identified automobile dealerships and financial institutions to participate in Program • Coordinated outreach with local legislative offices • Conducted vehicle emissions testing events (in partnership with Opus Inspection) • Processed applications

As the implementation process was being developed, each contractor began to ramp up their initial efforts to identify and conduct outreach to potential consumers. The EMFP officially launched in May 2015, with approximately 200 applicants signed up by Top Shelf and another 100 to 200 by Opus and FCCC. In addition, SCAQMD staff conducted limited outreach with local governments, state legislative offices and school districts. A press event in Sacramento sparked interest by local news reporters and peaked with a CBS 2 news article in early July 2015, resulting in the submission of more than 1,500 applications in a two-week period. Staff mobilized the contractors to suspend outreach and marketing and focus on processing applications and testing existing vehicles as quickly as possible.

Since the original funding could only cover 550 to 992 vouchers, additional funding is clearly needed to process existing applications and fund additional vouchers. Staff informed CARB of the need to cover not only the additional existing applications, but also anticipated applications to be received, and has requested $21,400,000 from CARB to extend implementation of the EFMP. Discussions about the need for additional funding were also conducted with MSRC staff.

Proposal

This action is to recognize upon receipt an additional $1,400,000 in funding from CARB (or BAR) to extend implementation of the EFMP. CARB also allocated an additional $20 million statewide from the GGRF for the EFMP Plus-Up, and this action is to also recognize up to $20,000,000 million from CARB, subject to their approval, to extend implementation of the EFMP Plus-Up. Furthermore, CARB is requiring air districts interested in receiving the EFMP Plus-Up funding to provide local funding for the base EFMP portion. Consequently, these actions would include allocating an additional $6,201,000 from the SCAQMD. At its September 17, 2015 meeting, the MSRC approved a staff proposal to also provide up to $6,201,000 to partner with the SCAQMD.

Since CARB allows up to 15 percent for administration (10 percent) and outreach (5 percent) of the EFMP and EFMP Plus-Up funding ($1,400,000 and $20,000,000, respectively), a total of $3,210,000 is available for administrative costs. Given the

significant demand, the contractors working on the programs need additional funding to continue their current efforts and assignments and processing both existing and future applications. This action would amend three of the four contracts adding additional funds to FCCC, Opus and Top Shelf contracts as provided in Table 4 for a total amount not to exceed $1,000,000 from the $3,210,000 designated to cover administrative costs. In addition, this action is to also authorize the Executive Officer to allocate up to an additional $300,000 (from the remaining $2,210,000 designated to cover administrative costs) to increase any of the four contracts on an as-needed basis depending on workload of each contractor to assist program participants in processing vehicle retirements and identifying replacement vehicles or alternative mobility options. The Executive Officer may adjust any one contract up to $75,000.. This would leave a balance of $1,910,000 in administrative funds available for future allocation.

The remaining $18,190,000 in funds from CARB as well as the funding from the SCAQMD and MSRC ($6,201,000 each) would be used to fund vouchers for a total of $30,592,000. The current funds from the first year will cover 550 vouchers while the requested funding should cover at minimum an additional 3,020 vouchers. These numbers assume that all vouchers will be used for replacement vehicles and the face value of each voucher will be issued at the maximum incentive level of $9,500 ($4,500 from EFMP plus $5,000 from EFMP Plus-up) for consumers at the lowest income levels in disadvantaged communities. Therefore, the final action is to authorize the Executive Officer to approve vouchers to program participants up to $30,592,000 to fund a minimum of 3,570 (inclusive of the original 550) replacement vehicles or alternative mobility options.

Table 2 provides a summary of the original and supplemental funding and how it will be distributed.

Table 2: Summary of Funding Distributions

	CARB		**SCAQMD**		**MSRC**		**Totals**
	Amount	**No. of Vouchers**	**Amount**	**No. of Vouchers**	**Amount**	**No. of Vouchers**	
Current Funding for Vouchers							
EFMP Base (1st Year)	$1,190,000	264	$690,000	153	$600,000	133	
Plus Up (1st Year)	$850,000	170					
Total Funding – 1st Year	**$2,040,000**	264*	$690,000	153	$600,000	133	$3,330,000 Funding 550 Vouchers

*Inclusive of the 170 Plus-Up for vouchers issued at $9,500 (EFMP base provides up to $4,500 and Plus-Up up to $5,000)

	CARB		SCAQMD		MSRC		Totals
	Amount	**No. of Vouchers**	**Amount**	**No. of Vouchers**	**Amount**	**No. of Vouchers**	
New Funding Request for Vouchers							
EFMP Base (2nd Year)	$1,190,000	264	$6,201,000	1,378	$6,201,000	1,378	3,020 Vouchers
Plus Up (2nd Year)	$17,000,000	3,400*					
Total Funding – 2nd Year	$18,190,000	3,400**	$6,201,000	1,378	$6,201,000	1,378	$30,592,000 Funding 3,020 Vouchers
15% Administrative & Marketing Costs	$3,210,000						
Total	**$21,400,000**						

**Inclusive of the 3,020 EFMP base, plus 380 EFMP Plus-Up for which there is a shortfall in EFMP base funding

With the initial experiences of the pilot program, staff will be developing a work plan that will lay out the implementation of the EFMP and EFMP Plus-up in the longer term and identify the necessary funding levels needed for the Program.

Benefits to SCAQMD

Successful continued implementation of the EFMP and the pilot EFMP Plus-Up will reduce emissions by accelerating the turnover of high-emitting vehicles with cleaner, more environmentally friendly replacement vehicles or employment of alternative mobility options. Incentives for program participation will be provided to low- and middle-income vehicle owners to ensure that disadvantaged communities benefit from cleaner replacement vehicles.

Resource Impacts

A total of up to $21,400,000 in revenue has been requested from CARB (and/or BAR), which will be recognized upon receipt in the HEROS II Special Revenue Fund (56), for the EFMP and EFMP Plus-Up. At its September 17, 2015 meeting, the MSRC approved providing up to $6,201,000 from the Mobile Source Air Pollution Reduction Fund (23). Of the $6,201,000 from the SCAQMD, $2,067,000 would be from the HEROS II Special Revenue Fund (56) and $4,134,000 from the Clean Fuels Fund (31). CARB staff indicated that only the scrapping portion of the EFMP voucher, which is $1,500 per voucher or $2,067,000 for the total request, are allowed from the AB 923 program funds for purposes of local matching with the EFMP Plus-Up. As such, staff is proposing that $4,134,000 from the Clean Fuels Fund (31) should be used for the remaining portion of the local match. The additional local and state funding to extend EFMP implementation shall not exceed $33,802,000 as summarized in Table 3.

Table 3: Proposed Additional Funding Request to Extend Implementation of the EFMP

Source	Fund	Amount
CARB or BAR	HEROS II Special Revenue Fund (56)	$1,400,000
CARB	HEROS II Special Revenue Fund (56)	20,000,000
MSRC (*contingent upon MSRC approval*)	Mobile Source Air Pollution Reduction Fund (23)	6,201,000
SCAQMD	HEROS II Special Revenue Fund (56) – AB 923	2,067,000
SCAQMD	Clean Fuels Fund (31)	4,134,000
Total		**$33,802,000**

The $33,802,000 is broken down as follows: $30,592,000 for vouchers for replacement vehicles or alternative mobility options, $1,300,000 for contract modifications and $1,910,000 for future administration of the Program.

The following table further breaks down the $33,802,000 by funding expenditure, including specifying whether the CARB (or BAR) dollars are AB 118 or GGRF funds.

Table 4: Proposed Funding Sources for Implementation of the EFMP

Proposed Funding	Funding	Funding Source
FCCC	$250,000	$210,000 – AB 118 from CARB (Administration) $40,000 – GGRF from CARB (Administration)
Opus	$375,000	GGRF from CARB (Administration)
Top Shelf	$375,000	GGRF from CARB (Administration)
Additional Contractor Funds Set Aside as Needed	$300,000	GGRF from CARB (Administration)
Funding for Vouchers	$1,190,000	AB 118 from CARB
Funding for Eligible Participants Residing in Disadvantaged Communities	$17,000,000*	GGRF from CARB
Funding for Vouchers	$6,201,000	$2.067,000 – SCAQMD AB 923 $4,134,000 – SCAQMD Clean Fuels Fund (31)
Funding for Vouchers	$6,201,000	MSRC (FY 2014–16 Work Program)
Remaining Unallocated Administration Funds	$1,910,000	GGRF from CARB (Administration)
Total Funding	**$33,802,000**	

*Maximum amount, lesser amount may be received.

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 8

PROPOSAL: Execute Contracts for FY 2014-15 "Year 17" Carl Moyer Program and SOON Provision

SYNOPSIS: On June 3, 2015, proposals were received in response to the Program Announcements issued for the "Year 17" Carl Moyer Program and the SOON Provision. These actions are to execute contracts for the "Year 17" Carl Moyer Program and the SOON Provision in an amount not to exceed $27,092,992, comprised of $24,419,832 from the SB 1107 Fund (32), $2,521,963 from the AB 923 Fund (80) and $151,197 in accrued interest from the Carl Moyer Program Fund (32). This action is to also execute contracts for projects from a backup list upon availability of funds from returned or partially completed projects.

COMMITTEE: Technology, September 18, 2015; Recommended for Approval

RECOMMENDED ACTIONS:

A. Authorize the Chairman to execute the following Carl Moyer Program contracts with funds from the Carl Moyer Program SB 1107 Fund (32) for a total of up to $18,103,045:
   1. Orange County Sheriff's Department for the replacement of 4 transport buses in an amount not to exceed $439,624 (subject to CARB approval);
   2. YRC Inc, dba YRC Freight for the diesel to electric repower of 9 off-road equipment, subject to CARB approval, in an amount not to exceed $1,564,092;
   3. Neovia Logistics Distribution, LP for the diesel to electric repower of 6 off-road equipment, subject to CARB approval, in an amount not to exceed $1,050,946;
   4. County Sanitation Districts of Los Angeles County for the replacement of 3 off-road equipment in an amount not to exceed $357,659;
   5. JKM Equipment, Inc. for the repower of 1 off-road equipment in an amount not to exceed $148,131;
   6. KEC Engineering for the replacement of 3 off-road equipment in an amount not to exceed $299,578;
   7. L&S Construction, Inc. for the replacement of 1 off-road equipment in an amount not to exceed $107,604;

8. McKenna General Engineering, Inc. for the repower of 2 off-road equipment in an amount not to exceed $232,026;
9. Patriot Grading & Engineering, Inc. for the repower of 7 and retrofit of 4 off-road equipment in an amount not to exceed $1,179,604;
10. Rentrac, Inc for the replacement of 6 for 3 off-road equipment in an amount not to exceed $2,626,223;
11. Sharma General Engineering Contractors, Inc. for the replacement of 3 and the repower and retrofit of 5 off-road equipment in an amount not to exceed $1,164,452;
12. Sukut Equipment Inc. for the replacement of 1 off-road equipment in an amount not to exceed $144,673;
13. West Coast Equipment LLC for the replacement of 7 for 3 off-road equipment in an amount not to exceed $104,010;
14. A&I Rock Company, Inc. for the repower of 3 off-road equipment in an amount not to exceed $315,971;
15. Apollo Wood Recovery for the replacement of 3 off-road equipment in an amount not to exceed $576,730;
16. Bill Higgins Inc. for the replacement of 1, and the repower of 1 off-road equipment in an amount not to exceed $246,114;
17. C&R Farms Inc. for the replacement of 14 off-road equipment in an amount not to exceed $1,414,411;
18. Carniello Enterprises for the replacement of 1 off-road equipment in an amount not to exceed $78,845;
19. Dependable Grading, Inc. for the repower of 2 off-road equipment in an amount not to exceed $245,846;
20. Desert Custom Farming Inc. for the replacement of 1 off-road equipment in an amount not to exceed $213,126;
21. Goodwin Enterprises, Inc. for the replacement of 1 off-road equipment in an amount not to exceed $234,876;
22. Joe B. Talley, Jr. for the replacement of 1 off-road equipment in an amount not to exceed $40,167;
23. Las Virgenes Municipal Water District for the replacement of 1 off-road equipment in an amount not to exceed $38,936;
24. LM Finance LLC for the replacement of 2 for 1 off-road equipment in an amount not to exceed $65,985;
25. M&H Transport, Inc. for the replacement of 1 off-road equipment in an amount not to exceed $269,612;
26. Michael Willemsen for the repower of 1 off-road equipment in an amount not to exceed $207,215;
27. Muth Equipment, Inc. for the repower 1 off-road equipment in an amount not to exceed $125,448;
28. Oasis Ranch Management, Inc. for the replacement of 2 off-road equipment in an amount not to exceed $140,526;

29. Oostdam Dairy for the replacement of 1 off-road equipment in an amount not to exceed $145,059;
30. P. Riley Enterprises, Inc. for the repower of 1 off-road equipment in an amount not to exceed $117,940;
31. Paul J. Nelson Equipment Rental for the replacement of 2 for 1 off-road equipment in an amount not to exceed $112,642;
32. Pro-Organic Farms LLC for the replacement of 1 off-road equipment in an amount not to exceed $404,172;
33. Sage Green, LLC for the replacement of 5 off-road equipment in an amount not to exceed $2,017,942;
34. Rick's Backhoe for the replacement of 1 off-road equipment in an amount not to exceed $105,988;
35. Shinkle & Sons Greenhouse Inc. for the replacement of 3 off-road equipment in an amount not to exceed $101,927;
36. Southern California Landscape Supply LLC for the replacement of 1 off-road equipment in an amount not to exceed $216,000;
37. Sunny Slope Tree Farm, Inc. for the replacement of 8 off-road equipment in an amount not to exceed $378,325;
38. T&W Parks Construction, Inc. for the replacement of 1 off-road equipment in an amount not to exceed $453,657;
39. Viramontes Express Inc. for the replacement of 3 off-road equipment in an amount not to exceed $212,183;
40. Washburn Grove Management, Inc. for the replacement of 3 off-road equipment in an amount not to exceed $120,740; and
41. Whittier Fertilizer Company for the replacement of 1 off-road equipment in an amount not to exceed $84,040.

B. Authorize the Chairman to execute the following Carl Moyer Program contracts with funds from the Carl Moyer Program AB 923 Fund (80) for a total of up to $2,225,112:
   1. JC Farming, Inc. for the replacement of 1 off-road equipment in an amount not to exceed $951,188; and
   2. Ralph D. Mitzel, Inc. for the repower of 8 off-road equipment in an amount not to exceed $1,273,924.

C. Authorize the Chairman to execute the following Carl Moyer Program contracts with:
   1. Jones Water Trucks, Inc. for the replacement of 2 off-road equipment in an amount not to exceed $1,344,000, comprised of $1,063,085 from the Carl Moyer Program SB 1107 Fund (32), and $280,915 from the Carl Moyer Program AB 923 Fund (80); and
   2. Williams Heavy Equipment Rentals, Inc. for the repower of 3 off-road equipment in an amount not to exceed $167,133, comprised of $15,936 from

the Carl Moyer Program AB 923 Fund (80), and $151,197 from interest funds accrued in the Carl Moyer Program Fund (32).

D. Authorize the Chairman to execute the following SOON Provision contracts with funds from the Carl Moyer Program SB 1107 Fund (32) for a total of up to $5,253,702:
   1. Coburn Equipment Rentals, Inc. for the repower of 16 off-road vehicles in an amount not to exceed $4,693,702, and
   2. Peed Equipment Company for the replacement of 1 off-road equipment in an amount not to exceed $560,000.

E. Authorize the Chairman to execute contracts from the backup list of projects as outlined in Table 5, under the SOON Provision, upon availability of funds from returned or partially completed projects. Projects will be selected from the list based on their readiness to proceed and cost-effectiveness.

Barry R. Wallerstein, D.Env.
Executive Officer

MMM:FM

Background

This is the 17th year of the Carl Moyer Program and the 11th year of the Program with a long-term source of funding generated under SB 1107 and AB 923. For FY 2014-15, CARB has allocated $25,515,326 in SB 1107 funds to the SCAQMD, comprised of $24,239,560 in project funds and $1,275,766 in administrative funds. In addition, $3,827,299 is required from the SCAQMD as its local match. Table 1 shows a summary of the total available funds including accumulated interest and returned funds.

On June 3, 2015, proposals were received in response to the Program Announcements issued for the "Year 17" Carl Moyer Program and the SOON Provision. A total of 116 proposals were received requesting over $66 million in funding.

Outreach

In accordance with SCAQMD's Procurement Policy and Procedure, a public notice advertising the PAs and inviting bids was published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin.

Additionally, potential bidders may have been notified utilizing SCAQMD's own electronic listing of certified minority vendors. Notice of the PAs was emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce

and business associations, and placed on the Internet at SCAQMD's website (http://www.aqmd.gov).

Proposal

These actions are to approve the recommended awards as outlined in Tables 2 and 3 under the Carl Moyer Program and the SOON Provision, respectively, in an amount not to exceed $27,092,992, comprised of $24,419,832 from the SB 1107 Fund (32), $2,521,963 from the AB 923 Fund (80) and $151,197 in accrued interest from the Carl Moyer Program Fund (32). This action is to also execute contracts from the list of backup projects as outlined in Table 5, under the SOON Provision, upon availability of funds from returned or partially completed projects. Projects will be selected from the list based on their readiness to proceed and cost-effectiveness.

The applications have been evaluated and recommended for funding according to CARB's Carl Moyer Program Guidelines released on June 6, 2011. Any equipment substitutions will be subject to the same requirements. The transport bus project with the Orange County Sheriff's Department is subject to and will be implemented after obtaining a case-by-case approval from CARB. Since there were more eligible projects than available funds, the marine projects operating as fishing vessels are not recommended for funding at this time. Instead, the majority of the off-road construction projects have been recommended for funding, as emissions reductions from this category is highly important according to the white paper published by the SCAQMD under the 2016 AQMP process.

Table 4 summarizes staff's recommendation for the Carl Moyer Program and the SOON Provision awards in disproportionately impacted areas under the requirements of AB 1390. The total amount of projects funded in disproportionately impacted areas is $6,803,069, while the total amount of projects funded solely based on cost-effectiveness is $20,289,923. In summary, 25% of the projects are in disproportionately impacted areas. At its September 4, 2015 meeting, the Board approved passenger locomotive projects operated by the Southern California Regional Rail Authority in the amount of $22.85 million from the Carl Moyer Program AB 923 Fund (80). Since these locomotives will mostly operate in disproportionately impacted areas, the overall goal of the Program will be exceeded.

Funding Distribution

Funding for projects has been recommended based on the priorities of the "Carl Moyer Program Guideline under SB 1107 & AB 923" adopted by the Board on July 8, 2005. The priorities of the Guideline are:

- Goods Movement (no less than 40%)
- Environmental Justice (no less than 50%)
- Cost-Effectiveness
- Low-Emission Engine/Vehicle Preference

- Early Commercialization of Advanced Technologies/Fuels
- Fleet Rules
- School Buses

The Board's allocation of funds for the implementation of the Proposition 1B–Goods Movement Program by far exceeds the goods movement objective.

Disproportionate Impact Point Ranking
The requirements of AB 1390 are implemented according to the following criteria:

1) All projects must qualify for the Carl Moyer Program by meeting the cost effectiveness limits established in the Program Announcement.
2) All projects will be evaluated according to the following criteria to qualify for funding as a disproportionately impacted area:
    a. Poverty Level: Detailed socioeconomic information is not included in the 2010 Census. Such data is collected yearly from a small percentage of the population on a rotating basis by the American Community Survey (ACS). All projects in areas where at least 10 percent of the population falls below the Federal poverty level based on the 2008-2012 ACS data are eligible to be included in this category, and
    b. PM2.5 Exposure: All projects in areas with the highest 15 percent of PM2.5 concentration measured within a 2 km grid will be eligible to be ranked in this category. The highest 15 percent of PM2.5 concentration is 11.10 micrograms per cubic meter and above, on an annual average, or
    c. Air Toxics Exposure: All projects in areas with a cancer risk of 894 in a million and above (based on MATES IV estimates) will be eligible to be ranked in this category.

The maximum score is comprised of 40 percent for poverty level and 30 percent each for PM and toxic exposures.

Benefits to SCAQMD
The successful implementation of the Carl Moyer Program will provide direct emissions reductions for both NOx and PM as required by the programs. Since the vehicles and equipment funded under this program will operate for the life of the contract and beyond, the emissions reductions will provide long-term benefits. Total annual NOx, PM and ROG emissions reductions from the recommended Carl Moyer Program projects are approximately 184.5 tons, 7.2 tons and 19.6 tons, respectively. Total annual NOx emission reductions from the recommended SOON Provision projects are approximately 62.6 tons.

Resource Impacts
Funding for the Carl Moyer Program and the SOON Provision projects shall not exceed $27,092,992, comprised of $24,419,832 from the SB 1107 Fund (32), $2,521,963 from the AB 923 Fund (80) and $151,197 in accrued interest from the Carl Moyer Program Fund (32).

Attachments
Table 1 – Carl Moyer Program Available Funds
Table 2 – Recommended Carl Moyer Program Awards
Table 3 – Recommended SOON Provision Awards
Table 4 – Funding Distribution of Recommended Awards
Table 5 – List of Backup Projects

Table 1: Carl Moyer Program Available Funds

Funding Source	Funds Required to be Encumbered	Comment
SB 1107	$24,419,832	From $25,515,326 "Year 17" funds allocated by CARB: less $1,275,766 in administration funds; plus $180,272 in returned projects.
Carl Moyer Fund Interest	$151,197	Total unobligated interest funds in Fund 32 by 6/30/15.
Match Funds	$3,827,299	This is the required match amount for "Year 16", which the SCAQMD has already met. However, in case of increased demand, projects can be funded with AB 923 funds that can be used either towards future match requirements or as backup for canceled or partially completed projects.
Total	**$28,398,328**	

Table 2: Recommended Carl Moyer Program Awards

SB 1107 Awards (Fund 32)				
Orange County Sheriff's Dept.	$439,624		YRC Inc, dba YRC Freight	$1,564,092
Neovia Logistics Distribution, LP	$1,050,946		County Sanitation District of LA County	$357,659
JKM Equipment, Inc.	$148,131		KEC Engineering	$299,578
L&S Construction, Inc.	$107,604		McKenna General Engineering	$232,026
Patriot Grading & Engineering, Inc.	$1,179,604		Rentrac, Inc.	$2,626,223
Sharma General Engineering Contr.	$1,164,452		Sukut Equipment Inc.	$144,673
West Coast Equipment, LLC	$104,010		A&I Rock Company, Inc.	$315,971
Apollo Wood Recovery	$576,730		Bill Higgins Inc.	$246,114
C&R Farms Inc.	$1,414,411		Carniello Enterprises	$78,845
Dependable Grading, Inc.	$245,846		Desert Custom Farming Inc.	$213,126
Goodwin Enterprises, Inc.	$234,876		Joe B. Talley, Jr.	$40,167
Las Virgenes Mineral Water District	$38,936		LM Finance, LLC	$65,985
M&H Transport, Inc.	$269,612		Michael Willemsen	$207,215
Muth Equipment, Inc.	$125,448		Oasis Ranch Management, Inc.	$140,526
Oostdam Dairy	$145,059		P. Riley Enterprises, Inc.	$117,940
Paul J. Nelson Equipment Rental	$112,642		Pro-Organic Farms LLC	$404,172
Sage Green, LLC	$2,017,942		Rick's Backhoe	$105,988
Shinkle & Sons Greenhouse Inc.	$101,927		Southern California Landscape Supply	$216,000
Sunny Slope Tree Farm, Inc.	$378,325		T&W Parks Construction, Inc.	$453,657
Viramontes Express Inc.	$212,183		Washburn Grove Management, Inc.	$120,740
Whittier Fertilizer Company	$84,040		Jones Water Truck, Inc.	$1,063,085
Total: $19,166,130				
AB 923 Awards (Fund 80)				
JC Farming, Inc.	$951,188		Jones Water Truck, Inc.	$280,915
Williams Heavy Equipment Rentals, Inc.	$15,936		Ralph D. Mitzel, Inc.	$1,273,924
Total: $2,521,963				
Carl Moyer Interest Awards (Fund 32)				
Williams Heavy Equipment Rentals, Inc.	$151,197			
Total: $151,197				
Grand Total $21,839,290				

Table 3: Recommended SOON Provision Awards

SB 1107 Awards (Fund 32)				
Coburn Equipment Rentals, Inc.	$4,693,702		Peed Equipment Company	$560,000
Total: $5,253,702				

Table 4: Funding Distribution of Recommended Awards

Awards in Disproportionately Impacted Areas				
Orange County Sheriff's Dept.	$439,624		YRC Inc, dba YRC Freight	$1,564,092
County Sanitation District of LA County	$357,659		JKM Equipment, Inc.	$148,131
KEC Engineering	$299,578		L&S Construction, Inc.	$107,604
Patriot Grading & Engineering, Inc.	$1,179,604		West Coast Equipment, LLC	$104,010
A&I Rock Company, Inc.	$315,971		Apollo Wood Recovery	$576,730
Bill Higgins Inc.	$246,114		Rick's Backhoe	$105,988
Whittier Fertilizer Company	$84,040		Ralph D. Mitzel, Inc.	$1,273,924
Total:	**$6,803,069**			
Awards Solely Based on Cost Effectiveness				
McKenna General Engineering	$232,026		Rentrac, Inc.	$2,626,223
Sharma General Engineering Contr.	$1,164,452		Neovia Logistics Distribution, LP	$1,050,946
C&R Farms Inc.	$1,414,411		Sukut Equipment Inc.	$144,673
Dependable Grading, Inc.	$245,846		Carniello Enterprises	$78,845
Goodwin Enterprises, Inc.	$234,876		Desert Custom Farming	$213,126
Las Virgenes Mineral Water District	$38,936		Joe B. Talley, Jr.	$40,167
M&H Transport, Inc.	$269,612		LM Finance, LLC	$65,985
Muth Equipment, Inc.	$125,448		Michael Willemsen	$207,215
Oostdam Dairy	$145,059		Oasis Ranch Management, Inc.	$140,526
Paul J. Nelson Equipment Rental	$112,642		P. Riley Enterprises, Inc.	$117,940
Sage Green, LLC	$2,017,942		Pro-Organic Farms LLC	$404,172
Shinkle & Sons Greenhouse Inc.	$101,927		Southern California Landscape Supply	$216,000
Sunny Slope Tree Farm, Inc.	$378,325		T&W Parks Construction, Inc.	$453,657
Viramontes Express Inc.	$212,183		Washburn Grove Management, Inc.	$120,740
Williams Heavy Equipment Rentals, Inc.	$167,133		JC Farming	$951,188
Jones Water Trucks, Inc.	$1,344,000		Coburn Equipment Rental	$4,693,702
Peed Equipment Company	$560,000			
Total:	**$20,289,923**			

Table 5: List of Backup Projects

	Program	Project Description	Funding
Independent Construction	SOON	Replace 7 Off-Road Equipment	$6,661,156
Power Move, Inc. / Crew, Inc.	SOON	Replace 6 Off-Road Equipment	$1,456,293

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 9

PROPOSAL: Approve Awards for School Bus Replacements and Retrofits

SYNOPSIS: At its March 6, 2015 meeting, the Board issued a Program Announcement to solicit applications for replacement and retrofit of school buses. These actions are to approve awards to replace pre-1994 diesel school buses with new alternative fuel buses and to retrofit 1994 and newer buses with particulate traps in an amount not to exceed $25,136,000 from the Carl Moyer Program AB 923 Fund (80).

COMMITTEE: Technology, September 18, 2015; Recommended for Approval

RECOMMENDED ACTIONS:

A. Authorize the Chairman to execute contracts with the following public school districts, and as shown in Table 1, to replace 144 pre-1994 diesel school buses with new alternative fuel buses and infrastructure in an amount not to exceed $25,016,000 from the Carl Moyer Program AB 923 Fund (80):
   1. ABC Unified School District for 1 CNG bus in an amount not to exceed $180,500;
   2. Alta Loma Unified School District for 1 CNG bus in an amount not to exceed $180,500;
   3. Anaheim City School for 1 CNG bus in an amount not to exceed $180,500;
   4. Anaheim Union School District for 7 propane buses in an amount not to exceed $906,500;
   5. Baldwin Park Unified School District for 1 CNG bus in an amount not to exceed $166,500;
   6. Bear Valley Unified School District for 1 CNG bus in an amount not to exceed $166,500;
   7. Beaumont Unified School District for 2 CNG buses in an amount not to exceed $361,000;
   8. Bellflower Unified School District for 1 CNG bus in an amount not to exceed $180,500;
   9. Bonita Unified School District for 1 CNG bus in an amount not to exceed $166,500;
   10. Capistrano Unified School District for 2 CNG buses in an amount not to exceed $361,000;

11. Centralia Unified School District for 1 propane buse in an amount not to exceed $129,500;
12. Chaffey Joint Union High School District for 2 CNG buses in an amount not to exceed $333,000;
13. Chino Valley Unified School District for 1 CNG bus in an amount not to exceed $180,500;
14. Coachella Valley Unified School District for 1 CNG bus in an amount not to exceed $166,500;
15. Colton Joint Unified School District for 1 CNG bus in an amount not to exceed $180,500;
16. Covina Valley Unified School District for 1 CNG bus in an amount not to exceed $166,500;
17. Cypress Unified School District for 1 CNG bus in an amount not to exceed $166,500;
18. Desert Sands Unified School District for 1 CNG bus in an amount not to exceed $166,500;
19. Downey Unified School District for 1 CNG bus in an amount not to exceed $180,500;
20. Etiwanda Unified School District for 1 CNG bus in an amount not to exceed $166,500;
21. Fontana Unified School District for 2 CNG buses in an amount not to exceed $361,000;
22. Fountain Valley Unified School District for 1 CNG bus in an amount not to exceed $166,500;
23. Fullerton School District for 1 propane bus in an amount not to exceed $129,500;
24. Fullerton Joint Union High School District for 1 CNG bus in an amount not to exceed $180,500;
25. Garden Grove Unified School District for 2 CNG buses in an amount not to exceed $361,000;
26. Huntington Beach City School for 1 CNG bus in an amount not to exceed $166,500;
27. Huntington Beach Union High School District for 2 CNG buses in an amount not to exceed $361,000;
28. Hemet Unified School District for 3 CNG buses in an amount not to exceed $541,500;
29. La Habra City School District for 1 CNG bus in an amount not to exceed $166,500;
30. Los Alamitos Unified School District for 1 CNG bus in an amount not to exceed $180,500;
31. Los Angeles Unified School District for 71 CNG buses in an amount not to exceed $12,815,500;
32. Montebello Unified School District for 1 CNG bus in an amount not to exceed $180,500;

33. Murrieta Valley Unified School District for 3 CNG buses in an amount not to exceed $499,500;
34. Newhall Unified School District for 1 propane bus in an amount not to exceed $129,500;
35. Newport-Mesa Unified School District for 1 CNG bus in an amount not to exceed $180,500;
36. Nuview Union School District for 4 CNG buses in an amount not to exceed $722,000;
37. Ocean View School District for 1 propane bus in an amount not to exceed $129,500;
38. Ontario-Montclair School District for 1 CNG buses in an amount not to exceed $180,500;
39. Orange Unified School District for 1 CNG bus in an amount not to exceed $180,500;
40. Placentia-Yorba Linda Unified School District for 1 CNG bus in an amount not to exceed $180,500;
41. Pupil Transportation Cooperative for 1 CNG bus in an amount not to exceed $180,500;
42. Redlands Unified School District for 2 CNG buses in an amount not to exceed $361,000;
43. Rialto Unified School District for 2 CNG buses in an amount not to exceed $361,000;
44. Rim of the World Unified School District for 1 CNG bus in an amount not to exceed $166,500;
45. San Jacinto Unified School District for 2 CNG buses in an amount not to exceed $361,000;
46. Santa Monica-Malibu Unified School District for 1 CNG bus in an amount not to exceed $166,500;
47. Saugus Union School District for 1 propane bus in an amount not to exceed $124,500;
48. Savanna Unified School District for 1 propane bus in an amount not to exceed $124,500;
49. Temecula Valley Unified School District for 2 CNG buses in an amount not to exceed $361,000;
50. Walnut Valley Unified School District for 1 CNG bus in an amount not to exceed $180,500; and
51. Westminster Unified School District for 1 propane bus in an amount not to exceed $129,500.

B. Authorize the Chairman to execute contracts with the following public school districts, and as shown in Table 2, to retrofit 6 diesel school buses with particulate traps in an amount not to exceed $120,000 from the Carl Moyer Program AB 923 Fund (80):

1. Fullerton Joint Union High School District for 1 trap in an amount not to exceed $20,000;
2. Huntington Beach Union High School District for 2 traps in amount not to exceed $40,000;
3. La Habra City School District for 2 traps in an amount not to exceed $40,000; and
4. Walnut Valley Unified School District for 1 trap in an amount not to exceed $20,000.

Barry R. Wallerstein, D.Env.
Executive Officer

MMM:FM

Background
Since the commencement of the Lower-Emission School Bus Program in 2001, SCAQMD has spent over $242 million in state and local funds to replace over 1,500 highly polluting school buses with alternative fuel buses and to retrofit over 2,800 school buses with particulate traps.

At its March 6, 2015 meeting, the Board approved the issuance of Program Announcement #PA2015-06 for the replacement of pre-1994 school buses with new alternative fuel buses and the retrofit of 1994 and newer school buses with particulate traps. By the June 5, 2015 closing date of the Program Announcement, 52 public school districts applied for 510 school bus replacements and 6 particulate traps. The City of Irwindale applied for two school buses, but it was not considered for award since it is neither a public school district nor a joint powers authority.

Outreach
In accordance with SCAQMD's Procurement Policy and Procedure, a public notice advertising the PA and inviting bids was published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin.

Additionally, potential bidders may have been notified utilizing SCAQMD's own electronic listing of certified minority vendors. Notice of the PA was emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations, and placed on the Internet at SCAQMD's website (http://www.aqmd.gov).

Proposal
This action is to execute contracts for the replacement of 144 pre-1994 school buses with new alternative fuel buses and the retrofit of 6 particulate traps for 1994 and newer school buses as shown in Tables 1 and 2, respectively, for an amount not to exceed $25,136,000 from the Carl Moyer Program AB 923 Fund (80).

Funding is distributed among the four counties of Los Angeles, Orange, Riverside and San Bernardino proportional to their populations per the 2010 census, as follows:

- Los Angeles: 59%
- Orange: 18%
- Riverside: 13%
- San Bernardino: 10%

Each applicant is recommended to receive at least one new alternative fuel school bus, and replacement of pre-1987 school buses is given priority within each county. School districts are required to provide $15,000 per CNG bus and $10,000 per propane bus as their local match.

SCAQMD will provide up to $162,000 for a new CNG and $120,000 for a new propane school bus. In addition, the SCAQMD will pay $4,500 per bus for the option of fire suppressant. Furthermore, infrastructure funding of $14,000 per CNG bus and $5,000 per propane bus is recommended, if requested by the applicant.

Benefits to SCAQMD
The successful implementation of the Lower-Emission School Bus Replacement and Retrofit Program will provide less-polluting and safer school transportation for school children and will reduce public exposure to toxic diesel particulate matter emissions. In addition, these awards comply with AB 1390 requirements, such that it would reduce air pollution in low-income, high-diesel and high-PM10 exposure areas as well as enhance the objectives of the Environmental Justice and Children's Health Initiatives adopted by the SCAQMD Board.

Resource Impacts
Total funding for the recommended awards shall not exceed $25,136,000 from the Carl Moyer Program AB 923 Fund (80).

Attachments
Table 1: Recommended Awards for Pre-1994 School Bus Replacements
Table 2: Recommended Awards for PM Traps

Table 1: Recommended Awards for Pre-1994 School Bus Replacements

#PA2015-06 A Applicant (USD)	County	Proposed Award	Pre-1987	Fuel Type	School Match ($15,000/ CNG bus)	Bus Award ($162K/CNG, $120K/Propane)	Fire Suppr. $4,500/bus	Infrastructure	Total SCAQMD Award
ABC	LA	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Baldwin Park	LA	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Bellflower	LA	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Bonita	LA	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Covina Valley	LA	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Downey	LA	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Los Angeles	LA	**71**	**Yes**	**CNG**	**$1,065,000**	**$11,502,000**	**$319,500**	**$994,000**	**$12,815,500**
Montebello	LA	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Newhall	LA	**1**	**No**	**Propane**	**$10,000**	**$120,000**	**$4,500**	**$5,000**	**$129,500**
Pupil Transportation	LA	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Santa Monica-Malibu	LA	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Saugus Union	LA	**1**	**No**	**Propane**	**$10,000**	**$120,000**	**$4,500**	**Not Requested**	**$124,500**
Walnut Valley	LA	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Total LA Co.		**83**				**$13,362,000**	**$373,500**	**$1,083,000**	**$14,818,500**
Anaheim City	OR	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Anaheim Union	OR	**7**	**Yes**	**Propane**	**$70,000**	**$840,000**	**$31,500**	**$35,000**	**$906,500**
Capistrano	OR	**2**	**No**	**CNG**	**$30,000**	**$324,000**	**$9,000**	**$28,000**	**$361,000**
Centralia	OR	**1**	**Yes**	**Propane**	**$10,000**	**$120,000**	**$4,500**	**$5,000**	**$129,500**
Cypress	OR	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Fountain Valley	OR	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Fullerton Joint Union	OR	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Fullerton	OR	**1**	**No**	**Propane**	**$10,000**	**$120,000**	**$4,500**	**$5,000**	**$129,500**
Garden Grove	OR	**2**	**No**	**CNG**	**$30,000**	**$324,000**	**$9,000**	**$28,000**	**$361,000**
Huntington Beach City	OR	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Huntington Beach Union	OR	**2**	**No**	**CNG**	**$30,000**	**$324,000**	**$9,000**	**$28,000**	**$361,000**

Table 1: Recommended Awards for Pre-1994 School Bus Replacements

#PA2015-06 A Applicant (USD)	County	Proposed Award	Pre-1987	Fuel Type	School Match ($15,000/ CNG bus)	Bus Award ($162K/CNG, $120K/Propane)	Fire Suppr. $4,500/bus	Infrastructure	Total SCAQMD Award
La Habra City	OR	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Los Alamitos	OR	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Newport-Mesa	OR	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Ocean View	OR	**1**	**No**	**Propane**	**$10,000**	**$120,000**	**$4,500**	**$5,000**	**$129,500**
Orange	OR	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Placentia-Yorba Linda	OR	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Savanna	OR	**1**	**No**	**Propane**	**$10,000**	**$120,000**	**$4,500**	**Not Requested**	**$124,500**
Westminster	OR	**1**	**No**	**Propane**	**$10,000**	**$120,000**	**$4,500**	**$5,000**	**$129,500**
Total Orange Co.		**28**				**$4,032,000**	**$126,000**	**$244,000**	**$4,381,000**
Beaumont	RV	**2**	**No**	**CNG**	**$30,000**	**$324,000**	**$9,000**	**$28,000**	**$361,000**
Coachella Valley	RV	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Desert Sands	RV	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Hemet	RV	**3**	**No**	**CNG**	**$45,000**	**$486,000**	**$13,500**	**$42,000**	**$541,500**
Murrieta Valley	RV	**3**	**No**	**CNG**	**$45,000**	**$486,000**	**$13,500**	**Not Requested**	**$499,500**
Nuview Union	RV	**4**	**Yes**	**CNG**	**$60,000**	**$648,000**	**$18,000**	**$56,000**	**$722,000**
San Jacinto	RV	**2**	**No**	**CNG**	**$30,000**	**$324,000**	**$9,000**	**$28,000**	**$361,000**
Temecula Valley	RV	**2**	**No**	**CNG**	**$30,000**	**$324,000**	**$9,000**	**$28,000**	**$361,000**
Total RV Co.		**18**				**$2,916,000**	**$81,000**	**$182,000**	**$3,179,000**
Alta Loma	SB	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Bear Valley USD	SB	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Chaffey Joint Union	SB	**2**	**No**	**CNG**	**$30,000**	**$324,000**	**$9,000**	**Not Requested**	**$333,000**
Chino Valley	SB	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Colton Joint	SB	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Etiwanda	SB	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Fontana	SB	**2**	**No**	**CNG**	**$30,000**	**$324,000**	**$9,000**	**$28,000**	**$361,000**

Table 1: Recommended Awards for Pre-1994 School Bus Replacements

#PA2015-06 A Applicant (USD)	**County**	**Proposed Award**	**Pre-1987**	**Fuel Type**	**School Match ($15,000/ CNG bus)**	**Bus Award ($162K/CNG, $120K/Propane)**	**Fire Suppr. $4,500/bus**	**Infrastructure**	**Total SCAQMD Award**
Ontario-Montclair	SB	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**$14,000**	**$180,500**
Redlands	SB	**2**	**No**	**CNG**	**$30,000**	**$324,000**	**$9,000**	**$28,000**	**$361,000**
Rialto	SB	**2**	**No**	**CNG**	**$30,000**	**$324,000**	**$9,000**	**$28,000**	**$361,000**
Rim of the World	SB	**1**	**No**	**CNG**	**$15,000**	**$162,000**	**$4,500**	**Not Requested**	**$166,500**
Total SB Co.		**15**				**$2,430,000**	**$67,500**	**$140,000**	**$2,637,500**
Total, All Applicants		**144**							**$25,016,000**

Table 2: Recommended Awards for PM Traps

#PA2015-06 B Applicant	**No. of Traps**	**County**	**Total SCAQMD Award**
Fullerton Joint Union High School District	1	OR	$20,000
Huntington Beach Union High School District	2	OR	$40,000
La Habra City School District	2	OR	$40,000
Walnut Valley Unified School District	1	LA	$20,000
Total	**6**		**$120,000**

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 10

PROPOSAL: Recognize Revenue and Appropriate Funds to Support Air Quality Sensor Performance Evaluation Center Program

SYNOPSIS: SCAQMD applied for U.S. EPA "Community-Scale Air Toxics Ambient Monitoring" funds for FY 2015-16 through FY 2017-18 and was awarded $569,682 to study air toxic emissions from refineries and the spatial and temporal distribution of such emissions over impacted local communities, utilizing next generation monitoring technologies. This action is to recognize $569,682 in revenue into the General Fund and appropriate $508,729 to the Science & Technology Advancement Budget (exclusive of the $60,953 in Salaries and Benefits), to support the Air Quality Sensor Performance Evaluation Center Program.

COMMITTEE: Technology, September 18, 2015; Recommended for Approval

RECOMMENDED ACTION:
Recognize $569,682 in revenue into the General Fund, and as set forth in the Attachment, appropriate $508,729, upon receipt into Science & Technology Advancement's FY 2015-16, FY 2016-17, and/or FY 2017-18 Budget, Services and Supplies/Capital Outlays Major Objects, as needed (exclusive of the $60,953 in Salaries and Benefits already included in the Budget).

Barry R. Wallerstein, D.Env.
Executive Officer

MMM:LT:AP

Background
On November 7, 2014, the U.S. EPA released RFP #EPA-OAR-OAQPS-15-01 to announce the availability of funds for "Community-Scale Air Toxics Ambient Monitoring" projects. Specifically, the RFP solicited proposals for projects designed to assist state, local and tribal communities in identifying and profiling air toxics sources, assessing emerging measurement methods, characterizing the degree and extent of local-scale air toxics problems and tracking progress of air toxics reduction activities.

To be considered for funding under this RFP, each project had to address only one of the following four categories: community-scale monitoring, monitoring in the near-road environment, methods evaluation or analysis of existing data. SCAQMD staff submitted a grant proposal to U.S. EPA within the community-scale monitoring category requesting funding in the amount of $569,682.

On June 25, 2015, U.S. EPA informed staff that the SCAQMD proposal was selected for award based on its score, rank and technical merit.

Proposal

This comprehensive three-year effort is to apply next generation air monitoring methods to characterize hazardous air pollutant (HAP) emissions from refineries and assess potential impacts to surrounding communities. The project will use low-cost air quality sensors and optical remote sensing techniques to accurately measure air toxic emissions from refineries and their potential impact on local communities. These state-of-the-art measurement methods are currently being tested and used within our existing Air Quality Sensor Performance Evaluation Center (AQ-SPEC) and fence-line monitoring programs.

The amount of air pollutants released from refineries is typically estimated using empirical calculations provided by available emission inventories and is not completely characterized. There is also a growing body of evidence suggesting that emission inventories for most pollutants, particularly VOCs, may be largely underestimated. Furthermore, there is a dearth of information regarding the dispersion patterns of such emissions over the surrounding communities. Therefore, improved knowledge of the actual magnitude of VOC and other HAP emissions from industrial facilities as well as a better understanding of their temporal and spatial distribution is crucial for attaining U.S. EPA's air quality standards and for protecting surrounding communities. This challenge is further augmented by the fact that HAPs are usually present at very low ambient concentrations and are difficult to measure with conventional monitoring instruments.

Most available monitoring methods for air toxics are limited to the collection of integrated field samples (e.g., using canisters), followed by laboratory analysis, and do not allow for continuous monitoring or dense spatial coverage, nor do they provide the ability to realistically ascertain total emissions from a facility. Emerging novel technologies, such as low-cost air monitoring sensors and optical remote sensing (ORS) methods (often referred to as Next Generation Air Monitoring or NGAM), may represent viable alternatives to reliably measure the atmospheric concentrations of these air toxics in real time. However, field data obtained using NGAM technology is scarce, and significant work is needed to gather long-term monitoring data to ascertain its feasibility, accuracy and cost-effectiveness and fully characterize industrial emissions and their impact on nearby communities.

Staff applied to U.S. EPA for funding and was awarded $569,682 to conduct a comprehensive study targeted at making significant advancements in these areas that focuses on the following specific objectives:

1. Long-term use of ORS methods to monitor HAP emissions from refineries and to estimate their annual VOC emissions; and
2. Long-term use of ORS methods and low-cost sensors for assessing the impact of industrial HAP emissions on surrounding communities.

EJ communities, such as Carson and Wilmington, are potentially impacted by increased ground level VOC concentrations, diesel particulate matter, ultrafine particles and other air toxics due to their close proximity to refineries, industrial facilities, the port complex and major transportation corridors. Many Carson and Wilmington residents live directly downwind from these industrial, commercial and transportation sources and are consequently at a greater risk of HAP exposure. This three-year study will for the first time utilize ORS methods in conjunction with low-cost air quality sensors to monitor HAP emissions from large industrial facilities in the Carson-Wilmington area and the spatial and temporal distribution of such emissions over neighboring communities.

Benefits to SCAQMD
This work will provide unprecedented monitoring information on HAP emissions from refineries and other industrial sources and allow mapping of ambient level HAP concentrations in surrounding neighborhoods. The work will also assist in identifying and addressing specific concerns related to air toxic exposure in the Carson-Wilmington area. Additionally, it will serve as a template for developing monitoring strategies and/or studies to provide information on mitigation efforts and their future implementation.

Resource Impacts
The $569,682 in U.S. EPA funding will partially support the AQ-SPEC and fence-line monitoring programs. In summary, $569,682 in revenue from U.S. EPA shall be recognized into the General Fund, and as set forth in the Attachment, $508,729 will be appropriated into Science and Technology Advancement's FY 2015-16, FY 2016-17, and/or FY 2017-18 Budget, Services and Supplies/Capital Outlays Major Objects as needed. The remaining $60,953 was already included in the adopted budget in the Salaries and Employee Benefits Major Object.

Attachment
Proposed Appropriations for FY 2015-16, FY 2016-17, and/or FY 2017-18

Attachment
Proposed Appropriations for FY 2015-16, FY 2016-17, and/or FY 2017-18

Account Description	Account Number	Estimated Expenditure
Services and Supplies/Capital Outlays Major Objects		
Solar Occultation Flux (SOF) Instrument (purchase or lease)	67300/77000	$ 388,729
Communications	67900	$ 25,000
Lab Supplies	68050	$ 15,000
Small Tools, Instruments, Equipment	68300	$ 50,000
Miscellaneous Expenses	69700	$ 30,000
Total Services and Supplies/Capital Outlays Major Objects		**$508,729**
Total Appropriations		**$508,729**
Salaries and Benefits Major Object*		$60,953
Total Award		**$569,682**

* Salaries and Benefits are already included in the adopted budget

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 11

PROPOSAL: Execute Contract for Security Guard Services at Diamond Bar Headquarters

SYNOPSIS: The current contract for Diamond Bar headquarters security guard services expires on November 30, 2015. On June 5, 2015, the Board approved release of an RFP to solicit proposals from firms interested in providing these services. This action is to execute a three-year contract with Contact Security, Inc., for a total amount not to exceed $1,466,418. Funding has been included in the FY 2015-16 Budget and will be requested in successive fiscal years.

COMMITTEE: Administrative, September 11, 2015; Recommended for Approval

RECOMMENDED ACTION:
Authorize the Chairman to execute a three-year contract with Contact Security, Inc., for security guard services, for the period of December 1, 2015 through November 30, 2018; for a total amount not to exceed $1,466,418.

Barry R. Wallerstein, D.Env.
Executive Officer

WJJ:SO

Background
SCAQMD contracts with a security guard service firm to provide armed and unarmed security guard services at the Diamond Bar headquarters. The contract term with the current contractor, Contact Security, Inc., expires November 30, 2015. On June 5, 2015, SCAQMD released RFP #2015-24 to solicit proposals from security guard service providers interested in contracting with SCAQMD for a three-year period.

In addition to routine guard services, SCAQMD requires occasional enhanced services to provide adequate coverage for highly attended conferences, certain Board meetings and other types of special events. While it is difficult to anticipate what these special-need costs will be, experience indicates they typically increase guard cost by about five

percent. As a consequence, the costs listed in the Board letter include an added five percent beyond proposal costs submitted, as a contingency amount to meet special-occasion needs.

Outreach
In accordance with SCAQMD's Procurement Policy and Procedure, a public notice advertising the RFP and inviting bids was published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin.

Additionally, potential bidders may have been notified utilizing SCAQMD's own electronic listing of certified minority vendors. Notice of the RFP has been emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations, and placed on the Internet at SCAQMD's website (http://www.aqmd.gov).

Proposal Evaluation
Ninety-nine copies of the RFP were mailed out and 23 vendors attended the mandatory bidders conference held on June 24, 2015. Fourteen proposals were received when final bidding closed at 2:00 p.m., July 8, 2015. Seven of the proposals received were deemed complete and met the RFP requirements.

The panel evaluating proposals included four SCAQMD employees - a Business Services Manager, an Investigations Manager, Clerk of the Board, and a Facilities Services Technician. Of these four panel members, two are Caucasian, one is African-American and one is Hispanic; two are female and two are male.

The panel evaluated the seven qualified and responsive proposals based on criteria specified in the RFP, which included completeness of response, cost, understanding of requirements, contractor qualifications, and references regarding past experience.

The attachment summarizes scores of the qualified bids. Contact Security, Inc. was the firm that submitted the highest-rated qualified bid, which included excellent references for security guard services. Contact submitted the lowest qualified proposal for a total 3-year amount of $1,251,889 and an additional optional proposal for a total 3-year amount of $1,396,589. The lower-cost proposal maintains the current guard wage through the 3-year term of the new contract with no increases. The guards have not received a raise in the last four years. Contact Security's optional proposal provides the guards with increases through the term of the new contract. Staff believes this proposal provides the best value to SCAQMD while meeting the budget and maintaining a professional level of security guards.

Resource Impacts
Sufficient funds in the amount of $275,950 are available in the approved FY 2015-16 Budget for the remainder of this fiscal year. Since this will be a three-year contract, continuing funding will need to be included in the budgets for each of the remaining fiscal years of the contract. Annual costs are $484,097 for FY 2016-17, $497,463 for FY 2017-18, and $208,908 for the five months of the contract that fall within FY 2018-19.

Attachment
Security Guard Services Bid Evaluation Summary

ATTACHMENT

Bid Evaluation Summary
RFP #2015-24 - Security Guard Services

NAME	Total 3yr Cost	Cost Points	Reference Points	Understanding of Requirements	Contractor Qualification	Additional Points	Total Points
CONTACT SECURITY, INC.	$1,396,588.50	47.0	9.5	18.75	15.75	15	106
GENERAL SECURITY SERVICE, INC.	$1,376,770.06	47.8	8.3	17	17.5	0	91
CALIFORNIA PANTHER SECURITY	$1,317,316.26	50.0	3.6	11.25	13.75	10	89
COVENANT SECURITY PATROL	$1,596,120.97	39.4	8.7	13.75	10.75	15	88
ALLTECH INDUSTRIES, INC.	$1,614,586.32	38.7	8.8	10.5	13.25	15	86
ABC SECURITY SERVICE, INC.	$1,602,977.76	39.2	8.6	17	17.75	0	83
PLATINUM SECURITY INC.	$1,793,018.68	32.0	9.5	16.75	16.25	5	80

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 12

PROPOSAL: Amend Contracts to Provide Short- and Long-Term Systems Development, Maintenance and Support Services

SYNOPSIS: SCAQMD currently has contracts with several companies for short- and long-term systems development, maintenance and support services. These contracts are periodically amended to add budgeted funds as additional needs are defined. This action is to amend the contracts approved by the Board to add additional funding of $345,000 for needed development and maintenance work.

COMMITTEE: Administrative, September 11, 2015; Recommended for Approval

RECOMMENDED ACTIONS:

1. Transfer $100,000 from Information Management's FY 2015-16 Budget, Services and Supplies, Professional and Specialized Services account to Information Management's FY 2015-16, Capital Outlays Major Object, Computer Software Account.
2. Authorize the Executive Officer to execute amendments to the contracts for systems development services in the amount of $80,000 to AgreeYa Solutions, $85,000 to Prelude Systems, $100,000 to Sierra Cybernetics, and $80,000 to Varsun eTechnologies from the FY2015-16 budget for the specific task orders listed in Attachment 1.

Barry R. Wallerstein, D.Env.
Executive Officer

JCM:OSM:mc

Background

At the October 3, 2014 meeting, the Board authorized staff to initiate level-of-effort contracts with several vendors for systems development, maintenance and support services. At the time these contracts were executed, it was expected that they would be modified in the future to add funding from approved budgets as system development

requirements were identified and sufficiently defined so that task orders could be prepared.

The contracts are Basic Ordering Agreements: Individual task orders are issued on both a competitive and sole-source basis (depending on the size and complexity of the systems), after review of prior successful experience of the company and associated administrative costs of the bid process relative to the costs associated with the work effort.

System development and maintenance efforts are currently needed (see Attachment 1) to enhance system functionality and to provide SCAQMD staff with additional automation for improving productivity. The estimated cost to complete the work on these additional tasks exceeds the amount of funding in the existing contracts.

The current contracts are for one year with the option to renew for two one-year periods. Renewal of these contracts is contingent upon performance, competitiveness, percent of tasks bid and overall customer satisfaction. This item is listed on the "Status Report on Major Projects for Information Management."

Proposal
Staff proposes the contracts be amended to add additional funding of $345,000 in the amount of $80,000 to AgreeYa Solutions, $85,000 to Prelude Systems, $100,000 to Sierra Cybernetics, and $80,000 to Varsun eTechnologies for the specific task orders listed in Attachment 1.

In addition, staff proposes a transfer of $100,000 from Information Management's FY 2015-16 Professional & Special Services account to Information Management's FY 2015-16 Capital Outlays Major Object to facilitate software development work.

Resource Impacts
Sufficient funding is included in the FY 2015-16 Budget.

Attachment
1. Task Order Summary

Attachment 1

Task Order Summary

Section A – Funding Totals by Contract

CONTRACTOR	PREVIOUS FUNDING	THIS ADDITION	TOTAL FUNDING
AgreeYa Solutions	$80,000	$80,000	$160,000
Prelude Systems	$141,300	$85,000	$226,300
Sierra Cybernetics	$392,500	$100,000	$492,500
Varsun eTechnologies	$525,000	$80,000	$605,000
TOTAL	$1,138,800	$345,000	$1,483,800

Section B – Task Orders Scheduled for Award

TASK	DESCRIPTION	ESTIMATE	AWARDED TO
Transportation Online Data Entry System	Develop mobile source web-based transportation plan data entry system; Modify existing mobile source system to support recently adopted rule changes and new web-based plan data entry system.	$85,000 $65,000	Prelude AgreeYa
PeopleSoft Benefits Administration	Configure, customize and implement PeopleSoft self-service Benefits Administration module.	$80,000	Varsun
Online Training Registration System	Develop front-end web-based training registration system to interface with commercial off-the-shelf (COTS) hosted on-line training application.	$15,000	AgreeYa
CLASS Systems and Web Application Support	Ongoing maintenance, minor enhancements and support for SCAQMD's CLASS systems, web applications and enterprise database support.	$100,000	Sierra
TOTAL		$345,000	

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 13

PROPOSAL: Execute Contract for Community Outreach with Los Angeles Sentinel, Inc.

SYNOPSIS: This action is to partner with Los Angeles Sentinel, Inc. to increase the SCAQMD's visibility and broaden public awareness of agency programs in key Los Angeles urban communities through publication of a 4-page broadsheet full-color newspaper wrap for a cost not to exceed $50,000.

COMMITTEE: Administrative, September 11, 2015; Recommended for Approval

RECOMMENDED ACTION:
Authorize the Executive Officer to execute a contract with Los Angeles Sentinel, Inc. for a total cost not to exceed $50,000 to produce a newspaper wrap targeted to their readership with relevant air quality information.

Barry R. Wallerstein, D.Env.
Executive Officer

GSA:DA:LBS

Background
As SCAQMD continues to reduce air pollution and meet clean air goals, public involvement remains essential to our agency attaining healthy air for all. To help achieve on-going success, under Board direction, SCAQMD is increasing its focus on seeking partnerships with groups and organizations that can help share news of the significant strides made to reduce urban smog, fine particulates, and toxic air contaminants through the implementation of regulations and programs, while advising the public that our region's pollution levels are still unacceptably high. Such partnerships help SCAQMD target its outreach in and around specific Southland communities – particularly those designated environmental justice, minority and lower income communities – to make it possible for residents in those impacted neighborhoods to better understand our local air pollution problems and to encourage them to more actively participate in SCAQMD's mission driven work to clean the air.

Last year, the SCAQMD partnered with the Los Angeles Sentinel, Inc. to produce a 4-page broadsheet full color newspaper wrap specifically targeted to update the *Los Angeles Sentinel* and *LA Watts Times* readership on the agency's ongoing efforts to reduce air pollution and create healthier communities. With an environmental justice focus the wrap included a series of concisely written, informative articles that introduced readers to the SCAQMD, explained how to report air quality problems, gave timely updates on current and upcoming programs, like Check Before You Burn and the Air Quality Sensor Performance Evaluation Center (known as AQ-SPEC), and promoted SCAQMD's smartphone app, as well as the agency's 2015 Martin Luther King Day of Service Forum and Environmental Justice conference.

As a cover for the January 8, 2015 issues of the two weeklies, the SCAQMD wrap reached 300,000 readers, predominantly in the African-American communities in and around the City of Los Angeles. The Los Angeles Sentinel, Inc. also provided SCAQMD with additional copies of the 2015 wrap for distribution at other community events. Since its founding in 1933, the *Los Angeles Sentinel* has been a relied upon source of news and information for the urban African-American community.

Proposal

Based upon the extensive distribution potential, the publication's credibility with its readership, and the positive community response to the 2015 wrap, execution of this contract will enable SCAQMD to produce another 4-page full color feature that will be published and distributed with the *Los Angeles Sentinel* and *LA Watts Times* newspapers in January 2016. This ongoing partnership will enable the SCAQMD to continue to reach a significant number of Los Angeles area households with relevant air quality information and through those articles motivate residents to be more engaged in improving the environmental quality of their communities.

In sum this partnership with the Los Angeles Sentinel, Inc. will:

- Increase awareness among members of the African-American community of the many ways in which air quality impacts public health;
- Provide an informative, well designed news piece to share information about SCAQMD programs and efforts to reduce air pollution and protect residents' health; and
- Promote individual decisions and community involvement that will help reduce urban air pollution and climate change.

Resource Impacts

Funding for this contract is available in Legislative and Public Affairs budget for Fiscal Year 2015-16.

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 14

PROPOSAL: Execute Contract for Consultant Services for SCAQMD Environmental Justice Outreach and Initiatives

SYNOPSIS: At the July 10, 2015 meeting, the Board approved release of an RFP to solicit proposals to provide assistance with community and stakeholder outreach efforts related to SCAQMD's Environmental Justice Program, including but not limited to, the Environmental Justice Community Partnership Initiative. This action is to execute a contract with Lee Andrews Group in an amount not to exceed $160,000. The contract will be for one year, beginning in November 2015, and may be extended for up to two one-year terms, upon satisfactory performance, at the Board's discretion.

COMMITTEE: Administrative, September 11, 2015; Recommended for Approval

RECOMMENDED ACTIONS:
Authorize the Chairman to execute a contract with Lee Andrews Group for consultant services for SCAQMD Environmental Justice Outreach and Initiatives for one year beginning in November 2015, in an amount not to exceed $160,000, with options for up to two one-year term renewals, upon satisfactory performance, at the Board's discretion.

Barry R. Wallerstein, D.Env.
Executive Officer

LBS:DJA:jns

Background
In February 2015 during the SCAQMD's conference, "Environmental Justice for All: A Conversation with the Community," Chairman Burke announced the Environmental Justice Community Partnership (the Partnership) initiative. The Partnership's goal is to both strengthen and build SCAQMD's relationships and alliances with community members and organizations to work towards achieving clean air and healthy sustainable communities for everyone. Throughout the year, the Partnership will host a series of

events and workshops to facilitate open dialogue and information sharing on air quality issues between SCAQMD and community members, government officials, government representatives, businesses, and academic institutions. The outreach efforts will include forums, training opportunities, and special presentations to educate and to receive feedback from the participants on air quality, SCAQMD rules and programs, and other related topics.

Discussions during the February 2015 Environmental Justice conference highlighted the need for ongoing dialogue and an external advisory council to ensure that the Partnership initiative remains relevant and represents the diverse communities and concerns within the South Coast Air Basin. Those discussions also included recommendations that SCAQMD hold subsequent environmental justice conferences to continue to bring the stakeholders together. All efforts will be designed to facilitate a two-way discussion between SCAQMD and the communities and residents it serves.

Legislative and Public Affairs (LPA) periodically releases Requests for Proposals (RFPs) for consultants to augment in-house expertise and assist staff with external advisory groups, and the development, planning, and implementation of specifically targeted workshops, events, and conferences.

On July 10, the SCAQMD Board approved the issuance of RFP 2016-05 for consultant services for environmental justice outreach and initiatives.

The consultant's expertise will assist LPA in the following:

1. Formation, coordination, and regular interaction with the Environmental Justice Community Partnership Advisory Council (Advisory Council);
2. Execution of a series of 4 annual Environmental Justice Community Partnership workshops, or events, each to be held in a different community identified throughout the South Coast Air Basin; and the second annual Environmental Justice for All Conference in 2016 and;
3. Execution of 4 community events, one in each county, to recognize outstanding local environmental justice community leaders.

Outreach
In accordance with SCAQMD's Procurement Policy and Procedure, a public notice advertising the RFP and inviting bids was published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin.

Additionally, potential bidders may have been notified utilizing SCAQMD's own electronic listing of certified minority vendors. Notice of the RFP has been emailed to

the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations, and placed on the Internet at SCAQMD's website (http://www.aqmd.gov).

Bid Evaluation
Five proposals were received in response to the RFP. The proposals were evaluated and scored by a four-member evaluation panel. Of the five proposals evaluated, two were considered technically qualified and three were deemed to not be technically qualified. The two highest-ranked proposals, based on attaining a minimum average score of fifty-six, were referred to the Administrative Committee for its consideration. The attached matrix presents the scores and total proposal costs for the firms that were interviewed by the Administrative Committee.

Panel Composition
The panel composition consisted of two SCAQMD Assistant Deputy Executive Officers, one SCAQMD Community Relations Manager, and one Senior Vice President & Chief Operating Officer for California State University, Los Angeles; two Asian and two Hispanic; three male and one female.

Resource Impacts
Funding for the first year of the contract in the amount of $160,000 will come from LPA Fiscal Year 2015-16 Budget. Funding for subsequent years of the contract will be requested in future Legislative and Public Affairs' budgets.

Attachment
RFP # P2016-05 Scores and Costs Matrix

RFP # P2016-05 SCORES AND COSTS MATRIX
FOR QUALIFYING FIRMS

Firm Name	Technical Score	Additional Points	Cost Points	Total Points	Total Cost
Estolano Lesar Perez Advisors	56.5	15*	29.8	101.3	160,000 / year
Lee Andrews Group	59.5	15*	30	104.5	159,032.20 / year

*Small Business 10 pts; Local Business 5 pts.

Clean Transportation
Funding from the MSRC
Mobile Source Air Pollution Reduction Review Committee

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 15

PROPOSAL: Approve Contract Awards and Allocation Approved by MSRC

SYNOPSIS: As part of their FYs 2014-16 AB 2766 Discretionary Fund Work Program, the MSRC approved eleven new contracts under the Local Government Program and one new contract under the Alternative Fuel Infrastructure Program. The MSRC also approved a funding allocation towards the Enhanced Fleet Modernization Program, with the funds to support vehicle replacement, transit and car-sharing vouchers. At this time the MSRC seeks Board approval of the contract awards and allocation.

COMMITTEE: Mobile Source Air Pollution Reduction Review, September 17, 2015; Recommended for Approval

RECOMMENDED ACTIONS:

1. Approve the award of 11 contracts totaling $2,581,925 under the Local Government Match Program, as part of approval of the FYs 2014-16 AB 2766 Discretionary Fund Work Program, as described in this letter and as follows:
   a. A contract with the City of Azusa in an amount not to exceed $474,925 to implement a “Complete Streets” pedestrian access project, contingent upon pre- and post-project collection of vehicle and pedestrian counts;
   b. A contract with the Coachella Valley Association of Governments in an amount not to exceed $250,000 to conduct street sweeping operations in the Coachella Valley;
   c. A contract with the City of Riverside in an amount not to exceed $500,000 to implement a “Complete Streets” pedestrian access project, contingent upon pre- and post-project collection of vehicle and pedestrian counts;
   d. A contract with the City of Wildomar in an amount not to exceed $500,000 to install bicycle lanes;
   e. A contract with the City of Brea in an amount not to exceed $500,000 to install a Class 1 Bikeway;
   f. A contract with the City of Rancho Cucamonga in an amount not to exceed $30,000 to purchase one heavy-duty natural gas vehicle;
   g. A contract with the City of Palm Springs in an amount not to exceed $110,000 to install bicycle lanes;

h. A contract with the City of Torrance in an amount not to exceed $32,000 to install EV charging infrastructure;
i. A contract with the City of Eastvale in an amount not to exceed $110,000 to install EV charging infrastructure;
j. A contract with the City of Moreno Valley in an amount not to exceed $20,000 to install EV charging infrastructure; and
k. A contract with the City of San Dimas in an amount not to exceed $55,000 to install EV charging infrastructure;

2. Approve an award under the Alternative Fuel Infrastructure Program to LBA Realty Company LLC in an amount not to exceed $100,000 for the installation of a limited access CNG station, as part of approval of the FYs 2014-16 AB 2766 Discretionary Fund Work Program, as described in this letter;
3. Approve MSRC allocation in an amount not to exceed $6,201,000 for partnership with SCAQMD on implementation of AB118 Enhanced Fleet Modernization Program, with funding to support vehicle replacement, transit and car-sharing vouchers in accordance with the Program terms, as part of approval of the FYs 2014-16 AB 2766 Discretionary Fund Work Program, as described in this letter;
4. Authorize MSRC the authority to adjust contract awards up to five percent, as necessary and previously granted in prior work programs; and
5. Authorize the Chairman of the Board to execute new contracts under FYs 2014-16 Work Program, as described above and in this letter.

Greg Pettis,
Chair, MSRC

MM:HH:CR

Background

In September 1990 Assembly Bill 2766 was signed into law (Health & Safety Code Sections 44220-44247) authorizing the imposition of an annual $4 motor vehicle registration fee to fund the implementation of programs exclusively to reduce air pollution from motor vehicles. AB 2766 provides that 30 percent of the annual $4 vehicle registration fee subvened to the SCAQMD be placed into an account to be allocated pursuant to a work program developed and adopted by the MSRC and approved by the Board.

In November 2014, the MSRC selected initial categories for the FYs 2014-16 Work Program, with the understanding that additional project categories would continue to be developed and brought forward for consideration at a later date. At its September 17, 2015 meeting, the MSRC considered recommended awards under the Local Government Match and Alternative Fuel Infrastructure Programs. In response to an expanded partnership opportunity for the Enhanced Fleet Modernization Program, the MSRC also

considered a recommendation to make a new allocation under the FYs 2014-16 Work Program. Details are provided below in the Proposals section.

Outreach

In accordance with SCAQMD's Procurement Policy and Procedure, public notices advertising the Local Government Match and Alternative Fuel Infrastructure Program Announcements were published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin. In addition, the Program Announcements were advertised in the Desert Sun newspaper for expanded outreach in the Coachella Valley.

Additionally, potential bidders may have been notified utilizing SCAQMD's own electronic listing of certified minority vendors. Notice of the solicitations was emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations, and placed on the Internet at SCAQMD's Website (http://www.aqmd.gov). Further, the solicitations were posted on the MSRC's website at http://www.cleantransportationfunding.org and electronic notifications were sent to those subscribing to this website's notification service.

Proposals

At its September 17, 2015 meeting, the MSRC considered recommendations from its MSRC-TAC and approved the following:

Local Government Match Program

As an element of the FYs 2014-16 Work Program, the MSRC allocated $13.0 million for the Local Government Match Program. A Program Announcement was developed and released on May 1, 2015. As in the previous Work Program, the Local Government Match Program offers to co-fund qualifying medium- and heavy-duty alternative fuel vehicles, alternative fuel infrastructure projects, electric vehicle charging infrastructure, and regional street sweeping in the Coachella Valley. The bicycle projects category was expanded to include "active transportation" projects, and commercial zero emission riding lawnmowers was added as a new category. In all categories, funding is provided on a dollar-for-dollar match basis, and funding for all eligible entities shall be distributed on a first-come, first-served basis with a geographic minimum per county of $1.625 million. The Program Announcement includes an open application period commencing June 2, 2015 and closing September 4, 2015. To date, the MSRC has awarded a total of $5,114,228 to 25 applications. The MSRC approved 11 additional applications totaling $2,581,925 as part of the FYs 2014-16 AB 2766 Discretionary Fund Work Program, as follows:

a. A contract with the City of Azusa in an amount not to exceed $474,925 to implement a "Complete Streets" pedestrian access project, contingent upon pre- and post-project collection of vehicle and pedestrian counts;

b. A contract with the Coachella Valley Association of Governments in an amount not to exceed $250,000 to conduct street sweeping operations in the Coachella Valley;
c. A contract with the City of Riverside in an amount not to exceed $500,000 to implement a "Complete Streets" pedestrian access project, contingent upon pre- and post-project collection of vehicle and pedestrian counts;
d. A contract with the City of Wildomar in an amount not to exceed $500,000 to install bicycle lanes;
e. A contract with the City of Brea in an amount not to exceed $500,000 to install a Class 1 Bikeway;
f. A contract with the City of Rancho Cucamonga in an amount not to exceed $30,000 to purchase one heavy-duty natural gas vehicle;
g. A contract with the City of Palm Springs in an amount not to exceed $110,000 to install bicycle lanes;
h. A contract with the City of Torrance in an amount not to exceed $32,000 to install EV charging infrastructure;
i. A contract with the City of Eastvale in an amount not to exceed $110,000 to install EV charging infrastructure;
j. A contract with the City of Moreno Valley in an amount not to exceed $20,000 to install EV charging infrastructure; and
k. A contract with the City of San Dimas in an amount not to exceed $55,000 to install EV charging infrastructure.

Alternative Fuel Infrastructure Program

As part of the FYs 2014-16 Work Program, the MSRC allocated $5.0 million for the implementation of new and expanded CNG and LNG refueling stations and modification of maintenance facilities to accommodate gaseous-fueled vehicles. A Program Announcement, #PA2015-12, was developed and released on May 1, 2015, with an open application period commencing that day and closing July 29, 2016. One application was received prior to the September 3, 2015 MSRC-TAC meeting. As part of the FYs 2014-16 AB 2766 Discretionary Fund Work Program, the MSRC approved a contract award to LBA Realty Company LLC, in an amount not to exceed $100,000, for the installation of a limited access CNG station.

Enhanced Fleet Modernization Program

The Enhanced Fleet Modernization Program (EFMP) is a vehicle retirement and replacement program authorized by the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (AB 118). The program focuses on providing greater incentives to eligible low- and middle-income owners of older vehicles to scrap their existing vehicle and receive a voucher either to help acquire a newer vehicle or cover the cost for transit passes or participation in car-sharing programs. In conjunction, the EFMP Plus-Up supplements the EFMP by increasing incentives for certain advanced technology replacement vehicles.

The MSRC previously allocated $800,000 to partner with SCAQMD in its implementation of the EFMP. Of this amount, $200,000 was awarded to one of the four contractors implementing the program, and $600,000 was to cover vouchers. Since implementation began in May 2015, the EFMP has generated significant interest from the public and is currently oversubscribed. SCAQMD staff initiated discussions with CARB staff regarding the availability of additional funding from the State, and in a separate item at its October 2, 2015 meeting, the SCAQMD Board will be considering allocation of additional SCAQMD funds. SCAQMD staff also initiated discussions with MSRC staff regarding potential expansion of the current partnership. The MSRC considered this partnership opportunity and approved an allocation of up to $6,201,000 to augment the SCAQMD funds to implement the EFMP and EFMP Plus-Up as an element of the FYs 2014-16 AB 2766 Discretionary Fund Work Program. The MSRC contribution would be for the voucher program only.

At this time, the MSRC requests the SCAQMD Board to approve the contract awards as part of approval of the FYs 2014-16 AB 2766 Discretionary Fund Work Program as outlined above. The MSRC also requests the Board to authorize the SCAQMD Chairman of the Board the authority to execute all agreements described in this letter. The MSRC further requests authority to adjust the funds allocated to each project specified in this Board letter by up to five percent of the project's recommended funding. The Board has granted this authority to the MSRC for all past Work Programs.

Resource Impacts

The SCAQMD acts as fiscal administrator for the AB 2766 Discretionary Fund Program (Health & Safety Code Section 44243). Money received for this program is recorded in a special revenue fund (Fund 23) and the contracts specified herein, as well as any contracts awarded in response to the solicitation, will be drawn from this fund.

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 16

PROPOSAL: Amend SCAQMD Conflict of Interest Code and Incorporate Code, as Amended, into SCAQMD Administrative Code

SYNOPSIS: This action is to amend the SCAQMD Conflict of Interest Code (Code), pursuant to Government Code Section 87306(a). Under the Code, individuals holding designated positions are required to disclose certain financial interests. The proposed amendments will add and delete designated positions subject to the Code's requirements. The proposed amendments will also revise the Disclosure Categories, assign the Disclosure Categories to the designated positions, and make minor clarifications to the Code. This action is also to incorporate the Code, as amended, into the SCAQMD Administrative Code.

COMMITTEE: Administrative Committee, September 11, 2015; Recommended for Approval.

RECOMMENDED ACTIONS:

1. Approve amendments to the SCAQMD Conflict of Interest Code as reflected in the Attachments;
2. Direct the Executive Officer to forward the revised Code and any other necessary documentation to the Fair Political Practices Commission for approval; and
3. Incorporate the SCAQMD Conflict of Interest Code, as amended, into the SCAQMD Administrative Code as new Section 42.

Barry R. Wallerstein, D.Env.
Executive Officer

KRW:AJO:bg

Background
The Political Reform Act, Government Code Sections 8100, et. seq., requires state and local government agencies to adopt and promulgate conflict-of-interest codes. The Board has adopted a Conflict of Interest Code that governs SCAQMD officials and employees. Individuals holding specified positions are required to disclose certain investments, income, interests in real property, business entities and business positions, and may have to disqualify themselves from making or participating in governmental decisions affecting those interests.

Proposal
The SCAQMD's Conflict of Interest Code is periodically updated. The proposed amendments will change the enumeration of SCAQMD positions required to file economic disclosure statements by adding the following classifications as persons who must file Statements of Economic Interest under the Conflict of Interest Code: Directors of the Brain & Lung Tumor and Air Pollution Foundation, and Principal Air Quality Chemist. In addition, deleted or unfunded classifications are proposed to be removed as designated positions in the Code, as set out in Attachment B.

The proposed amendments will also revise the Disclosure Categories, as requested by the Fair Political Practices Commission (FPPC), to make them consistent with the disclosure categories for other public agencies. The FPPC has been working to make conflict-of-interest codes uniform throughout the state, to the extent possible, in order to make the disclosure process easier to understand for those reporting and for the public to review. The revised Disclosure Categories were assigned to the designated positions, as appropriate. The proposed amendments also make minor clarifications to the Code itself.

Before the SCAQMD may amend its Code, FPPC regulations require that individuals whose positions will be subject to its requirement be afforded a 45-day written comment period and the option of a public hearing. A 45-day notice was provided to give interested individuals the opportunity to provide written comments on the proposed amendments to the Code, and to request a public hearing on the matter.

Under this proposal, the SCAQMD Conflict of Interest Code, as amended, would be incorporated into the SCAQMD Administrative Code as new Section 42.

Resource Impacts
No resource impacts will result from this proposal.

Attachments
A. Proposed Amended Conflict of Interest Code
B. Proposed Amended Conflict of Interest Code (Strike-Out)
C. Resolution

ATTACHMENT A

NEW §42 OF SCAQMD ADMINISTRATIVE CODE

CONFLICT-OF-INTEREST CODE FOR THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

The Political Reform Act, Government Code Sections 8100, et. Seq., requires state and local government agencies to adopt and promulgate conflict-of-interest codes. The Fair Political Practices Commission has adopted a regulation, 2 Cal. Code of Regs. Section 18730, which contains the terms of a standard conflict-of-interest code, which can be incorporated by reference, and which may be amended by the Fair Political Practices Commission to conform to amendments to the Political Reform Act after public notice and hearings. Therefore, the terms of 2 Cal. Code of Regs. Section 18730 and any amendments to it duly adopted by the Fair Political Practices Commission, along with Appendices "A" and "B" in which officials and employees are designated and disclosure categories are set forth, are hereby incorporated by reference and constitute the conflict-of-interest code of the South Coast Air Quality Management District (SCAQMD).

Designated employees and officials shall file their statements of economic interest with the South Coast Air Quality Management District. Upon receipt of the statements of the SCAQMD Governing Board Members and Executive Officer, SCAQMD shall make and retain copies and forward the originals to the Fair Political Practices Commission. Statements for all designated employees shall be retained with the SCAQMD. All statements shall be made available for public inspection and reproduction upon request. (Gov. Code Section 81008.)

APPENDIX "A"

Designated Positions

Position	Reportable Economic Interest Category Number (See Appendix "B")
Air Quality Analysis & Compliance Supervisor	1, 2
Atmospheric Measurements Manager	1, 2
Board Member Consultant	1-7
Brain & Lung Tumor and Air Pollution Foundation	6
Building Maintenance Manager	1
Business Services Manager	1
Clean Fuels Officer	1, 2, 6
Clerk of the Board	1, 2
Community Relations Manager	1, 2
Controller	1-4, 6, 7
Designated Deputy	1-7
Designated Deputy- Legal	1-7
Deputy District Counsel I	1-7
Deputy District Counsel II	1-7
Executive Officer	1-7
Financial Services Manager	1-4, 6, 7
Board Member Assistant	1-7
Health Effects Officer	1-4, 6, 7
Human Resources Manager	1
Investigator	2
Investigations Manager	1-7
Mobile Source Air Pollution Reduction Review Committee Member	1, 2, 6
Mobile Source Air Pollution Reduction Review Committee Member Alternate	1, 2, 6
Planning & Rules Manager	1-7
Principal Air Quality Chemist	1, 2
Principal Deputy District Counsel	1-7
Procurement Manager	1-4, 6, 7
Program Supervisor	1-7

Position	Reportable Economic Interest Category Number (See Appendix "B")
Public Affairs Manager	1, 2, 6
Public Benefits Programs Oversight Committee Member	6
Purchasing Assistant	1
Purchasing Supervisor	1
Quality Assurance Manager	1, 2
Risk Manager	1
SCAQMD Board Member	1-7
SCAQMD Hearing Board Member	1-7
SCAQMD Hearing Board Member Alternate	1-7
Senior Air Quality Engineer	2
Senior Air Quality Engineering Manager	1, 2
Senior Deputy District Counsel	1-7
Senior Enforcement Manager	1, 2
Senior Public Affairs Manager	1, 2, 6
Senior Public Information Specialist	1, 2, 6
Senior Staff Specialist	1-7
Staff Specialist	1, 2, 6
Supervising Air Quality Engineer	1, 2
Supervising Investigator	2
Systems & Programming Manager	1, 2
Technical Advisory Committee of the Mobile Source Air Pollution Reduction Review Committee	1, 2, 6
Technical Advisory Committee of the Mobile Source Air Pollution Reduction Review Committee Alternate	1, 2, 6
Technology Implementation Manager	1, 2, 6
Consultants/New Positions	*

*Consultants/new positions shall be included in the list of designated employees and shall disclose pursuant to the broadest disclosure category in the code subject to the following limitation:

The Executive Officer may determine in writing that a particular consultant or new position, although a "designated position," is hired to perform a range of duties that is limited in scope and thus is not required to comply fully with the disclosure requirements described in this section. Such determination shall include a description of the consultant's or new position's duties and, based upon that description, a statement of the extent of disclosure requirements. The Executive Officer's determination is a public record and shall be retained for public inspection in the same manner and location as this conflict-of-interest code (Gov. Code Section 81008).

APPENDIX "B"

Disclosure Categories

1. Investments and business positions in business entities, and income, including receipt of loans, gifts, and travel payments, from sources that provide services, supplies, materials, machinery, or equipment to the District.

2. Investments and business positions in business entities, and income, including receipt of loans, gifts, and travel payments, from sources (including business entities, governmental entities and non-profits) for which the agency has oversight authority. Sources include those subject to District rules, regulation, permits, fines or citations.

3. Investments and business positions in business entities, and sources of income, including receipt of loans, gifts, and travel payments, from sources that engage in the acquisition, appraisal, disposal, or development of real property within the District.

4. Investments and business positions in business entities, and sources of income, including receipt of loans, gifts, and travel payments, from sources that regularly engage in the preparation of environmental impact statements or reports for projects within the District.

5. Interests in real property located within the jurisdiction of the District or within one mile of the boundaries of the jurisdiction of the District.

6. Investments and business positions in business entities, and sources of income, including receipt of loans, gifts, and travel payments, from sources that apply for or receive financial or technical assistance, including grants, from the District.

7. Investments and business positions in business entities, and sources of income, including receipt of loans, gifts, and travel payments, from sources that have a claim for money or damages pending or have filed such a claim within the last two years.

ATTACHMENT B

NEW §42 OF SCAQMD ADMINISTRATIVE CODE

CONFLICT-OF-INTEREST CODE FOR THE

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

The Political Reform Act, Government Code Sections 8100, et. seq., requires state and local government agencies to adopt and promulgate conflict-of-interest codes. The Fair Political Practices Commission has adopted a regulation, 2 Cal. Code of Regs. Section 18730, which contains the terms of a standard conflict-of-interest code, which can be incorporated by reference, and which may be amended by the Fair Political Practices Commission to conform to amendments to the Political Reform Act after public notice and hearings. Therefore, the terms of 2 Cal. Code of Regs. Section 18730 and any amendments to it duly adopted by the Fair Political Practices Commission, along with A~~ttachments~~ppendices "A" and "B" in which officials and employees are designated and disclosure categories are set forth, are hereby incorporated by reference and constitute the conflict-of-interest code of the South Coast Air Quality Management District (SCAQMD).

Designated employees and officials shall file their statements of economic interest with the South Coast Air Quality Management District. Upon receipt of the statements of the SCAQMD Governing Board Members and Executive Officer, ~~the District~~SCAQMD shall make and retain copies and forward the originals to the Fair Political Practices Commission. Statements for all ~~other~~ designated employees shall be retained with the ~~District~~SCAQMD. ~~and~~All statements shall be made available for public inspection and reproduction upon request. (Gov. Code Section 81008.)

~~ATTACHMENT~~ APPENDIX "A"

Designated Positions

Position	Reportable Economic Interest Category Number (See ~~Attachment~~ppendix "B")
~~Affirmative Action Officer~~	~~1~~2
Air Quality Analysis & Compliance Supervisor	~~2, 3~~1, 2
Atmospheric Measurements Manager	1, 2
~~2, 3~~	
Board Member Consultant ~~(Employee)~~	1-7
Brain & Lung Tumor and Air Pollution Foundation Directors	6
Building Maintenance Manager	1~~2~~
Business Services Manager	1~~2~~
Clean Fuels Officer	1, 2, 6~~2, 3~~
Clerk of the Board	1, 2~~2, 3~~
Community Relations Manager	1, 2~~2, 3~~
~~Computer Services Manager~~	~~2, 3~~
~~Consultants (Source Testing)~~	~~1~~
Controller	1-4,6,7
Designated Deputy	1-7
Designated Deputy- Legal	1-7
Deputy District Counsel I	1-7
Deputy District Counsel II	1-7
~~Environmental Technology Assessment Manager~~	~~1~~
Executive Officer	1-7
Financial Services Manager	1-4,6,7
~~Governing~~ Board Member Assistant	1-7
~~Graphics Art Manager~~	~~1~~2
Health Effects Officer	1-4,6,7
Human Resources Manager	1~~2~~

Position	Reportable Economic Interest Category Number (See Attachmentppendix "B")
Investigator	23
Investigations Manager	1-7
~~Manager of Organizational and Human Resources Development~~	~~2~~
Mobile Source Air Pollution Reduction Review Committee Member	1,2, 6-7
Mobile Source Air Pollution Reduction Review Committee Member Alternate	1, 2, 6-7
Planning & Rules Manager	1-7
Principal Air Quality Chemist	1, 2
Principal Deputy District Counsel	1-7
Procurement Manager	1-4,6,7
Program Supervisor	1-7
Public Affairs Manager	1, 2, 62, 3
Public Benefits Programs Oversight Committee Member	64
Purchasing Assistant	12
~~Purchasing Manager~~	~~2~~
Purchasing Supervisor	12
Quality Assurance Manager	1,22
~~Resource Planning Manager~~	~~2~~
Risk Manager	12
SCAQMD Board Member	1-7
SCAQMD Hearing Board Member	1-7
SCAQMD Hearing Board Member Alternate	1-7
Senior Air Quality Engineer	23
Senior Air Quality Engineering Manager	1, 2-7
Senior Deputy District Counsel	1-7
Senior Enforcement Manager	1, 2-7
Senior Public Affairs Manager	1,2, 6-7
Senior Public Information Specialist	1,2,6-7
Senior Staff Specialist	1-7
~~Source Testing and Monitoring Manager~~	~~1~~
Staff Specialist	1, 2, 62, 3

Supervising Air Quality Engineer	1, 2~~-7~~
Supervising Investigator	2~~3~~
Systems & Programming Manager	1,2~~-7~~
Technical Advisory Committee of the Mobile Source Air Pollution Reduction Review Committee	1, 2,6~~-~~

Position	Reportable Economic Interest Category Number (See ~~Attachment~~ Appendix "B")
Technical Advisory Committee of the Mobile Source Air Pollution Reduction Review Committee Alternate	1,2,6~~-7~~
Technology Implementation Manager	1,2,6~~-7~~
~~Transportation Programs Manager~~	~~1~~
~~Telecommunications Manager~~	~~2~~
Consultants/New Positions	*

*Consultants/new positions shall be included in the list of designated employees and shall disclose pursuant to the broadest disclosure category in the code subject to the following limitation:

The Executive Officer may determine in writing that a particular consultant or new position, although a "designated position," is hired to perform a range of duties that is limited in scope and thus is not required to comply fully with the disclosure requirements described in this section. Such determination shall include a description of the consultant's or new position's duties and, based upon that description, a statement of the extent of disclosure requirements. The Executive Officer's determination is a public record and shall be retained for public inspection in the same manner and location as this conflict-of-interest code (Gov. Code Section 81008).

~~ATTACHMENT~~APPENDIX "B"

Disclosure Categories

1. Investments and business positions in business entities, and income, including receipt of loans, gifts, and travel payments, from sources that provide services, supplies, materials, machinery, or equipment to the District.

2. Investments and business positions in business entities, and income, including receipt of loans, gifts, and travel payments, from sources (including business entities, governmental entities and non-profits) for which the agency has oversight authority. Sources include those subject to District rules, regulation, permits, fines or citations.

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4. Investments and business positions in business entities, and sources of income, including receipt of loans, gifts, and travel payments, from sources that regularly engage in the preparation of environmental impact statements or reports for projects within the District.

5. Interests in real property located within the jurisdiction of the District or within one mile of the boundaries of the jurisdiction of the District.

6. Investments and business positions in business entities, and sources of income, including receipt of loans, gifts, and travel payments, from sources that apply for or receive financial or technical assistance, including grants, from the District.

7. Investments and business positions in business entities, and sources of income. including receipt of loans, gifts, and travel payments, from sources that have a claim for money or damages pending or have filed such a claim within the last two years.

~~***Category 1 - Officials and employees whose duties are broad:***~~

~~Persons in this category shall disclose all interests in real property located in the SCAQMD's jurisdiction, and shall also disclose all investments, business positions, source of income, including gifts, loans, and travel payments, from sources located or doing business in SCAQMD's jurisdiction.~~

~~***Category 2 – Officials and employees whose duties involve contracting or purchasing:***~~

~~Persons in this category shall disclose all investments, business positions, and sources of income, including gifts, loans and travel payments, from sources that~~

~~provide goods, services, supplies, materials, vehicles, machinery or equipment of the type utilized by the SCAQMD.~~

~~Category 3 - Officials and employees whose duties involve regulatory activities:~~

~~Persons in this category shall disclose all investments, business positions, and income, including gifts, loans and travel payments, from sources that are subject to the regulatory, permit or licensing authority of the SCAQMD.~~

~~Category 4 - Officials and employees whose duties involve financial interests in grants received from the District:~~

~~Persons in this category shall disclose all investments, business positions and income, including gifts, loans and travel payments, or income from a nonprofit organization, if the source is of the type to receive grants or other monies from or through the SCAQMD.~~

ATTACHMENT C

RESOLUTION NO. 42-___

A Resolution of the South Coast Air Quality Management District Board amending the SCAQMD Conflict of Interest Code (Code) and incorporating the Code into the SCAQMD Administrative Code.

WHEREAS, the Political Reform Act, Government Code Sections 8100, et. seq., requires state and local government agencies to adopt and promulgate conflict-of-interest codes.

WHEREAS, the Governing Board has adopted a Conflict of Interest Code that governs SCAQMD officials and employees.

WHEREAS, the SCAQMD Board finds that it is appropriate to amend the Code to add and delete designated positions subject to the Code's requirements, revise the Disclosure Categories, assign the Disclosure Categories to the designated positions, and make minor clarifications to the Code.

WHEREAS, a 45-day notice was provided to give affected individuals the opportunity to provide written comments on the proposed amendments to the Code, and to request a public hearing on the matter.

NOW, THEREFORE BE IT RESOLVED the SCAQMD Board hereby amends the Conflict of Interest Code, and incorporates it to the October 2, 2015 Board letter as new Section 42 of the Administrative Code, as set forth in Attachment A of the Board letter.

Back to Agenda

BOARD MEETING DATE: October 2, 2015 AGENDA NO. 17

PROPOSAL: Legislative and Public Affairs Report

SYNOPSIS: This report highlights August 2015 outreach activities of Legislative and Public Affairs, which include: an Environmental Justice Update, Community Events/Public Meetings, Business Assistance, and Outreach to Business and Federal, State, and Local Government.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:
Receive and file.

Barry R. Wallerstein, D.Env.
Executive Officer

LBS:DJA:MC:dm

BACKGROUND

This report summarizes the activities of Legislative and Public Affairs for August 2015. The report includes four major areas: Environmental Justice Update; Community Events/Public Meetings (including the Speakers Bureau/Visitor Services, Communications Center, and Public Information Center); Business Assistance; and Outreach to Business and Federal, State and Local Governments.

ENVIRONMENTAL JUSTICE UPDATE

The following are key environmental justice-related activities in which SCAQMD staff participated during the month of August. These events involve communities that may suffer disproportionately from adverse air quality impacts.

August 4

- Staff represented SCAQMD at the Riverside County Community Health Workshop in Jurupa Valley and provided a timeline of upcoming community meeting dates for the 2016 Air Quality Management Plan.

August 19

- Staff attended the Inland Action Empire Asthma Coalition meeting in Colton and participated in the discussion related to school readiness as well as provided information about the upcoming National Drive Electric events.

August 20

- Staff worked with the Department of Toxic Substances Control to organize and implement the logistics for the Exide Technologies Advisory Group meeting in Huntington Park. Staff participation included: coordination with the City of Huntington Park, and organizing translation and audio visual services. Additionally, staff assisted community members throughout the meeting and helped with logistical issues.

COMMUNITY EVENTS/PUBLIC MEETINGS

Each year, thousands of residents engage in valuable information exchanges through events and meetings that SCAQMD sponsors either alone or in partnership with others. Attendees typically receive the following information:

- Tips on reducing their exposure to smog and its health effects;
- Clean air technologies and their deployment;
- Invitations or notices of conferences, seminars, workshops and other public events;
- Ways to participate in SCAQMD's rule and policy development; and
- Assistance in resolving air pollution-related problems.

SCAQMD staff attended and/or provided information and updates at the following events:

August 8

- 41st Assembly District 16th Annual Community Block Party and Resource Fair, Pasadena

August 16

- Regalettes Annual "A White Linen Affair" Event, Skirball Cultural Center, Los Angeles

August 22

- American Cancer Society Relay for Life, Rialto Middle School

August 26

- 6th Annual Women in Green Forum, Los Angeles

August 29

- 2015 Rhythm and Joy Festival, Warner Center Park, Woodland Hills
- 62nd Assembly District Back to School Wellness and Health Fair, Oakwood Park, Venice
- 22nd Annual City of Glendale Cruise Night

SPEAKERS BUREAU/VISITOR SERVICES

SCAQMD regularly receives requests for staff to speak on air quality-related issues from a wide variety of organizations, such as trade associations, chambers of commerce, community-based groups, schools, hospitals and health-based organizations. SCAQMD also hosts visitors from around the world who meet with staff on a wide range of air quality issues.

August 12

- Two representatives from the National Weather Service visited SCAQMD headquarters where they received an overview on the agency and air quality, toured SCAQMD's laboratory, and viewed SCAQMD's clean alternative fuel vehicles.

August 21

- Thirteen attendees from a Workshop for Chinese Air Regulators, hosted by the UCLA Air Quality Management Training Program toured, SCAQMD's Air Monitoring Station in Rubidoux and laboratory. SCAQMD staff also made a presentation to the group on the agency's rules and regulations.

August 28

- Fifteen attendees from a Workshop for Chinese Air Regulators hosted by the UCLA Air Quality Management Training Program were given a tour of SCAQMD's Air Monitoring Station in Rubidoux and laboratory. SCAQMD staff also presented to the group on the agency's rules and regulations.

COMMUNICATION CENTER STATISTICS

The Communication Center handles calls on the SCAQMD main line, 1-800-CUT-SMOG® line, the Spanish line, and after hours calls to each of those lines. Calls received in the month of August 2015 were:

Calls to SCAQMD's Main Line and 1-800-CUT-SMOG® Line	3,770
Calls to SCAQMD's Spanish-language Line	84
Total Calls	3,854

PUBLIC INFORMATION CENTER STATISTICS

The Public Information Center (PIC) handles phone calls and walk-in requests for general information. Information for the month of August is summarized below:

Calls Received by PIC Staff	134
Calls to Automated System	3,770
Total Calls	3,904
Visitor Transactions	241
E-Mail Advisories Sent	2,463

BUSINESS ASSISTANCE

SCAQMD notifies local businesses of proposed regulations so they can participate in the agency's rule development process. SCAQMD also works with other agencies and governments to identify efficient, cost-effective ways to reduce air pollution and shares that information broadly. Staff provides personalized assistance to small businesses both over the telephone and via on-site consultation. The information is summarized below:

- Conducted one free on-site consultation
- Provided permit application assistance to 145 companies
- Issued 15 clearance letters

Types of businesses assisted

Auto Body Shops	Dry Cleaners	Printing Facilities
Chemical Manufacturer	Gas Stations	Restaurants
Cabinet Manufacturer	Medical Facilities	Metal Plating Facilities
Construction	Architecture	Engineering

OUTREACH TO COMMUNITY GROUPS AND FEDERAL, STATE, AND LOCAL GOVERNMENTS

Field visits and/or communications were conducted with elected officials or staff from the following cities:

Aliso Viejo	Inglewood	Murrieta
Alhambra	Industry	Palos Verdes Estates
Bell	La Habra	Rancho Palos Verdes
Buena Park	La Verne	Redondo Beach
Beaumont	Lawndale	Rolling Hills
Carson	La Cañada Flintridge	Rolling Hills Estates
Corona	Lake Elsinore	Riverside
Commerce	Lomita	Rosemead
Diamond Bar	Los Angeles	San Dimas

Duarte	Long Beach	San Jacinto
El Segundo	Maywood	South Gate
Gardena	Manhattan Beach	South Pasadena
Glendora	Menifee	Temecula
Hawthorne	Monterey Park	Torrance
Hermosa Beach	Moreno Valley	Vernon
Hemet	Montebello	Walnut
Huntington Park		

Visits and/or communications were conducted with elected officials or staff from the following State and Federal Offices:

- U.S. Congresswoman Lucille Roybal-Allard
- U.S. Congressman Xavier Becerra
- U.S. Congressman Ken Calvert
- U.S. Congresswoman Janice Hahn
- U.S. Congressman Duncan Hunter
- U.S. Congressman Brad Sherman
- U.S. Congressman Mark Takano
- U.S. Congresswoman Mimi Walters
- State Senator Ben Allen
- State Senator Joel Anderson
- State Senator Pat Bates
- State Senator Kevin De León
- State Senator Isadore Hall
- State Senator Bob Huff
- State Senator Ricardo Lara
- State Senator Holly Mitchell
- State Senator Mike Morrell
- State Senator John Moorlach
- State Senator Richard Roth
- State Senator Jeff Stone
- Assembly Member Autumn Burke
- Assembly Member Ed Chau
- Assembly Member David Hadley
- Assembly Member Christina Garcia
- Assembly Member Eric Linder
- Assembly Member Chad Mayes
- Assembly Member Jose Medina
- Assembly Member Melissa Melendez
- Assembly Member Anthony Rendon

- Assembly Member Miguel Santiago
- Assembly Member Reginald Jones-Sawyer
- Assembly Member Don Wagner
- Assembly Member Marie Waldron

Staff represented SCAQMD and/or provided updates or a presentation to the following governmental agencies and business organizations:

Alhambra Chamber of Commerce
Anaheim Chamber of Commerce
Beaumont Chamber of Commerce
California Air Resources Board
Coachella Valley Association of Governments
California Contract Cities Association
Chino Valley Chamber of Commerce
Corona Chamber of Commerce
Greater Riverside Chamber of Commerce
Hemet/San Jacinto Chamber of Commerce
League of California Cities, Inland Empire
Los Angeles Economic Development Corporation
Montclair Chamber of Commerce
Moreno Valley Chamber of Commerce
Murrieta Chamber of Commerce
Orange County Council of Governments
Orange County Black Chamber of Commerce
OmniTrans
Regional Hispanic Chamber, Southern California
Riverside County Transportation Commission
Riverside Transit Agency (RTA)
San Bernardino Chamber of Commerce
San Bernardino Associated Governments
San Gabriel Valley Economic Partnership
San Gabriel Valley Council of Governments
San Pedro Chamber of Commence
Silicon Valley Leadership Group
Small Business Action Committee, Laguna Niguel
South Bay Association Chamber of Commerce
South Bay Area Chambers of Commerce
South Bay Service Council
South Bay Cities Council of Governments
South Orange County Economic Coalition
Southern California Association of Governments
Temecula Chamber of Commerce

Western Riverside Council of Governments
Western Riverside Transportation NOW (RTA)
- Hemet/San Jacinto Chapter
- Moreno Valley/Perris Chapter
- San Gorgonio Pass Chapter, Beaumont
- Southwest Chapter, Temecula

Western States Petroleum Association
Wilmington Chamber of Commerce

Staff represented SCAQMD and/or provided updates or a presentation to the following community groups and organizations:

American Cancer Society
Barrio Planners, Los Angeles
Boyle Heights Neighborhood Council
Environmental Priorities Network, Manhattan Beach
Healthy Jurupa Valley City Group
Inland Empire Asthma Coalition
Moreno Valley Unified School District
Moreno Valley College
Mothers of East Los Angeles
One LA Board of Organizations
Resurrection Church, Los Angeles
Riverside County Department of Public Health
Riverside County Health Coalition
St. Rose of Lima Catholic Church, Maywood
Southwest Health Care System, Temecula
Temecula Valley School District
University of California, Riverside
University of California, Los Angeles (UCLA)
University of Southern California, Los Angeles (USC)
Union de Vecinos, Los Angeles

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 18

REPORT: Hearing Board Report

SYNOPSIS: This reports the actions taken by the Hearing Board during the period of August 1 through August 31, 2015.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:
Receive and file this report.

Edward Camarena
Chairman of Hearing Board

SM

Two summaries are attached: **Rules From Which Variances and Orders for Abatement Were Requested in 2015** and **August 2015 Hearing Board Cases**.

The total number of appeals filed during the period August 1 to August 31, 2015 is 0; and total number of appeals filed during the period of January 1 to August 31, 2015 is 1.

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
# of HB Actions Involving Rules													
109													0
109(c)													0
109(c)(1)													0
201													0
201.1													0
202													0
202(a)	1			1		1		1					4
202(b)													0
202(c)													0
203		1											1
203(a)	1	1			3								5
203(b)	5	2	7	4	3	6	5	4					36
204													0
208													0
218(c)(1)(B)(i)			1										1
218.1													0
218.1(b)(4)(C)			1										1
218(b)(2)					1								1
218(c)(1)(A)													0
218(d)(1)(A)													0
218(d)(1)(B)													0
219													0
219(s)(2)	1												1
221(b)	1												1
221(c)													0
221(d)	1												1
222		1											1
222(d)(1)(C)													0
222(e)(1)													0
401													0
401(b)													0
401(b)(1)						1							1
401(b)(1)(A)													0
401(b)(1)(B)						1							1
402	1				1								2
403(d)(1)													0
403(d)(1)(A)													0
403(d)(2)													0
404													0
404(a)													0
405													0
405(a)													0
405(b)													0
405(c)													0
407(a)						1							1
407(a)(1)													0
407(a)(2)(A)													0

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
410(d)													0
430(b)(3)(A)(iv)													0
431.1													0
431.1													0
431.1(c)(1)													0
431.1(c)(2)													0
431.1(c)(3)(C)													0
431.1(d)(1)													0
431.1(d)(1), Att A(1)													0
442													0
444													0
444(a)													0
444(c)													0
444(d)													0
461					1								1
461(c)(1)													0
461(c)(1)(A)													0
461(c)(1)(B)													0
461(c)(1)(C)													0
461(c)(1)(E)													0
461(c)(1)(F)(i)													0
461(c)(1)(F)(iv)													0
461(c)(1)(F)(v)													0
461(c)(1)(H)													0
461(c)(2)													0
461(c)(2)(A)													0
461(c)(2)(B)													0
461(c)(2)(C)													0
461(c)(3)													0
461(c)(3)(A)													0
461(c)(3)(B)													0
461(c)(3)(C)													0
461(c)(3)(D)(ii)													0
461(c)(3)(E)													0
461(c)(3)(H)													0
461(c)(3)(M)													0
461(c)(4)(B)													0
461(c)(4)(B)(ii)													0
461(d)(5)(A)													0
461(e)(1)													0
461(e)(2)	1												1
461(e)(2)(A)													0
461(e)(2)(A)(i)													0
461(e)(2)(B)(i)													0
461(e)(2)(C)													0
461(e)(3)													0
461(e)(3)(A)													0
461(e)(3)(C)(i)(I)													0

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
461(e)(3)(D)													0
461(e)(3)(E)													0
461(e)(5)													0
461(e)(7)													0
462													0
462(c)(4)(B)(i)													0
462(c)(7)(A)(ii)													0
462(d)													0
462(d)(1)													0
462(d)(1)(A)													0
462(d)(1)(A)(i)													0
462(d)(1)(B)													0
462(d)(1)(C)													0
462(d)(1)(E)(ii)													0
462(d)(1)(F)													0
462(d)(1)(G)													0
462(d)(5)													0
462(e)(1)													0
462(e)(1)(E)													0
462(e)(1)(E)(ii)													0
462(e)(1)(E)(i)(II)													0
462(e)(2)(A)(i)													0
462(e)(4)													0
462(h)(1)													0
463													0
463(c)													0
463(c)(1)													0
463(c)(1)(A)(I)-(iv)													0
463(c)(1)(B)													0
463(c)(1)(C)													0
463(c)(1)(D)													0
463(c)(1)(E)													0
463(c)(2)													0
463(c)(2)(B)													0
463(c)(2)(C)													0
463(c)(3)													0
463(c)(3)(A)													0
463(c)(3)(B)													0
463(c)(3)(C)													0
463(d)													0
463(d)(2)													0
463(e)(3)(C)													0
463(e)(4)													0
463(e)(5)(C)													0
464(b)(1)(A)							1						1
464(b)(2)							1						1
468													0
468(a)													0

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
468(b)													0
1102													0
1102(c)(2)													0
1102(e)(1)					1								1
1102(f)(1)					1								1
1105.1													0
1105.1(d)(1)(A)(i)													0
1105.1(d)(1)(A)(iii)													0
1106(c)(1)													0
1106.1(c)(1)													0
1106.1(c)(1)(A)													0
1107(c)(1)													0
1107(c)(2)													0
1107(c)(7)													0
1107													0
1110.1													0
1110.2		1											1
1110.2(c)(14)													0
1110.2(d)													0
1110.2(d)(1)(A)													0
1110.2(d)(1)(B)													0
1110.2(d)(1)(B)(ii)	1												1
1110.2(d)(1)(D)													0
1110.2(d)(1)(E)													0
1110.2(e)(1)(A)													0
1110.2(e)(1)(B)(i)(II)													0
1110.2(e)(1)(B)(i)(III)													0
1110.2(e)(4)(B)													0
1110.2(f)													0
1110.2(f)(1)(A)													0
1110.2(f)(1)(c)													0
1113(c)(2)													0
1113(d)(3)													0
1118(c)(4)													0
1118(c)(5)													0
1118(d)(1)(2)													0
1118(d)(1)(2)													0
1118(d)(2)													0
1118(d)(3)													0
1118(d)(4)(B)													0
1118(d)(5)(A)													0
1118(d)(5)(B)													0
1118(d)(10)													0
1118(d)(12)													0
1118(e)													0
1118(f)(1)(C)	1												1
1118(g)(3)						1							1
1118(g)(5)													0

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
1118(g)(5)(A)				1									1
1118(i)(5)(B)(i)													0
1118(i)(5)(B)(ii)													0
1118(j)(1)(A)(ii)													0
1118(j)(1)(B)(ii)													0
1118(j)(1)(C)													0
1121(c)(2)(C)													0
1121(c)(3)													0
1121(c)(6)													0
1121(c)(7)													0
1121(c)(8)													0
1121(e)(3)													0
1121(h)													0
1121(h)(1)													0
1121(h)(2)													0
1121(h)(3)													0
1122(c)(2)(A)													0
1122(c)(2)(E)													0
1122(d)(1)(A)													0
1122(d)(1)(B)													0
1122(d)(3)													0
1122(e)(2)(A)													0
1122(e)(2)(B)													0
1122(e)(2)(C)													0
1122(e)(2)(D)													0
1122(e)(3)													0
1122(e)(4)(A)													0
1122(e)(4)(B)													0
1122(g)(3)													0
1122(j)													0
1124													0
1124(c)(1)(A)													0
1124(c)(1)(E)													0
1124(c)(4)(A)													0
1125(c)(1)													0
1125(c)(1)(C)													0
1125(d)(1)													0
1128(c)(1)													0
1128(c)(2)													0
1130													0
1130(c)(1)													0
1130(c)(4)													0
1131													0
1131(d)													0
1132(d)(2)													0
1132(d)(3)													0
1133(d)(8)													0
1133.2(d)(8)													0

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
1134(c)													0
1134(c)(1)													0
1134(d)													0
1134(d)(1)													0
1134(d)(2)(B)(ii)													0
1134(f)													0
1134(g)(2)													0
1135(c)(3)													0
1135(c)(3)(B)													0
1135(c)(3)(C)													0
1135(c)(4)													0
1135(c)(4)(D)													0
1136													0
1136(c)(1)(A)(i)													0
1137(d)(2)													0
1145													0
1145(c)(1)													0
1145(c)(2)													0
1145(g)(2)													0
1145(h)(1)(E)													0
1146					1								1
1146(c)(1)(A)				1									1
1146(c)(1(G)			1				1						2
1146(c)(1)(I)				1									1
1146(c)(2)													0
1146(c)(2)(A)													0
1146(d)(8)													0
1146.1													0
1146.1(a)(2)													0
1146.1(a)(8)													0
1146.1(b)(3)													0
1146.1(c)(1)													0
1146.1(c)(2)													0
1146.1(d)(4)													0
1146.1(d)(6)													0
1146.1(e)(1)													0
1146.1(e)(1)(B)													0
1146.1(e)(2)													0
1146.2													0
1146.2(c)(1)	1												1
1146.2(c)(4)	1	1											2
1146.2(c)(5)	1												1
1146.2(e)													0
1147	1				1								2
1147(c)(1)							2						2
1147(c)(10)													0
1147(c)(14)(B)													0
1150.1(d)(1)(C)(i)	1												1

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
1150.1(d)(4)													0
1150.1(d)(5)													0
1150.1(d)(10)													0
1150.1(d)(11)													0
1150.1(d)(12)													0
1150.1(d)(13)													0
1150.1(d)(14)													0
1150.1(e)(1)													0
1150.1(e)(2)													0
1150.1(e)(3)													0
1150.1(e)(1)(B)(C)													0
1150.1(e)(1)(C)													0
1151.1(e)(2)(B)(C)													0
1150.1(e)(2)(C)													0
1150.1(e)(3)(B)													0
1150.1(e)(3)(B)(C)													0
1150.1(e)(3)(C)													0
1150.1(e)(4)													0
1150.1(e)(6)(A)(I)													0
1150.1(e)(6)(A)(ii)													0
1150.1(f)(1)(A)(iii)(I)													0
1150.1(f)(1)(H)(i)													0
1151													0
1151(c)(8)													0
1151(2)													0
1151(5)													0
1151(d)(1)													0
1151(e)(1)													0
1151(e)(2)													0
1151(f)(1)													0
1153(c)(1)													0
1153(c)(1)(B)													0
1156(d)(5)(C)(i)													0
1158													0
1158(d)(2)													0
1158(d)(5)													0
1158(d)(7)													0
1158(d)(7)(A)(ii)													0
1158(d)(10)													0
1164(c)(1)(B)													0
1164(c)(2)													0
1166(c)(2)													0
1166(c)(2)(F)													0
1166, Part 12	1												1
1168													0
1168(c)(1)													0
1169(c)(13)(ii)													0
1171													0

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
1171(c)													0
1171(c)(1)													0
1171(c)(1)(A)(i)													0
1171(c)(1)(b)(i)													0
1171(c)(4)													0
1171(c)(5)													0
1171(c)(5)(A)(i)													0
1171(c)(6)													0
1173													0
1173(c)													0
1173(d)													0
1173(e)(1)													0
1173(f)(1)(B)													0
1173(g)													0
1175													0
1175(c)(2)													0
1175(c)(4)(B)													0
1175(c)(4)(B)(i)													0
1175(c)(4)(B)(ii)													0
1175(c)(4)(B)(ii)(I)													0
1175(b)(1) (C)													0
1175(d)(4)(ii)(II)													0
1176													0
1176(e)													0
1176(e)(1)							1						1
1176(e)(2)													0
1176(e)(2)(A)													0
1176(e)(2)(A)(i)							1						1
1176(e)(2)(B)(v)							1						1
1176(f)(3)													0
1177(d)(2)(D)													0
1178(d)(1)(A)(xiii)													0
1178(d)(1)(A)(xiv)													0
1178(d)(1)(B)													0
1178(d)(1)(C)													0
1178(d)(3)(C)													0
1178(d)(3)(D)													0
1178(d)(3)(E)													0
1178(d)(4)(A)(i)													0
1178(g)													0
1186.1													0
1186.1													0
1189(c)(3)													0
1195													0
1195(d)(1)(D)													0
1303(a)													0
1303(a)(1)													0
1303(b)(1)													0

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
1401													0
1401(d)													0
1401(d)(1)(A)													0
1401(d)(1)(B)													0
1405(d)(3)(C)													0
1407(d)													0
1407(d)(1)													0
1407(d)(2)													0
1407(d)(5)	1					1							2
1407(f)(1)													0
1415(d)(3)													0
1418(d)(2)(A)													0
1420(d)(1)	1												1
1420.1(f)(3)													0
1420.1(g)(4)													0
1420.1(k)(13)(B)													0
1421(d)													0
1421(d)(1)(C)													0
1421(d)(1)(G)													0
1421(d)(3)(A)													0
1421(e)(2)(c)													0
1421(e)(1)(A)(vii)													0
1421(e)(3)(B)													0
1421(h)(1)(A)													0
1421(h)(1)(B)													0
1421(h)(1)(C)													0
1421(h)(1)(E)													0
1421(h)(3)													0
1421(i)(1)(C)													0
1425(d)(1)(A)													0
1469													0
1469(c)													0
1469(c)(8)													0
1469(c)(11)(A)													0
1469(c)(13)(ii)													0
1469(d)(5)													0
1469(e)(1)													0
1469(e)(7)													0
1469(g)(2)													0
1469(h)													0
1469(l)													0
1469(j)(4)(A)													0
1469(j)(4)(D)													0
1469(k)(3)(A)													0
1470													0
1470(c)(2)(C)(i)(I)													0
1470(c)(2)(C)(iv)													0
1470(c)(3)(B)(ii)	1												1

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
1470(c)(3)(C)(iii)					4	1							5
1470(c)(4)													0
1470(c)(4)(B)			1										1
1470(c)(5)													0
1470(d)(2)(B)													0
1470(e)(2)(A)													0
2004(c)(1)		3					3						6
2004(c)(1)(C)													0
2004(f)(1)			4	2	1	2		2					11
2004(f)(2)													0
2004(k)													0
2005													0
2009(b)(2)													0
2009(c)													0
2009(f)(1)													0
2009(f)(2)													0
2009.1													0
2009.1(c)													0
2009.1(f)(1)													0
2009.1(f)(2)													0
2009.1(f)(3)													0
2011													0
2011 Attachment C													0
2011(c)(2)							1						1
2011(c)(2)(A)	1												1
2011(c)(2)(B)													0
2011(c)(3)(A)	1												1
2011(e)(1)													0
2011(f)(3)													0
2011(g)													0
2011(g)(1)													0
2011(k)							1						1
2011(k) Appen. A, Chap. 2, except E & Attach C													0
2011(k) Appen. A, Chap. 2, Section A.3 a-c, A.5 and B. 1-4													0
and Appen. A, Chap. 2, Section C.2.a, c & d													0
2011, Appen. A, Attach. C, Section B.2.a.							1						1
2012 Chapter 2													0
2012 Attach. C, B.2.a													0
2012 Appen. A, Attach. C, Section B.2.	1												1
2012 Appen. A, Attach. C, Section B.2.a. & b.													0
2012 Appen. A													0
2012 Appen. A, Chap. 2													0
2012 Appen A, Chap. 2, Sec. A													0
2012 Appen A. Chap. 2. Sec. A(1)					1								1
2012 Appen A, Chap. 2, Sec. B													0
2012, Appen. A, Protocol 2012, Chap. 2, B.5.													0
2012, Appen A, Chap. 2, B.5.a													0
2012, Appen A, Chap. 2, B.10													0

Rules from which Variances and Order for Abatements were Requested in 2015													
2015	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total Actions*
2012, Appen A, Chap. 2, B.11													0
2012, Appen A, Chap. 2, B.12													0
2012, Appen A, Chap. 2, B.17			1										1
2012, Appen A, Chap.2, B.18													0
2012, Appen A, Chap.2, B.20													0
2012, Chapter 2, E.2.b.i.													0
2012, Chapter 2, E.2.b.ii.													0
2012 Appen A, Chap. 4.A.4													0
2012(B)(5)(e)													0
2012(c)(2)(A)				1	1								2
2012(c)(2)							1						1
2012(c)(3)													0
2012(c)(3)(A)				1	1								2
2012(c)(3)(B)													0
2012(c)(10)													0
2012(d)(2)													0
2012(d)(2)(A)													0
2012(d)(2)(D)													0
2012(f)(2)(A)			1										1
2012(g)(1)			1		1								2
2012(g)(3)													0
2012(g)(7)													0
2012(h)(3)													0
2012(h)(4)													0
2012(h)(5)													0
2012(h)(6)													0
2012(i)													0
2012(j)(1)													0
2012(j)(2)													0
2012, Protocol (Appen. A) Chap. 2, Part A.1.a													0
2012, Protocol (Appen. A) Chap. 2, Part B.4													0
2012, Protocol, (Appen A) Chap. 2, Part B.5.e													0
2012 Chapter 2, B.5.f													0
2012(m)													0
2012(m) Table 2012-1, and Appen. A, Chp 2, & Attachment C													0
2012(m) Appen. A, Attach. C													0
2012(m) Appen. A, Chap. 2, Sections 2.A.1 a-c, e.g,													0
and B. 1-4 and Appendix A, Chapter 3, Section C.2 a, c & d													0
2012(m) Appen. A, Chap 3, Section (A)(6)													0
2012(m) Appen. A, Chap 5, Para G, Table 5B and Att. D													0
2202			1										1
3002			1										1
3002(c)													0
3002(c)(1)	3	1	3		1	2	3	2					15
3002(c)(2)													0
Regulation II													0
Regulation IX													0
Regulation IX, 40 CFR Part 60, Subpart J													0

Rules from which Variances and Order for Abatements were Requested in 2015													
	2015	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***	***Jul***	***Aug***	***Sep***	***Oct***	***Nov***	***Dec***	***Total Actions***
Regulation XI													0
Regulation XIII													0
H&S 39152(b)													0
H&S 41510													0
H&S 41700		1											1
H&S 41701									2				2
H&S 93115.6(c)(2)(C)(1)													0
H&S 42303													0
Title 13 Code of Regulations §2452													0

Report of August 2015 Hearing Board Cases

Case Name and Case No.	Rules	Reason for Petition	District Position/ Hearing Board Action	Type and Length of Variance or Order	Excess Emissions
1. Chevron Products Company Case No. 831-376 (V. Tyagi)	203(b) 464(b)(1)(A) 464(b)(2) 1176(e)(1) 1176(e)(2)(A)(i) 11476(e)(2)(B)(v) 2004(f)(1) 3002(c)(1)	Petitioner needs to take one oil water separator out of service to conduct periodic maintenance.	Not Opposed/Granted	SV granted commencing 8/21/15 and continuing through 9/30/15.	VOC: 7 lbs/total
2. Hixson Metal Finishing Case No. 5418-4 (N. Feldman)		Petitioner seeks to have the District's rejection of its risk reduction plan rescinded and related NOV abated.	Opposed/Dismissed	District's Motion to Dismiss Appeal of Rejection of Risk Reduction Plan granted.	N/A
3. Recology Los Angeles Case No. 6031-1 (N. Feldman)	203(b)	Petitioner seeks to operate facility it purchased without proper emission controls in place.	Not Opposed/Denied	RV denied.	N/A
4. Senior Operations LLC dba Senior Aerospace SSP Case No. 6034-1 (M. Lorenz)	203(b)	Petitioner seeks to increase lead production without first obtaining permits.	Opposed/Denied	SV denied.	N/A
5. Ultramar, Inc., dba Valero Wilmington Refinery Case No. 3845-93 (K. Manwaring)	202(a) 203(b) 401(b)(1) 407(a) 2004(f)(1) 3002(c)(1) H&S Code 41701	FCCU shut down to repair leaking valve. Upon restart there may be excess emissions.	Not Opposed/Granted	ExParte EV &AOC granted commencing 8/19/15 and continuing for 30 days or until the EV & AOC hearing currently scheduled for 8/25/15, whichever comes first.	CO: 1248 lbs/day Opacity: 65%
6. Universal City Studios, LLC Case No. 4935-13 (Consent Calendar; No Appearance)	401(b)(1)(B) H&S Code 41701	Petitioner will use fog machine for visual effects for Halloween show.	Not Opposed/Granted	SV granted for thirty-two (32) events commencing 9/12/15 and continuing through 11/8/15.	Opacity: TBD by 10/1/15

Acronyms

AOC: Alternative Operating Conditions
CEMS: Continuous Emissions Monitoring System
ESP: Electrostatic Precipitator
EV: Emergency Variance
FCD: Final Compliance Date
FCCU: Fluid Catalytic Cracking Unit
H&S: Health & Safety Code
ICE: Internal Combustion Engine
IV: Interim Variance
MFCD/EXT: Modification of a Final Compliance Date and Extension of a Variance
Mod. O/A: Modification of an Order for Abatement
NOV: Notice of Violation
NOx: Oxides of Nitrogen
O/A: Order for Abatement
RATA: Relative Accuracy Test Audit
RV: Regular Variance
SOx: Oxides of Sulfur
SV: Short Variance
TBD: To be determined
VOC: Volatile Organic Compounds

Back to Agenda

BOARD MEETING DATE: October 2, 2015 AGENDA NO. 19

REPORT: Civil Filings and Civil Penalties Report

SYNOPSIS: This reports the monthly penalties from July 1 through August 31, 2015, and legal actions filed by the General Counsel's Office from July 1 through August 31, 2015. An Index of District Rules is attached with the penalty reports.

COMMITTEE: Stationary Source, September 18, 2015, Reviewed

RECOMMENDED ACTION:
Receive and file this report.

Kurt R. Wiese
General Counsel

KRW:lc

Violations	Civil Actions Filed
1	DRAKE LARSON dba MESQUITE ENTERPRISES, LLC Riverside Superior Court Case No. INS1501357; Filed: 8.6.15 (PH) P59055 R. 204 - Permit Conditions R. 444 - Open Fires
1 Violation	1 Case

Attachments
July and August 2015 Penalty Reports
Index of District Rules and Regulations

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
General Counsel's Office

July 2015 Settlement Penalty Report

Total Penalties

Civil Settlements:	**$69,200.00**
MSPAP Settlements:	**$42,525.00**
Hearing Board Settlements:	**$4,600.00**
Total Cash Settlements:	**$116,325.00**
Total SEP Value:	**$0.00**
Fiscal Year through July 2015 Cash Total:	**$116,325.00**
Fiscal Year through July 2015 SEP Value Only Total:	**$0.00**

FAC ID	COMPANY NAME	RULE NUMBER	SETTLED DATE	ATTY INT	NOTICE NO.	TOTAL SETTLEMENT
CIVIL SETTLEMENTS:						
3417	AIR PRODUCTS & CHEMICALS INC.	2012 2004	7/14/2015	NSF	P34697	$3,700.00
101656	AIR PRODUCTS AND CHEMICALS, INC.	2004, 3002(C)(1) 2004(F)(1)	7/14/2015	NSF	P57081	$10,000.00
123664	AQUAMAR INC.	1146	7/9/2015	ML	P56722	$5,500.00
141103	CITY OF ALHAMBRA/ALHAMBRA POLICE DEPARTMENT	203(B), 1470	7/7/2015	BTG	P48499	$1,500.00
800056	KINDER MORGAN LIQUIDS TERMINALS, LLC	40 CFR, 401, 3002	7/7/2015	VKT	P34682	$5,000.00
148676	MONROE SHELL, KEN GILBERT DBA	203(B)	7/28/2015	NSF	P59786	$500.00
103838	NIKRAD ENTERPRISES INC #3	461(C)(2)(B), 41960.2 201, 203(A) 203(B), 461(C)(2)(B) 41960.2 461(C)(2)(B)	7/14/2015	NSF	P60806 P60817 P60813 P59346	$8,500.00
8220	PROVIDENCE ST JOSEPH MEDICAL CENTER	PERP 2460	7/9/2015	KCM	P61714	$2,500.00
132368	QG PRINTING CORP	3002	7/22/2015	NSF	P61192	$1,000.00

FAC ID	COMPANY NAME	RULE NUMBER	SETTLED DATE	ATTY INT	NOTICE NO.	TOTAL SETTLEMENT
32840	ROYAL TRUCK BODY INC	3002	7/22/2015	SH	P52992	$500.00
89116	THERMO FISHER SCIENTIFIC	1146.2	7/22/2015	NSF	P62155	$30,000.00
158079	TREMCO INC	1113(C)(1)	7/30/2015	LBN	P60321	$500.00

TOTAL CIVIL SETTLEMENTS: $69,200.00

MSPAP SETTLEMENTS:

166213	76 LAKEWOOD, ZIBA INVESTMENT CORP	461(C)(2)(B), 41960.2,	7/14/2015		P61951	$550.00
173007	ALAMEDA FUEL	206, 461(C)(2)(B)	7/28/2015		P59320	$3,190.00
173007	ALAMEDA FUEL	461	7/28/2015		P59349	$2,060.00
178581	BNSF HIGHGROVE YARD	403	7/15/2015		P60451	$10,000.00
172994	CIRCLE K #2709496	461, 41954, 41960.2	7/15/2015		P61666	$1,170.00
178580	COMPLETE COACH WORKS	203 (A)	7/8/2015		P58097	$2,310.00
166865	CSC TEAM	461(C)(2)(B), 41960.2	7/7/2015		P60818	$1,235.00
116304	HIGHRIDGE CAR WASH	461(C)(1)(A), 41960.2	7/28/2015		P59309	$650.00

FAC ID	COMPANY NAME	RULE NUMBER	SETTLED DATE	ATTY INT	NOTICE NO.	TOTAL SETTLEMENT
178412	OPI PRODUCTS & COTY INC.	203(A), 1146.1, 1472	7/29/2015		P57475	$1,750.00
160411	PETERSON CHASE GEN ENG CONSTRUCTION	PERP 2460	7/9/2015		P59676	$375.00
8433	QUALITY FINISHING INC.	1147	7/7/2015		P61709	$750.00
75865	R D BUILDERS, INC.	461, 41954	7/14/2015		P60928	$1,250.00
117019	SHERMAN CAR, INC.	203 (B), 461	7/14/2015		P59317	$1,400.00
153058	SKANSKA USA CIVIL WEST CA DISTRICT INC.	403	7/23/2015		P62006	$2,000.00
177352	SUNBOA, INC.	203 (A)	7/16/2015		P60069	$375.00
151937	TESORO S. COAST CO, EQUILLION DLR., R&M PAC #68	203, 461, 41960.2	7/7/2015		P62431	$750.00
8935	TRAIL RITE INC.	3003	7/7/2015		P58282	$500.00
172096	TRIUMPH STRUCTURES LOS ANGELES	203 (B)	7/23/2015		P59638	$7,800.00
141769	VONS A SAFEWAY CO. #3138	201, 203	7/8/2015		P61317	$2,850.00
178589	WOODLAND HILLS 76	203 (A)	7/22/2015		P60074	$1,000.00
154943	XERXES PETROLEUM	461	7/7/2015		P61955	$560.00

FAC ID	COMPANY NAME	RULE NUMBER	SETTLED DATE	ATTY INT	NOTICE NO.	TOTAL SETTLEMENT
MSPAP SETTLEMENTS: $42,525.00						
HEARING BOARD SETTLEMENTS:						
35188	3M COMPANY Hearing Board Case No. 5970-2 Penalty for ongoing operation of the facility's equipment in noncompliance until 9.15.15.	203, 1147, 1303	7/16/2015	KCM	HRB2283	$4,000.00
72040	KTLA INC Hearing Board Case No. 6027-1 Facility will pay $1000/month until noncompliant generator is removed from service and replaced with a compliant generator.	1470	7/16/2015	RRF	HRB2282	$100.00
159199	SIC/LEED 1015 SANTA ANA LLC Hearing Board Case No. 6009-1 Beginning January 1, 2015 through period of O/A, should facility operate the emergency engine identified in settlement agreement, facility will pay $500/month.	1470	7/8/2015	TRB	HRB2281	$500.00
TOTAL HEARING BOARD SETTLEMENTS: $7,500.00						

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
General Counsel's Office

August 2015 Settlement Penalty Report

Total Penalties

Civil Settlements:	**$521,568.49**
MSPAP Settlements:	**$40,583.00**
Hearing Board Settlements:	**$4,500.00**
Total Cash Settlements:	**$566,651.49**
Total SEP Value:	**$0.00**
Fiscal Year through August 2015 Cash Total:	**$682,976.49**
Fiscal Year through August 2015 SEP Value Only Total:	**$0.00**

FAC ID	COMPANY NAME	RULE NUMBER	SETTLED DATE	ATTY INT	NOTICE NO.	TOTAL SETTLEMENT
CIVIL SETTLEMENTS:						
161814	ALLENCO ENERGY INC.	203 (B), 1176 1176 402, 41700 203 (B), 206	8/25/2015	BTG	P61504 P61503 P61502 P50699	$144,250.00
134227	ALTA III DRY CLEANERS, HO SUNG PARK	203 203	8/12/2015	NSF	P61188 P61186	$1,000.00
800022	CALNEV PIPE LINE, LLC	3002	8/25/2015	BTG	P37236	$1,500.00
22911	CARLTON FORGE WORKS	2004(F)(1), 3002(C)(1)	8/12/2015	BTG	P57644	$342,500.00
104633	CHEVRON DLR, ABBAS ESLAMI Settlement includes a suspended penalty of $1,000 that shall be paid if facility representative does not attend the District's Compliance Assistance Class for Rule 461 by December 4, 2015.	461 203(B), 461	8/21/2015	LBN	P59979 P59955	$500.00
123974	CONSOLIDATED DISPOSAL SERVICES INC	402, 41700	8/4/2015	NAS	P57737	$5,000.00
150463	MODERN MASTERS INC.	1113(C)(1)	8/14/2015	WBW	P60320	$5,418.49
150397	RF MAC DONALD CO.	203, 1146	8/13/2015	WBW	P62750	$10,000.00
161835	SANTA MONICA 405, INC. Small Claims settlement	461, 41960.2	8/12/2015	PH3	P35799	$400.00

FAC ID	COMPANY NAME	RULE NUMBER	SETTLED DATE	ATTY INT	NOTICE NO.	TOTAL SETTLEMENT
800278	SFPP, L.P. (NSR USE)	3002	8/25/2015	BTG	P37237	$5,000.00
165306	SUPERIOR CLEANERS Settlement includes a suspended penalty of $1500 to be paid if NOV is issued from June 15, 2015 through June 15, 2016 for any District rule violation and shall be inaddition to a civil penalty for the new NOV.	203 (A) 203	8/20/2015	KCM	P60961 P60968	$0.00
1/9/1966	WEBER METALS INC	3002(C)(1), 3004 3002	8/6/2015	RRF	P57144 P61448	$6,000.00

TOTAL CIVIL SETTLEMENTS: $521,568.49

MSPAP SETTLEMENTS:

149102	2000 AVE OF THE STARS/TRAMMELL CROW	203 (B)	8/5/2015		P60665	$4,500.00
7/8/2007	AMERICAN MOBILE POWER CO.	PERP 2460	8/5/2015		P61712	$450.00
156049	AMERICAS STYRENICS LLC	203(A), 203 (B)	8/26/2015		P60711	$1,650.00
162379	ANIKAT GAS & FOOD INC.	461, 41960.2	8/25/2015		P59788	$825.00
179857	APEX PARKS GROUP DBA BOOMERS	203 (A)	8/28/2015		P56730	$550.00
68073	BEVERLY CLEANERS	203 (A), 1421	8/12/2015		P59643	$1,540.00
179297	BURRO CANYON SHOOTING PARK	203 (A)	8/25/2015		P60854	$550.00

FAC ID	COMPANY NAME	RULE NUMBER	SETTLED DATE	ATTY INT	NOTICE NO.	TOTAL SETTLEMENT
139763	COMILLA CORP	461	8/25/2015		P60827	$410.00
179534	COMMERCE CONSTRUCTION CO.	403(D)(1) 403(D)(2)	8/12/2015		P56041	$3,850.00
102569	CONVENIENCE RETAILERS LLC # 2705248	461	8/14/2015		P36740	$600.00
124414	ELITE SANDBLASTING, GILBERT NUNEZ	Title 13	8/19/2015		P60134	$638.00
170704	ELMESIRY, INC. SM OIL	203	8/19/2015		P60825	$400.00
168686	EXCEL CONSTRUCTION SERVICES, INC.	PERP 2460	8/28/2015		P59640	$500.00
178597	INDEPENDENT CONSTRUCTION COMPANY	203	8/19/2015		P61190	$1,600.00
177672	KOOS CLEANERS	203	8/5/2015		P50732	$250.00
178156	KYLE NELSON	461	8/25/2015		P60915	$600.00
179091	LA FARM LP	222	8/5/2015		P60133	$100.00
148835	M & J UNION 76, RAFAAT R LUGA	203(B), 461	8/18/2015		P59785	$350.00
60284	MAYA STEEL FABRICATIONS INC	203 (A)	8/14/2015		P62487	$100.00
179197	MORLEY BUILDERS	PERP 2460	8/19/2015		P60510	$375.00
178828	NATURAL ENVIRONMENTAL PROTECTION	403	8/14/2015		P61801	$500.00
179535	OLTMANS CONSTRUCTION CO.	403(D)(1), 403(D)(2)	8/14/2015		P56042	$1,650.00

FAC ID	COMPANY NAME	RULE NUMBER	SETTLED DATE	ATTY INT	NOTICE NO.	TOTAL SETTLEMENT
151742	PALMIRA ASSOCIATES, INC.	461	8/5/2015		P60065	$1,000.00
174882	PETROL X, INC.	461, 41960.2	8/28/2015		P60073	$500.00
112907	ROSEMEAD OIL CO.	203	8/19/2015		P61662	$10,000.00
105598	SENIOR AEROSPACE SSP	203 (B)	8/25/2015		P61713	$1,600.00
86630	SIERRA VISTA	203 (A)	8/18/2015		P61554	$800.00
155559	SUNSTATE EQUIPMENT CO.	Title 13 PERP 2460	8/18/2015		P44890	$400.00
152001	TESORO S.COAST, S.KIM, MARGUERIT, #6	203(B), 461(C)(2)(B)	8/19/2015		P62427	$1,100.00
179255	THE R.J. NOBLE COMPANY	403 403	8/12/2015		P52994 P52993	$2,195.00
28330	WORLD OIL CO SS# 34	461	8/18/2015		P61254	$1,000.00

MSPAP SETTLEMENTS: $40,583.00

FAC ID	COMPANY NAME	RULE NUMBER	SETTLED DATE	ATTY INT	NOTICE NO.	TOTAL SETTLEMENT
HEARING BOARD SETTLEMENTS:						
35188	3M COMPANY Hearing Board Case No. 5970-2 Penalty for ongoing operation of the facility's equipment in noncompliance until 9.15.15.	203, 1147, 1303	8/14/2015	KCM	HRB2285	$4,000.00
159199	SIC/LEED 1015 SANTA ANA LLC Hearing Board Case No. 6009-1 Beginning January 1, 2015 through period of O/A, should facility operate the emergency engine identified in settlement agreement, facility will pay $500/month.	1470	8/4/2015	TRB	HRB2284	$500.00
TOTAL HEARING BOARD SETTLEMENTS:	**$4,500.00**					

DISTRICT RULES AND REGULATIONS INDEX
FOR JULY AND AUGUST 2015 PENALTY REPORTS

REGULATION II – PERMITS

List and Criteria Identifying Information Required of Applicants Seeking A Permit to Construct from the South Coast Air Quality Management - District *(Amended 4/10/98)*

Rule 201 Permit to Construct *(Amended 1/5/90)*
Rule 203 Permit to Operate *(Amended 1/5/90)*
Rule 206 Posting of Permit to Operate *(Amended 10/8/93) Explains how and where permits are to be displayed.*
Rule 222 Filing Requirements for Specific Emission Sources Not Requiring a Written permit Pursuant to Regulation II. *(Amended 5/19/00)*

REGULATION IV - PROHIBITIONS

Rule 401 Visible Emissions *(Amended 9/11/98)*
Rule 402 Nuisance *(Adopted 5/7/76)*
Rule 403 Fugitive Dust *(Amended 12/11/98) Pertains to solid particulate matter emitted from man-made activities.*
Rule 461 Gasoline Transfer and Dispensing *(Amended 6/15/01)*

REGULATION XI - SOURCE SPECIFIC STANDARDS

Rule 1113 Architectural Coatings *(Amended 6/20/01)*
Rule 1146 Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters *(Amended 11/17/00)*
Rule 1146.1 Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters *(Amended 5/13/94)*
Rule 1146.2 Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers *(Adopted 1/9/98)*
Rule 1147 NOx REDUCTIONS FROM MISCELLANEOUS SOURCES (9/08)
Rule 1176 Sumps and Wastewater Separators *(Amended 9/13/96)*

REGULATION XIII - NEW SOURCE REVIEW

Rule 1303 Requirements *(Amended 4/20/01)*

REGULATION XIV - TOXICS

Rule 1421 Control of Perchloroethylene Emissions from Dry Cleaning Operations *(Amended 6/13/97)*
Rule 1470 Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines
Rule 1472. Requirements for Facilities with Multiple Stationary Emergency Standby Diesel Fueled Internal Combustion Engines

REGULATION XX REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM)

Rule 2004 Requirements *(Amended 5/11/01)*
Rule 2005 New Source Review for RECLAIM *(Amended 4/20/01)*
Rule 2012 Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO_X) Emissions *(Amended 5/11/01)*

REGULATION XXX - TITLE V PERMITS

Rule 3002 Requirements *(Amended 11/14/97)*
Rule 3003 Applications *(Amended 3/16/01)*
Rule 3004 Permit Types and Content *(Amended 12/12/97)*

CALIFORNIA HEALTH AND SAFETY CODE § 41700

41700 Violation of General Limitations
41954 Compliance for Control of Gasoline Vapor Emissions
41960.2 Gasoline Vapor Recovery

CALIFORNIA CODE OF REGULATIONS

Title 13 Mobile Sources and Fuels
PERP 2460 Portable Equipment Testing Requirements

Back to Agenda

BOARD MEETING DATE: October 2, 2015 AGENDA NO. 20

REPORT: Lead Agency Projects and Environmental Documents Received By SCAQMD

SYNOPSIS: This report provides, for the Board's consideration, a listing of CEQA documents received by the SCAQMD between August 1, 2015 and August 31, 2015, and those projects for which the SCAQMD is acting as lead agency pursuant to CEQA.

COMMITTEE: Mobile Source, September 18, 2015, Reviewed

RECOMMENDED ACTION:
Receive and file.

Barry R. Wallerstein, D.Env.
Executive Officer

PF:JW:IM:JW:AK

CEQA Document Receipt and Review Logs (Attachments A and B) – Each month, the SCAQMD receives numerous CEQA documents from other public agencies on projects that could adversely affect air quality. A listing of all documents received and reviewed during the reporting period of August 1, 2015 and August 31, 2015 is included in Attachment A. A list of active projects from previous reporting periods for which SCAQMD staff is continuing to evaluate or has prepared comments is included in Attachment B.

The Intergovernmental Review function, which consists of reviewing and commenting on the adequacy of the air quality analysis in CEQA documents prepared by other lead agencies, is consistent with the Board's 1997 Environmental Justice Guiding Principles and Environmental Justice Initiative #4. Furthermore, as required by the Environmental Justice Program Enhancements for FY 2002-03 approved by the Board in September 2002, each of the attachments notes those proposed projects where the SCAQMD has been contacted regarding potential air quality-related environmental justice concerns. The SCAQMD has established an internal central contact to receive information on projects with potential air quality-related environmental justice concerns. The public

may contact the SCAQMD about projects of concern by the following means: in writing via fax, email, or standard letters; through telephone communication; as part of oral comments at SCAQMD meetings or other meetings where SCAQMD staff is present; or by submitting newspaper articles. The attachments also identify for each project the dates of the public comment period and the public hearing date, if applicable as reported at the time the CEQA document is received by the SCAQMD. Interested parties should rely on the lead agencies themselves for definitive information regarding public comment periods and hearings as these dates are occasionally modified by the lead agency.

At the January 6, 2006 Board meeting, the Board approved the Workplan for the Chairman's Clean Port Initiatives. One action item of the Chairman's Initiatives was to prepare a monthly report describing CEQA documents for projects related to goods movement and to make full use of the process to ensure the air quality impacts of such projects are thoroughly mitigated. In response to describing goods movement, CEQA documents (Attachments A and B) are organized to group projects of interest into the following categories: goods movement projects; schools; landfills and wastewater projects; airports; and general land use projects, etc. In response to the mitigation component, guidance information on mitigation measures were compiled into a series of tables relative to: off-road engines; on-road engines; harbor craft; ocean-going vessels; locomotives; fugitive dust; and greenhouse gases. These mitigation measure tables are on the CEQA webpages portion of the SCAQMD's website. Staff will continue compiling tables of mitigation measures for other emission sources, including airport ground support equipment, etc.

As resources permit, staff focuses on reviewing and preparing comments for projects: where the SCAQMD is a responsible agency; that may have significant adverse regional air quality impacts (e.g., special event centers, landfills, goods movement, etc.); that may have localized or toxic air quality impacts (e.g., warehouse and distribution centers); where environmental justice concerns have been raised; and those projects for which a lead or responsible agency has specifically requested SCAQMD review. If the SCAQMD staff provided written comments to the lead agency as noted in the column "Comment Status," there is a link to the "SCAQMD Letter" under the Project Description. In addition, if the SCAQMD staff testified at a hearing for the proposed project, a notation is provided under the "Comment Status." If there is no notation, then SCAQMD staff did not provide testimony at a hearing for the proposed project.

During the period August 1, 2015 through August 31, 2015, the SCAQMD received 65 CEQA documents. Of the total of 80 documents* listed in Attachments A and B:

- 20 comment letters were sent;
- 28 documents were reviewed, but no comments were made;
- 27 documents are currently under review;
- 1 document did not require comments (e.g., public notices, plot plans, Final Environmental Impact Reports);
- 0 documents were not reviewed; and
- 4 documents were screened without additional review.

* These statistics are from August 1, 2015 to August 31, 2015 and may not include the most recent "Comment Status" updates in Attachments A and B.

Copies of all comment letters sent to lead agencies can be found on the SCAQMD's CEQA webpage at the following internet address: http://www.aqmd.gov/home/regulations/ceqa/commenting-agency.

SCAQMD Lead Agency Projects (Attachment C) – Pursuant to CEQA, the SCAQMD periodically acts as lead agency for stationary source permit projects. Under CEQA, the lead agency is responsible for determining the type of CEQA document to be prepared if the proposal is considered to be a "project" as defined by CEQA. For example, an Environmental Impact Report (EIR) is prepared when the SCAQMD, as lead agency, finds substantial evidence that the proposed project may have significant adverse effects on the environment. Similarly, a Negative Declaration (ND) or Mitigated Negative Declaration (MND) may be prepared if the SCAQMD determines that the proposed project will not generate significant adverse environmental impacts, or the impacts can be mitigated to less than significance. The ND and MND are written statements describing the reasons why proposed projects will not have a significant adverse effect on the environment and, therefore, do not require the preparation of an EIR.

Attachment C to this report summarizes the active projects for which the SCAQMD is lead agency and is currently preparing or has prepared environmental documentation. During August, one Lead Agency project was released to the public for review. As noted in Attachment C, the SCAQMD continued working on the CEQA documents for six active projects during August.

Attachments

A. Incoming CEQA Documents Log
B. Ongoing Active Projects for Which SCAQMD Has or Will Conduct a CEQA Review
C. Active SCAQMD Lead Agency Projects

ATTACHMENT A*
INCOMING CEQA DOCUMENTS LOG
AUGUST 1, 2015 TO AUGUST 31, 2015

SCAQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Goods Movement **LAC150825-03** PCMC Chassis Support Facility Project	The proposed project consists of the development of a chassis support facility for the distribution, storage and maintenance of chassis used to move cargo containers. The project would support the Long Beach Container Terminal operations at Middle Harbor for a period of up to seven years. Comment Period: 8/25/2015 - 9/24/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	Port of Long Beach	Under review, may submit written comments
Warehouse & Distribution Centers **LAC150814-05** CT Aerojet Project	The proposed project consists of constructing approximately 181,800 square feet of warehouse and office uses on an 8.35-acre site. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/september/mndctaerojet.pdf Comment Period: 8/14/2015 - 9/14/2015 Public Hearing: N/A	Draft Mitigated Negative Declaration	City of Azusa	SCAQMD staff commented 9/15/2015
Warehouse & Distribution Centers **RVC150804-01** World Logistics Center (Highland Fairview)	The proposed project consists of a new 2,610-acre Specific Plan area envisioned to accommodate up to 40.6 million square feet of high cube industrial warehouse development and related uses. Reference SBC150707-14 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/feirworld081415.pdf http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/feirworld080715.pdf Comment Period: N/A Public Hearing: 8/17/2015	Notice of a Public Hearing	City of Moreno Valley	SCAQMD staff commented 8/14/2015 **Testified at Public Hearing**
Warehouse & Distribution Centers **RVC150807-01** General Plan Amendment No. 1152, Change of Zone No. 7873, Parcel Map No. 36962 and Plot Plan No. 25837	The proposed project consists of constructing a 555,615-square-foot warehouse/distribution center with 73 truck loading bays, 135 truck trailer parking stalls, 188 automobile parking stalls, and all other necessary and required improvements on the project site. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/pcgpa1152.pdf Comment Period: 8/7/2015 - 8/13/2015 Public Hearing: N/A	Other	County of Riverside	SCAQMD staff commented 8/21/2015

**Sorted by Land Use Type (in order of land uses most commonly associated with air quality impacts), followed by County, then date received.*

- Project has potential environmental justice concerns due to the nature and/or location of the project.

Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
AUGUST 1, 2015 TO AUGUST 31, 2015

SCAQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Warehouse & Distribution Centers **RVC150814-04** Alessandro Commerce Centre Revised Focused EIR	The proposed project consists of a Lot Line Adjustment to rearrange the existing lots of the 54-acre site based on Plot Plan 25422 with a conservation easement located on one lot and two separate industrial warehouse buildings proposed on two of the remaining three lots for a total of up to 814,630 square feet of industrial warehouse uses. The revised project will have no business park or commercial uses as were proposed under the original project. The revised project includes a minimum 200-foot wide open space/conservation easement as agreed to in a lawsuit settlement. As with the original project, the revised project will construct Brown Street to its full width along the east boundary of the site. Comment Period: 8/14/2015 - 9/30/2015 Public Hearing: N/A	Draft Environmental Impact Report	County of Riverside	Under review, may submit written comments
Warehouse & Distribution Centers **RVC150818-05** Sycamore Canyon Business Park Buildings 1 and 2	The proposed project consists of the grading, construction, and operation of a total approximately 1.4-million square feet of light industrial office and warehouse contained within two buildings on site, which will be subdivided into two parcels. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/noplluh.pdf Comment Period: 8/26/2015 - 8/18/2015 Public Hearing: 9/16/2015	Notice of Preparation	City of Riverside	SCAQMD staff commented 8/28/2015
Warehouse & Distribution Centers **RVC150818-07** Optimus Logistics Center I	The proposed project consists of constructing two high-cube warehouse buildings totaling 1,455,781 square feet, with another 10.76 acres left undeveloped for a future commercial development fronting Ramona Expressway and 9.6 acres set aside for the future Ramona Expressway on-ramp at the I-215 Freeway. Reference RVC150428-06; RVC141128-05 Comment Period: N/A Public Hearing: 8/25/2015	Notice of Availability of a Final Environmental Impact Report	City of Perris	Document reviewed - No comments
Warehouse & Distribution Centers **RVC150827-06** Planning Case P14-1033 and P14-1034 (Center Street Commerce)	The proposed project consists of constructing an approximately 308,000-square-foot warehouse and a Lot Merger to consolidate four contiguous parcels into one parcel totaling approximately 15.90 acres. Comment Period: N/A Public Hearing: N/A	Preliminary Review	City of Riverside	Under review, may submit written comments

- Project has potential environmental justice concerns due to the nature and/or location of the project.

Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
AUGUST 1, 2015 TO AUGUST 31, 2015

SCAQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Warehouse & Distribution Centers **SBC150806-07** Watson Industrial Park	The proposed project consists of a proposal to redevelop an approximately 211.9-acre property to accommodate eight industrial buildings. Comment Period: 8/8/2015 - 9/18/2015 Public Hearing: N/A	Draft Environmental Impact Report	City of Chino	Preparing written comments
Waste and Water-related **LAC150805-02** Civic Center Project	The proposed project consists of a new City Hall, a new Port Building for Harbor Department administration, a new and relocated Main Library, a redeveloped Lincoln Park, a residential developmental and a commercial mixed-use development. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/september/deirlbcivic.pdf Comment Period: 8/5/2015 - 9/17/2015 Public Hearing: N/A	Supplemental Environmental Impact Report	City of Long Beach	SCAQMD staff commented 9/16/2015
Waste and Water-related **LAC150811-02** Tesoro Refining and Marketing Company LLC	The proposed project consists of a second draft Post-Closure Permit for the East and West Retention Basins that used to process water that may have contained hazardous concentrations of benzene mixed with storm water. Comment Period: 8/12/2015 - 9/30/2015 Public Hearing: 8/27/2015	Community Notice	Department of Toxic Substances Control	Document reviewed - No comments
Waste and Water-related **LAC150820-13** Fremont High School Redevelopment Project Areas 3 and 5 Cleanup Plan for Contaminated Soil	The proposed project consists of a draft Removal Action Plan to clean up contaminated soil at Fremont High School. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/september/otherdtscfremont.pdf Comment Period: 8/20/2015 - 9/21/2015 Public Hearing: N/A	Community Notice	Department of Toxic Substances Control	SCAQMD staff commented 9/16/2015
Waste and Water-related **LAC150825-01** 651 W. Knox Street, Gardena	This document consists of a fact sheet. The proposed project consists of a Remedial Action Plan to clean up the contamination found in shallow soil vapor and groundwater at the site and migrating off-site. Comment Period: 8/31/2015 - 9/30/2015 Public Hearing: N/A	Other	Los Angeles Regional Water Quality Control Board	Under review, may submit written comments

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SCAQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Waste and Water-related **ORC150814-03** CEQA Statement of Findings (SOF) for former Production Plating Facility in Huntington Beach	The proposed project consists of a cleanup plan to treat and control chemical contamination at the former Production Plating Facility. The project includes preparation of a CEQA Statement of Findings. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/september/otherdtscsofhb.pdf	Community Notice	Department of Toxic Substances Control	SCAQMD staff commented 9/10/2015
Waste and Water-related **RVC150814-02** Stringfellow Superfund Site Project Update	This document consists of a community update and completed field work as well as activities planned for the future. Reference SBC140319-01 Comment Period: N/A Public Hearing: N/A	Community Notice	Department of Toxic Substances	Document does not require comments
Utilities **LAC150818-04** Los Angeles Regional Interoperable Communications System (LA-RICS), Land Mobile Radio (LMR) Project	The proposed project consists of a new Land Mobile Radio and would establish a communications system for emergency responders, currently not available, that would allow for an efficient and coordinated response to emergencies in Los Angeles County. Comment Period: 8/18/2015 - 9/15/2015 Public Hearing: N/A	Other	Federal Emergency Management Agency	Document reviewed - No comments
Utilities **LAC150820-07** ENV-2015-794/2050 E. Marengo St; Boyle Heights	The proposed project consists of a Conditional Use permit to allow the construction/installation of a wireless telecommunications facility on a rooftop of an existing hotel. The installation consists of 12 panel antennas and associated appurtenances divided into three sectors all to be screened by an architecturally integrated wall. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/mndenv2015794.pdf Comment Period: 8/20/2015 - 9/9/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	SCAQMD staff commented 8/28/2015
Utilities **LAC150820-08** ENV-2015-1478/ 2645 S. Nevin Ave; Southeast Los Angeles	The proposed project consists of a Conditional Use Permit to allow the installation, use and maintenance of an unmanned wireless telecommunications facility with 12 antennas and associated appurtenances on three arrays mounted on a monopalm, and equipment cabinets and generator mounted on a concrete slab. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/mndenv20154178.pdf Comment Period: 8/20/2015 - 9/9/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	SCAQMD staff commented 8/28/2015

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Utilities **LAC150820-09** ENV-2015-1493/ 2700 W. 3rd St; Westlake	The proposed project consists of the installation, use and maintenance of an unmanned wireless telecommunication facility with 12 panel antennas, 12 remote radio units, five raycaps, and two hybrid fiber cables installed behind eight-foot high screen walls on the rooftop of an existing two-story office building. Comment Period: 8/20/2015 - 9/9/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
Utilities **LAC150827-02** ENV-2015-989/ 3077 S. University Ave; South Los Angeles	The proposed project consists of the construction, use and maintenance of two new unmanned wireless telecommunications facilities on a proposed 60-foot tall monopole disguised as a pine tree with ancillary equipment placed at grade behind a wall enclosure located within the Hebrew Union College parking lot. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/september/mnd3077suniversity.pdf Comment Period: 8/27/2015 - 9/16/2015 Public Hearing: N/A	Notice of Availability of a Recirculated Draft Environmental Impact Report	City of Los Angeles	SCAQMD staff commented 9/11/2015
Utilities **LAC150827-05** College of the Canyon Wireless Telecommunications Facility	The proposed project consists of the construction of a wireless telecommunication facility in the community of Valencia. The facility will include 12 antennas with three sectors, 12 remote radio units, three ray caps, one transformer, one emergency natural gas fueled generator and two radio equipment cabinets. Comment Period: 8/25/2015 - 9/15/2015 Public Hearing: N/A	Draft Negative Declaration	City of Santa Clarita	Document reviewed - No comments
Utilities **ORC150811-05** San Diego Gas and Electric Company	The proposed project consists of rebuilding and upgrading the 138/12-kilovolt (kV) 60-megavolt ampere air-insulated Capistrano Substation, replacing a single-circuit 138-kV transmission line, relocating several transmission line segments and renovating several 12-kV distribution line segments into underground conduits and overhead on existing and new structures. Comment Period: 8/10/2015 - 9/24/2015 Public Hearing: N/A	Recirculated Draft Environmental Impact Report	California Public Utilities Commission	Under review, may submit written comments

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Utilities **ORC150812-01** Newport Banning Ranch Oil Field Abandonment	The Remedial Action Plan presents the decommissioning and abandonment of oil field operations at the Newport Banning Ranch property site in Orange County. There are 85 active and idle oil wells on the property and up to 362,000 cubic yards of materials including approximately 182,000 cubic yards of hydrocarbon contaminated soil estimated for remediation. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/september/rapbanningranch.pdf Comment Period: 8/12/2015 - 9/4/2015 Public Hearing: N/A	Other	Santa Ana Regional Water Quality Control Board (SARWQCB) and the Orange County Health Care Agency (OCHCA)	SCAQMD staff commented 9/4/2015
Utilities **ORC150820-10** South Orange County Reliability Enhancement Project	The proposed project consists of rebuilding and upgrading a portion of the transmission infrastructure in South Orange County. Reference LAC150224-01 Comment Period: 8/10/2015 - 9/24/2015 Public Hearing: N/A	Notice of Availability of a Recirculated Draft Environmental Impact Report	Public Utilities Commission	Document reviewed - No comments
Utilities **RVC150818-01** 15-CUP-09 (40 Pennsylvania)	The proposed project consists of a disguised wireless telecommunications facility that includes the installation of a 57" monoeucalyptus to include 12 panels in a 279-square-foot tower lease area. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/september/pctransmittalcell.pdf Comment Period: 8/18/2015 - 8/28/2015 Public Hearing: N/A	Other	City of Beaumont	SCAQMD staff commented 9/2/2015
Utilities **SBC150818-03** Southern California Edison West of Devers Upgrade Project	The proposed project consists of upgrading the West of Devers 220 kilovolt transmission lines between Devers, El Casco, Vista, and San Bernardino substations to increase system deliverability by at least 2,200 megawatts. The project also includes upgrading of equipment, removal and relocation of existing subtransmission and electric distribution lines. Comment Period: 8/7/2015 - 9/22/2015 Public Hearing: N/A	Draft Environmental Impact Report	California Public Utilities Commission	Document reviewed - No comments

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SCAQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Transportation **LAC150827-01** ENV-2014-3092/1515 N. Killarney Ave; Northeast Los Angeles	The proposed project consists of roadway widening to a width of less than 20 feet, a deviation to allow a continuous paved roadway of less than 20 feet from the driveway apron to the boundary of the hillside area and the construction of two new single-family homes on two adjacent, vacant lots. The project will require 326 cubic yards of export. Comment Period: 8/27/2015 - 9/16/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
Transportation **RVC150821-02** SR 79 Realignment Project	This document consists of a partially Recirculated Draft EIR. The proposed project consists of realigning approximately 18 miles of existing State Route 79 in the Cities of Hemet and San Jacinto in unincorporated Riverside County. Reference: RVC150424-01, RVC130212-02 Comment Period: 8/21/2015 - 9/10/2015 Public Hearing: N/A	Recirculated Draft Environmental Impact Report	California Department of Transportation	Under review, may submit written comments
Institutional (schools, government, etc.) **LAC150811-06** 13-15PPR/14-15CUP/68-15VAR/69-15VAR	The proposed project consists of constructing a 940-space parking structure that would be four stories and have five levels of parking. The structure would include a solar array on a section of the roof and approximately 1,900 square feet of office space on the ground floor for the Campus Safety Department. Comment Period: 8/11/2015 - 8/31/2015 Public Hearing: N/A	Draft Mitigated Negative Declaration	City of La Verne	Document reviewed - No comments
Institutional (schools, government, etc.) **ORC150820-11** Orange Coast College Vision 2020 Facilities Master Plan and Public Meeting	The proposed project consists of the construction of new academic, administrative, residential and parking facilities on the Orange Coast College campus. The project will also include renovation of two existing buildings, totaling approximately 54,000 assignable square feet (ASF) and demolition of approximately 200,900 ASF. Reference ORC140617-08 Comment Period: 8/20/2015 - 10/5/2015 Public Hearing: N/A	Recirculated Draft Program Environmental Impact Report	Coast Colleges	Under review, may submit written comments
Medical Facility **SBC150825-02** Loma Linda University Adventist Health Campus Transformation Project	The proposed project consists of revisions to the campus master plan which was reviewed in the Program EIR. The revisions would increase the new hospital from 13 stories to 17 stories and would increase the hospital footage from 732,000 square feet to 1,060,000 square feet. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/noplluh.pdf Comment Period: 8/25/2015 - 9/25/2015 Public Hearing: N/A	Notice of Preparation	City of Loma Linda	SCAQMD staff commented 8/28/2015

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Retail **LAC150820-01** ENV-2015-2741/ 13720-13722 W. Vanowen St; Van Nuys-North Sherman Oaks	The proposed project consists of demolishing an existing coin-operated carwash and the construction of a new 3,387-square-foot car wash. Comment Period: 8/20/2015 - 9/9/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
Retail **RVC150828-02** Lake Elsinore Walmart Supercenter Project	The proposed project consists of the construction and operation of a retail center including a Walmart Supercenter store and three freestanding retail/restaurant mixed-use buildings on an undeveloped 17.66-acre site. Comment Period: 8/28/2015 - 10/12/2015 Public Hearing: N/A	Draft Environmental Impact Report	City of Lake Elsinore	Under review, may submit written comments
General Land Use (residential, etc.) **LAC150805-05** Agoura Equestrian Estates	The proposed project consists of the annexation of an approximately 71-acre site into the City of Agoura Hills and subdivision of the site into 17 lots, including two permanent open space lots and 15 residential single-family lots. Reference LAC150114-01 Comment Period: N/A Public Hearing: 9/9/2015	Final Environmental Impact Report	City of Agoura Hills	Document reviewed - No comments
General Land Use (residential, etc.) **LAC150806-01** ENV-2014-2377/2635, 2639, 2641 W. Olympic Blvd & 981, 987 S. Westmoreland Ave; Wilshire	The proposed project consists of constructing a two- and three-story addition to an existing one-story commercial office/laboratory building that operates as an optical manufacturing and wholesale distribution business. Comment Period: 8/6/2015 - 8/26/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
General Land Use (residential, etc.) **LAC150806-02** ENV-2014-4227/6916-6938 N. Reseda Blvd; Reseda-West Van Nuys	The proposed project consists of the demolition of existing fast-food & auto-related structures and the construction of a new mixed-use project with 170 residential units and, 15,186 square feet of commercial space in a six-story building. There will be approximately 12,600 cubic yards of dirt cut and exported from that site to accommodate a level of subterranean parking. Comment Period: 8/6/2015 - 8/26/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments

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General Land Use (residential, etc.) **LAC150806-03** ENV-2014-2525/3115 W. Weldon Ave; Northeast Los Angeles	The proposed project consists of on-site grading of approximately 940 cubic yards of earth in conjunction with the proposed construction of a 29-foot tall, 2,095-square-foot single-family residence with attached garage and patio on an 8,180-square-foot lot. Comment Period: 8/6/2015 - 8/26/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
General Land Use (residential, etc.) **LAC150806-04** ENV-2014-3572/3076 W. Olympic Blvd; Wilshire	The proposed project consists of constructing a seven-story building with, 226 residential units, including 19 units for very low income households, and 17,768 square feet of ground floor retail. The project will require the export of 24,300 cubic yards of dirt and the removal of approximately 30 non-protected trees onsite. Comment Period: 8/6/2015 - 8/26/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
General Land Use (residential, etc.) **LAC150806-05** ENV-2015-1142/ 1422 N. Devlin Dr; Hollywood	The proposed project consists of demolishing an existing 3,118-square-foot single family dwelling; and the construction of a 3,678-square-foot single family dwelling, a 5,794-square-foot basement, a 2,110-square-foot garage, pool and six parking spaces on a 14,844-square-foot lot. Comment Period: 8/6/2015 - 8/26/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
General Land Use (residential, etc.) **LAC150806-06** ENV-2015-1603/ 1746 N. Gower St; Hollywood	The proposed project consists of a Conditional Use permit to allow the construction/installation of an unmanned wireless telecommunications facility consisting of two new equipment cabinets, 12 panel antennas, and a standby generator within a 9-foot by 13-foot area. Comment Period: 8/6/2015 - 8/26/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
General Land Use (residential, etc.) **LAC150820-02** ENV-2015-1742/ 7050 Topanga Canyon Blvd.; Canoga Park-Winnetka-Woodland Hills-West Hills	The proposed project consists of demolishing the existing structure and asphalt; and the construction of 76,500 square feet of a mix of commercial land uses. Comment Period: 8/20/2015 - 9/9/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments

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General Land Use (residential, etc.) **LAC150820-03** ENV-2014-933/4311 N. Torreon Canoga Park-Winnetka-Woodland Hills-West Hills	The proposed project consists of the construction of a new 2,059-square-foot, three-story single-family dwelling. The project includes approximately 25.6 cubic yards of dirt that will be cut and exported Comment Period: 8/20/2015 - 9/9/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
General Land Use (residential, etc.) **LAC150820-04** ENV-2015-2555/14241-14261 W. Magnolia Blvd; Van Nuys-North Sherman Oaks	The proposed project consists of the construction, use and maintenance of a three-story, residential building with 29 dwelling units on an approximately 29,982-square-foot site. Comment Period: 8/20/2015 - 9/9/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
General Land Use (residential, etc.) **LAC150820-05** ENV-2014-3621/1142-1150 N. Cahuenga Blvd; Hollywood	The proposed project consists of the demolition of a single family home and the construction of a four-story residential building that includes 29 dwelling units on an approximately 33,138-square foot area. Comment Period: 8/20/2015 - 9/9/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
General Land Use (residential, etc.) **LAC150820-06** ENV-2014-4867/ 5055 N. Caltrans Dr; Canoga Park-Winnetka-Woodland Hills-West Hills	The proposed project consists of the construction, use and maintenance of a new 1,994-square-foot, two-story single-family dwelling. Comment Period: 8/20/2015 - 9/9/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	Document reviewed - No comments
General Land Use (residential, etc.) **LAC150821-01** 254 East Union Street	The proposed project consists of the construction of a new six-story, mixed-use building with 2,625 square feet of commercial area on the ground floor and 36 residential units over three-level parking. Comment Period: N/A Public Hearing: 9/2/2015	Notice of a Public Hearing	City of Pasadena	Document reviewed - No comments

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General Land Use (residential, etc.) **LAC150827-04** Tentative Tract Map No. 73119, Planned Unit and Development No. 55, and Certificate of Compatibility No. 48	The proposed project consists of the development of 33 residential condominiums on a 2.72-acre site. Comment Period: 8/27/2015 - 9/8/2015 Public Hearing: N/A	Other	City of La Mirada	Document reviewed - No comments
General Land Use (residential, etc.) **ORC150818-02** Santiago Oaks Arizona Crossing Repair Project	The proposed project consists of the reconstruction of and improvement to an existing creek crossing structure within Santiago Oaks Regional Park. Comment Period: 8/18/2015 - 9/14/2015 Public Hearing: N/A	Draft Mitigated Negative Declaration	County of Orange	Document reviewed - No comments
General Land Use (residential, etc.) **ORC150818-06** 2001 East Dyer Road	The proposed project consists of a mixed-use development on an 18.84-acre site that is currently occupied by a vacant 366,000-square-foot industrial building. The proposed project consists of multi-family apartments within three buildings. The development is planned to surround a one-acre central park with public access. Approximately 12,900 square feet of retail space, 5,500 square feet of restaurant space, and 56,000 square feet of office space are also proposed within the project site. Comment Period: N/A Public Hearing: 8/24/2015	Notice of a Public Hearing	City of Santa Ana	Document reviewed - No comments
General Land Use (residential, etc.) **ORC150820-12** 17-Unit Laurel Residential Project	The proposed project consists of 17 detached single-family residential units on the site, to replace the existing church and associated facilities on a 2.87-acre parcel. Comment Period: 8/20/2015 - 9/9/2015 Public Hearing: N/A	Draft Mitigated Negative Declaration	City of Fullerton	Document reviewed - No comments
General Land Use (residential, etc.) **ORC150828-03** Tentative Tract Map 17665	The proposed project consists of the development of five single-family detached condominium units on a 16,060-square-foot site. Comment Period: 8/28/2015 - 9/3/2015 Public Hearing: N/A	Initial Project Consultation	City of Tustin	Document reviewed - No comments

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SCAQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
General Land Use (residential, etc.) **RVC150804-03** Planning Application Plot Plan No. 2015-164 and Tentative Tract Map No. 2015-165	The proposed project consists of the construction and operation of a 235-unit market-rate apartment complex and a gated 100-unit senior living facility on 17.2 gross acres. Comment Period: 8/4/2015 - 8/18/2015 Public Hearing: N/A	Other	City of Menifee	Document reviewed - No comments
General Land Use (residential, etc.) **RVC150811-07** Project Transmittal P14-0683-0685	The proposed project consists of 220 multi-family residential dwelling units located on approximately 16 acres of a 31-acre site. The project will include approximately 10 acres of open space areas. Comment Period: 8/11/2015 - 8/24/2015 Public Hearing: N/A	Initial Project Consultation	City of Riverside	Document reviewed - No comments
General Land Use (residential, etc.) **RVC150827-07** Planning Case P14-0045 - P14-0049 (Mission Lofts)	The proposed project consists of the construction of a 214-unit apartment complex with 146 surface parking stalls on the northerly parcel and 174 surface parking stalls on the southerly parcel of the project with approximately 1,200 square feet of retail on a 4.69 acre site. Comment Period: N/A Public Hearing: N/A	Preliminary Review	City of Riverside	Under review, may submit written comments
General Land Use (residential, etc.) **RVC150828-01** Horizon Development Project	The proposed project consists of the development of a mixed-use residential and assisted living facility on a 20-acre project site. The multi-family residential portion of the project includes 138 units two-story townhomes, a recreation building and 350 parking spaces. The senior living facility includes a single two-story building with 86 units. Comment Period: 8/28/2015 - 10/12/2015 Public Hearing: N/A	Draft Environmental Impact Report	City of Wildomar	Document reviewed - No comments
General Land Use (residential, etc.) **SBC150804-02** Appeal No. 15-001	The proposed project consists of the approval of Tentative Tract Map 18935 (TTM-14-001) for the subdivision of two adjoining parcels into 71 numbered lots and one lettered lot for the construction of 70 detached single-family residences. Comment Period: N/A Public Hearing: 8/11/2015	Notice of a Public Hearing	City of Highland	Under review, may submit written comments

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SCAQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Plans and Regulations **LAC150811-03** PLAN Hermosa: City of Hermosa Beach General Plan and Local Coastal Program Update	The proposed project consists of the adoption and implementation of PLAN Hermosa. PLAN Hermosa defines a community vision and goals, policies, and actions which establish a regulatory framework to advance the community's vision. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/nopplanhermosa.pdf Comment Period: 8/7/2015 - 9/8/2015 Public Hearing: 8/18/2015	Notice of Preparation	City of Hermosa Beach	SCAQMD staff commented 8/13/2015
Plans and Regulations **LAC150819-01** Creative Billboard and Creative Tall Wall Zoning Text and Sunset Specific Plan Amendments	The proposed project consists of amending the City of West Hollywood's Zoning Ordinance and the Sunset Specific Plan to allow for creative tall wall signs. Comment Period: 8/19/2015 - 9/10/2015 Public Hearing: N/A	Draft Negative Declaration	City of West Hollywood	Document reviewed - No comments
Plans and Regulations **RVC150805-03** General Plan Amendment No. 960	The Riverside County General Plan serves as a blueprint for the future of Riverside County. The action evaluated by the Draft EIR is the adoption of Riverside County General Plan Amendment No. 960, the General Plan Update Project, which proposes a variety of revisions to the current Riverside County General Plan to update existing policies, maps and implementing directions, and provide new information and policies where needed. Reference RVC150805-03 Comment Period: N/A Public Hearing: 9/16/2015	Final Environmental Impact Report	County of Riverside	Document reviewed - No comments
Plans and Regulations **RVC150811-04** 2015 General Plan Update and EIR	The proposed project consists of a General Plan Update that encompasses future community development plans from now until 2040. The General Plan will provide long term planning guidelines for the City's growing population and projected development. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/nop2015gppalmd.pdf Comment Period: 8/10/2015 - 9/11/2015 Public Hearing: N/A	Notice of Preparation	City of Palm Desert	SCAQMD staff commented 8/13/2015
Plans and Regulations **RVC150827-08** Planning Case P14-0683 (GPA), P14-0684 (RZ) and P14-0685 (PPE)	The proposed project consists of constructing a 220-unit apartment complex and related amenities on approximately 30.90 acres. Comment Period: 8/24/2015 - 8/24/2015 Public Hearing: N/A	Preliminary Review	City of Riverside	Document reviewed - No comments

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ATTACHMENT B*
ONGOING ACTIVE PROJECTS FOR WHICH SCAQMD HAS OR IS CONTINUING TO CONDUCT A CEQA REVIEW

SCAQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
General Land Use (residential, etc.) **RVC150702-04** GPA No. 1126, CZ No. 7811, TTM No. 36668	The proposed project consists of subdividing 65.20 acres into 200 residential lots, three water quality basins, two park sites and eleven open space lots. Comment Period: 7/1/2015 - 7/29/2015 Public Hearing: 9/1/2015	Notice of Availability of a Draft Mitigated Negative Declaration	County of Riverside	Under review, may submit written comments
Plans and Regulations **SBC150724-02** Leal Master Plan	The proposed project consists of the adoption of the Leal Master Plan, a long range-planning document that identifies the general parameters for future development. Comment Period: 7/23/2015 - 9/7/2015 Public Hearing: N/A	Draft Environmental Impact Report	City of Eastvale	Under review, may submit written comments
Warehouse & Distribution Centers **RVC150729-02** Optimus Logistics Center 2	The proposed project consists of a high-cube warehouse development consisting of two buildings totaling approximately 1,037,811 square feet on a 48.4-acre-site. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/september/deiroptimus.pdf Comment Period: 7/29/2015 - 9/11/2015 Public Hearing: N/A	Draft Environmental Impact Report	City of Perris	SCAQMD staff commented 9/11/2015
Warehouse & Distribution Centers **SBC150625-09** Sierra Lakes Commerce Center Project	The proposed project consists of the construction and operation of approximately 597,818 net square feet of "high-cube" logistics warehouse use with associated office spaces. Reference SBC150306-01 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/deirsierra.pdf Comment Period: 6/25/2015 - 8/10/2015 Public Hearing: N/A	Draft Environmental Impact Report	City of Fontana	SCAQMD staff commented 8/6/2015
Warehouse & Distribution Centers **SBC150707-14** World Logistics Center (Highland Fairview)	The proposed project consists of a new 2,610 acre Specific Plan envisioned to accommodate up to 40.6 million square feet of high-cube industrial warehouse distribution development and related uses on approximately 3,818 acres. Reference RVC150430-07 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/feirworld081415.pdf http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/feirworld080715.pdf Comment Period: N/A Public Hearing: 8/17/2015	Notice of a Public Hearing	City of Moreno Valley	SCAQMD staff commented 8/7/2015 **Testified at Public Hearing**

Sorted by Comment Status, followed by Land Use, then County, then date received.

- Project has potential environmental justice concerns due to the nature and/or location of the project.

ATTACHMENT B
ONGOING ACTIVE PROJECTS FOR WHICH SCAQMD HAS OR IS CONTINUING TO CONDUCT A CEQA REVIEW

SCAQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Warehouse & Distribution Centers **SBC150708-01** Slover Avenue Distribution Center	The proposed project consists of redeveloping a property with a 671,324-square-foot distribution warehouse structure. Reference SBC141105-01 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/deirslover.pdf Comment Period: 7/10/2015 - 8/24/2015 Public Hearing: N/A	Draft Environmental Impact Report	City of Fontana	SCAQMD staff commented 8/21/2015
Warehouse & Distribution Centers **SBC150728-03** P201500122-CF	The proposed project consists of constructing a 676,983-square-foot warehouse building on 34.54 acres. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/p201500122.pdf Comment Period: 7/28/2015 - 8/6/2015 Public Hearing: N/A	Initial Project Consultation	County of San Bernardino	SCAQMD staff commented 8/5/2015
Utilities **LAC150730-04** ENV-2015-999/ 1243 W. Innes Ave; Silver Lake-Echo Park-Elysian Valley	The proposed project consists of the installation, use and maintenance of a wireless telecommunications facility comprised of two 11-foot-high sectors, each with six panel antennas, mounted on the rooftop of an existing 34-foot tall apartment building. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/mnd2015999.pdf Comment Period: 7/30/2015 - 8/19/2015 Public Hearing: N/A	Notice of Availability of a Draft Mitigated Negative Declaration	City of Los Angeles	SCAQMD staff commented 8/5/2015
Transportation **LAC150306-02** State Route 710 North Study	The proposed project consists of improving mobility and congestion relief on State Route 710 and surrounding areas in Los Angeles County, between State Route 2 and Interstates 5, 10, 210, and 605 in east/northeast Los Angeles and the western San Gabriel Valley. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/deir710.pdf Comment Period: 3/6/2015 - 8/5/2015 Public Hearing: 4/11/2015	Draft Environmental Impact Report	California Department of Transportation	SCAQMD staff commented 8/5/2015
Transportation **LAC150707-10** Azusa Transit Oriented Development General/Plan Development Code Update and Specific Plan	The proposed project consists of two Gold Line light rail stations that will be located in the City as part of the Metro Gold Line Phase II extension. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/deirazusatod.pdf Comment Period: 7/1/2015 - 8/17/2015 Public Hearing: N/A	Draft Environmental Impact Report	City of Azusa	SCAQMD staff commented 8/7/2015

- Project has potential environmental justice concerns due to the nature and/or location of the project.

ATTACHMENT B
ONGOING ACTIVE PROJECTS FOR WHICH SCAQMD HAS OR IS CONTINUING TO CONDUCT A CEQA REVIEW

SCAQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Transportation **RVC150722-02** Interstate 15/Limonite Avenue Interchange Improvements Project	The proposed project consists of improving the existing freeway interchange at Interstate 15 and Limonite Ave. The project would replace the existing Limonite Avenue overcrossing and would widen the roadway from four lanes to six lanes. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/mndlimonitei15.pdf Comment Period: 7/20/2015 - 8/19/2015 Public Hearing: 8/6/2015	Draft Mitigated Negative Declaration	California Department of Transportation	SCAQMD staff commented 8/19/2015
General Land Use (residential, etc.) **LAC150624-04** City Market of Los Angeles	The proposed project consists of redeveloping an approximately 10-acre site in Downtown Los Angeles. The project seeks to demolish up to approximately 91,729 square feet of existing structures on the project site and redevelop the site with a mixed-use project with a maximum of 1,719,658 square feet of total developed floor area built over a 25-year period. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/deircitymarket.pdf Comment Period: 6/25/2015 - 8/10/2015 Public Hearing: N/A	Draft Environmental Impact Report	City of Los Angeles	SCAQMD staff commented 8/6/2015
General Land Use (residential, etc.) **ORC150707-12** Ebb Tide Residential Project	The proposed project consists of demolition of 73 existing mobile home spaces, three fixed structures, and related surface improvements to accommodate the development of 81 single-family detached condominium dwelling units. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/mndebb.pdf Comment Period: 7/2/2015 - 8/1/2015 Public Hearing: 8/6/2015	Notice of Availability of a Draft Mitigated Negative Declaration	City of Newport Beach	SCAQMD staff commented 8/3/2015
General Land Use (residential, etc.) **SBC150721-05** EA Review No. 14-75, SPA No. 2 to the Renaissance Specific Plan, Tentative Tract Map No. 19916	The proposed project consists of the subdivision of 5.37 gross acres of the project site into twenty vacant single-family lots, one 0.53-acre lot containing an existing single-family residence, one 1.56-acre reminder vacant lot and two new public streets. The project will also include construction of 20 single family residences. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/ttm19916.pdf Comment Period: 7/17/2015 - 8/5/2015 Public Hearing: 8/26/2015	Draft Mitigated Negative Declaration	City of Rialto	SCAQMD staff commented 8/5/2015
Plans and Regulations **LAC150730-07** Downtown El Monte Specific Plan and Master Plan	The proposed project consists of the creation of a Specific Plan and Master Plan for El Monte's Downtown District, which includes Valley Mall, a transit- and pedestrian oriented, mixed-use urban village. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2015/august/nopdownelmonte.pdf Comment Period: 7/30/2015 - 8/31/2015 Public Hearing: 7/13/2015	Notice of Preparation	City of El Monte	SCAQMD staff commented 8/5/2015

- Project has potential environmental justice concerns due to the nature and/or location of the project.

ATTACHMENT C
ACTIVE SCAQMD LEAD AGENCY PROJECTS
THROUGH AUGUST 31, 2015

PROJECT DESCRIPTION	PROPONENT	TYPE OF DOCUMENT	STATUS	CONSULTANT
The Phillips 66 (formerly ConocoPhillips) Los Angeles Refinery Ultra Low Sulfur Diesel project was originally proposed to comply with federal, state and SCAQMD requirements to limit the sulfur content of diesel fuels. Litigation against the CEQA document was filed. Ultimately, the California Supreme Court concluded that the SCAQMD had used an inappropriate baseline and directed the SCAQMD to prepare an EIR, even though the project has been built and has been in operation since 2006. The purpose of this CEQA document is to comply with the Supreme Court's direction to prepare an EIR.	Phillips 66 (formerly ConocoPhillips), Los Angeles Refinery	Environmental Impact Report (EIR)	The Notice of Preparation/ Initial Study (NOP/IS) was circulated for a 30-day public comment period on March 26, 2012 to April 26, 2012. The consultant submitted the administrative Draft EIR to SCAQMD in late July 2013. The Draft EIR was circulated for a 45-day public review and comment period from September 30, 2014 to November 13, 2014. Two comment letters were received and responses to comments are being prepared.	Environmental Audit, Inc.
Tesoro Refinery proposes to integrate the Tesoro Wilmington Operations with the Tesoro Carson Operations (former BP Refinery). The proposed project also includes modifications of storage tanks at both facilities, new interconnecting pipelines, and new electrical connections. In addition, Carson's Liquid Gas Rail Unloading facilities will be modified. The proposed project will be designed to comply with the federally mandated Tier 3 gasoline specifications and with State and local regulations mandating emission reductions.	Tesoro Refining and Marketing Company Los Angeles Refinery	Environmental Impact Report (EIR)	A previous Draft Negative Declaration was withdrawn in order for the storage tank project to be analyzed in a new CEQA document that also addresses the Tesoro-BP Refinery Integration Project. A NOP/IS was prepared for the integration project and released for a 30-day public review and comment period from September 10, 2014 to October 10, 2014. 86 comment letters were received, and responses to comments are being prepared. The consultant is preparing a Draft EIR.	Environmental Audit, Inc.
Quemetco is proposing an increase in the daily furnace feed rate.	Quemetco	Environmental Impact Report (EIR)	An Initial Study has been prepared by the consultant and is under review by SCAQMD staff.	Trinity Consultants
Chevron is proposing modifications to its Product Reliability and Optimization (PRO) Project and has applied for a modification to its permit to increase the firing duty of its Tail Gas Unit to meet current BACT requirements.	Chevron	Addendum	An Addendum to the 2008 Final EIR was prepared by the consultant. The Addendum was certified by the Executive officer on August 11, 2015.	Environmental Audit, Inc.

A shaded row indicates a new project.

ATTACHMENT C
ACTIVE SCAQMD LEAD AGENCY PROJECTS
THROUGH AUGUST 31, 2015

PROJECT DESCRIPTION	PROPONENT	TYPE OF DOCUMENT	STATUS	CONSULTANT
Breitburn Operating LP is proposing to upgrade their fluid handling systems to facilitate an increase in the amount of produced water that can be treated at the site in Sante Fe Springs.	Breitburn Operating LP	Environmental Impact Report (EIR)	The NOP/IS was released for a 30-day public review and comment period from December 4, 2014 to January 2, 2015. Two comment letters were received related to the NOP/IS and responses are being prepared. The Draft EIR was released for 45-day public review and comment period from April 15, 2015 to May 29, 2015. Two comment letters were received relative to the Draft EIR. Responses to the comments have been prepared and provided to the Department of Conservation, Division of Oil, Gas and Geothermal Resources.	Environ
DCOR LLC is proposing to install three flares on their off-shore oil Platform Esther.	DCOR LLC	Mitigated Negative Declaration	A preliminary draft Mitigated Negative Declaration has been prepared by the consultant and is under review by SCAQMD staff.	RBF Consulting
As part of AB 2588 requirements, Hixson Metal Finishing is proposing a Risk Reduction Plan at its Newport Beach facility, which would consist of on-site tank relocation, installation of filtration systems and mesh pads, construction of permanent total enclosures, and installation of covers on waste water treatment tanks.	Hixson Metal Finishing	To Be Determined	The consultant is currently analyzing the environmental impacts from the proposed project to determine the appropriate CEQA document to be prepared.	Environmental Audit, Inc.

A shaded row indicates a new project.

Back to Agenda

BOARD MEETING DATE: October 2, 2015 AGENDA NO. 21

REPORT: Rule and Control Measure Forecast

SYNOPSIS: This report highlights SCAQMD rulemaking activities and public workshops potentially scheduled for the year 2015 and portions of 2016.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:
Receive and file.

Barry R. Wallerstein, D.Env.
Executive Officer

PF:JW:AFM

219	Equipment Not Requiring a Written Permit Pursuant to Regulation XX
Rule 219 is moved from November to February 2016 to allow staff additional time to work with stakeholders.	
415	Odors from Rendering Facilities
Rule 415 is moved from October to December to allow staff additional time to work with stakeholders.	
416	Odors from Kitchen Grease Processing
Rule 416 is moved from December to February 2016 to allow staff additional time to work with stakeholders.	
1110.2	Emissions from Gaseous and Liquid-Fueled Engines
Rule 1110.2 is moved from November to December to allow staff additional time to work with stakeholders.	
1118	Control of Emissions from Refinery Flares
Rule 1118 is moved from December to April 2016 to allow staff additional time to work with stakeholders.	

1123	Refinery Process Turnarounds (MSC-03)
Rule 1123 is moved from December to March 2016 to allow staff additional time to work with stakeholders.	
1156	Further Reductions of Particulate Emissions from Cement Manufacturing Facilities
At the September Board hearing, Rule 1156 was recommended to return to the Stationary Source Committee, so this rule is moved to the November Board hearing.	
1171	
Rule 1171 is moved from December to April 2016 to allow staff additional time to work with stakeholders.	
1177	
Rule 1177 is moved from December to April 2016 to allow staff additional time to work with stakeholders.	
1466	Toxic Air Containment Emissions from Decontamination of Soil
Rule 1466 is moved from December to March 2016 to allow staff additional time to work with stakeholders.	

2015 MASTER CALENDAR

Below is a list of all rulemaking activity scheduled for the year 2015. The last four columns refer to the type of rule adoption or amendment. A more detailed description of the proposed rule adoption or amendment is located in the Attachments (A through D) under the type of rule adoption or amendment (i.e. AQMP, Toxics, Other and Climate Change).

**An asterisk indicates that the rulemaking is a potentially significant hearing.*
+This proposed rule will reduce criteria air contaminants and assist toward attainment of ambient air quality standards.
[1]Subject to Board approval
California Environmental Quality Act shall be referred to as "CEQA."
Socioeconomic Analysis shall be referred to as "Socio."

2015

November		AQMP	Toxics	Other	Climate Change
Reg. XX*+	Regional Clean Air Incentives Market (RECLAIM) (CMB-01)	√			
1113*+	Architectural Coatings (CTS-01)	√			
1156	Further Reductions of Particulate Emissions from Cement Manufacturing Facilities		√		
December					
415[1]	Odors from Rendering Facilities			√	
1110.2[1]	Emissions from Gaseous and Liquid-Fueled Engines			√	
4001*	Backstop to Ensure AQMP Emission Reduction Targets Are Met at Commercial Marine Ports (IND-01)	√			

2015 TO-BE DETERMINED

TBD		AQMP	Toxics	Other	Climate Change
222	Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation I			√	

2015 MASTER CALENDAR (continued)

2015 TO-BE DETERMINED

TBD	(continued)	AQMP	Toxics	Other	Climate Change
224	Incentives for Super-Compliant Technologies			√	
1107	Coating of Metal Parts and Products (CTS-02)			√	
1147	NOx Reductions from Miscellaneous Sources			√	
1168	Adhesive and Sealant Applications (CTS-02)	√			
1190 Series	Fleet Vehicle Requirements			√	
Reg. XIII	New Source Review			√	
1403	Asbestos Emissions from Demolition/Renovation Activities		√		
1411	Recovery or Recycling of Refrigerants from Motor Vehicle Air Conditioners		√		
1902	Transportation Conformity – Preamble			√	
2511	Credit Generation Program for Locomotive Head End Power Unit Engines			√	
2512	Credit Generation Program for Ocean-Going Vessels at Berth			√	
Reg. XXVII	Climate Change				√

2015 MASTER CALENDAR (continued)

2015 TO-BE DETERMINED

TBD	(continued)	AQMP	Toxics	Other	Climate Change
Reg. IV, IX, X, XI, XIV, XX XXX and XXXV Rules	Various rule amendments may be needed to meet the requirements of state and federal laws, implement OEHHA revised risk assessment guidance, address variance issues/ technology-forcing limits, to abate a substantial endangerment to public health or welfare, or to seek additional reductions to meet the SIP short-term measure commitment. The associated rule development or amendments include, but are not limited to, SCAQMD existing rules listed in Table 1 of the December 5, 2014 Rule and Control Measure Forecast and new or amended rules to implement the 2012 AQMP measures in Table 2 of the December 5, 2014 Rule and Control Measure Forecast. The CCP has been updated to include new measures to address toxic emissions in the basin. The CCP includes a variety of measures that will reduce exposure to air toxics from stationary, mobile, and area sources (Table 3 of the December 5, 2014 Rule and Control Measure Forecast). Rule amendments may include updates to provide consistency with CARB Statewide Air Toxic Control Measures.	√	√	√	√
---	Mobile Source Measures	√	√		
---	SIP Implementation	√			

2015 MASTER CALENDAR (continued)

2016

January		AQMP	Toxics	Other	Climate Change
1161[+]	VOC Reductions from Mold Release Agents (CTS-03)	√			
1188[+]	VOC Reductions from Vacuum Trucks (FUG-01)	√			
1304.2*	Greenfield or Existing Electrical Generating Facility Fee for Use of Offsets for Load Serving Entities			√	
1304.3*	Greenfield or Existing Electrical Generating Facility Fee for Use of Offsets for Municipalities			√	
2301[+]	Control of Emissions from New or Redevelopment Projects (EGM-01)	√			
February					
219[1]	Equipment Not Requiring a Written Permit Pursuant to Regulation II			√	
416[1]	Odors from Kitchen Grease Processing			√	
1136	Wood Products Coatings (CTS-02)			√	
1450	Control of Methylene Chloride Emissions		√		
March					
1123[+1]	Refinery Process Turnarounds (MCS-03)	√			
1402	Control of Toxic Air Contaminants from Existing Sources		√		
1430	Control of Toxic Air Contaminants from Metal Forging, Shredding, Grinding and Other Metal Processing Operations		√		
1466[1]	Toxic Air Contaminant Emissions from Decontamination of Soil		√		

2015 MASTER CALENDAR (continued)

2016

April		AQMP	Toxics	Other	Climate Change
1118[1]	Control of Emissions from Refinery Flares			√	√
1171[+1]	Solvent Cleaning Operations (CTS-02)	√			
1177[+1]	Liquefied Petroleum Gas Transfer and Dispensing (FUG-02)	√			
May					
1430.1	Control of Toxic Air Contaminants from Metal Forging, Shredding, Grinding and Other Metal Processing Operations		√		
July					
1420[+]	Emissions Standard for Lead		√		

ATTACHMENT A

AQMP Rule Activity Schedule

This attachment lists those control measures that are being developed into rules or rule amendments for Board consideration that are designed to implement the amendments to the 2012 Air Quality Management Plan.

2015

November	
1113*+	**Architectural Coatings (CTS-01)** *[Projected Emission Reduction: N/A]* Potential amendments may include a backstop provision to address additional potential VOC emission reductions from the small container exemption, high volume categories, and increased fees in Rule 314 – Fees for Architectural Coatings. Additional clarifications will also be considered to address ongoing compliance issues. *Philip Fine 909.396.2239 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
Reg. XX*+	**Regional Clean Air Incentives Market (RECLAIM) (CMB-01)** *[Projected Emission Reduction: 3-5 TPD]* Proposed amendments to Regulation XX will seek to implement additional NOx emission reductions. *Joe Cassmassi 909.396.3155 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
December	
4001*	**Backstop to Ensure AQMP Emission Reduction Targets Are Met at Commercial Marine Ports (IND-01)** *[Projected Emission Reduction: TBD]* If triggered, the proposed rule will address cost-effective NOx, SOx, and PM2.5 emission reduction strategies from port-related sources to ensure emission reductions claimed or emission targets assumed in the 2012 AQMP for the 24-hour PM2.5 standard are maintained. *Randall Pasek 909.396.2251 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

To-Be Determined 2015

To-Be Determined	
1168	**Adhesive and Sealant Applications (CTS-02)** *[Projected Emission Reduction: N/A]* Amendments to Rule 1168 will partially implement CTS-02 and reflect improvements in adhesive and sealant technology, as well as remove outdated provisions and include minor clarifications. *Philip Fine 909.396.2239 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT A

AQMP Rule Activity Schedule (continued)

To-Be Determined 2015

To-Be Determined	(continued)
Reg. IV, IX, X, XI, XIV, XIV, XX, XXX AND XXXV Rules	Various rule amendments may be needed to meet the requirements of state and federal laws, implement OEHHA revised risk assessment guidance, address variance issues/ technology-forcing limits, to abate a substantial endangerment to public health or welfare, or to seek additional reductions to meet the SIP short-term measure commitments and/or long-term emission reduction commitments. The associated rule development or amendments include, but are not limited to, SCAQMD existing rules listed in Table 1 of the December 5, 2014 Rule and Control Measure Forecast and new or amended rules to implement the 2012 AQMP measures in Table 2 of the December 5, 2014 Rule and Control Measure Forecast.
---	**Mobile Source Measures** *[Projected Emission Reduction: TBD]* The District may adopt measures to limit emissions from mobile sources, both on-road and off-road (nonroad) sources, consistent with the Board's direction to counsel at the October 2014 meeting to explore the District's regulatory authority over mobile sources. These measures may include but are not limited to, transportation control measures, operational limits, fleet rules, credit generation rules, and indirect source rules, such as an indirect source rule for railyards and/or other sources which attract mobile sources. *Henry Hogo 909.396.3184 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
---	**SIP Implementation** *[Projected Emission Reduction: TBD]* The District may adopt additional measures to carry out the State Implementation Plan for PM2.5 or ozone, or other pollutants if required, as deemed necessary to meet commitments and federal requirements. *Philip Fine 909.396.2239 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

2016

January	
1161^{+}	**VOC Reductions from Mold Release Agents (CTS-03)** *[Projected Emission Reduction: TBD]* The proposed rule will establish requirements for mold release products used in composite, fiberglass, metal and plastic manufacturing, and concrete stamping operations. *Philip Fine 909.396.2239 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT A

AQMP Rule Activity Schedule (continued)

2016

January	(continued)
1188+	**VOC Reductions from Vacuum Trucks (FUG-01)** *[Projected Emission Reduction: TBD]* The proposed rule will establish VOC emission standards and other requirements associated with the operation of vacuum trucks not covered by Rule 1149 – Storage Tank and Pipeline Cleaning and Degassing. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
2301+	**Control of Emissions from New or Redevelopment Projects (EGM-01)** *[Projected Emission Reduction: Committed to reduce 0.5 tons per day of VOC, 0.8 tons per day of NOx, and 0.5 tons per day of PM2.5 in 2023.]* The proposed rule will implement AQMP Control Measure EGM-01 – Emission Reductions from New or Redevelopment Projects. Proposed Rule 2301 will consider the co-benefits of VOC, NOx, and PM 2.5 emission reductions from the 2012 Regional Transportation Plan/Sustainable Communities Strategy and San Joaquin Valley Air Pollution Control District's Rule 9510 – Indirect Source Review to meet the "all feasible measures" requirement. *Henry Hogo 909.396.3184 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
March	
1123+1	**Refinery Process Turnarounds (MCS-03)** *[Projected Emission Reduction: N/A]* Proposed amendments, if needed, will implement Control Measure MSC-03 of the 2007 AQMP by establishing procedures that better quantify emission impacts from start-up, shutdown or turnaround activities. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
April	
1171+1	**Solvent Cleaning Operations (CTS-02)** *[Projected Emission Reduction: Some VOC]* The proposed amendments will review existing exemptions and include clarifications that may arise due to compliance verification activities or manufacturer and public input, including the sales prohibition clause. *Philip Fine 909.396.2239 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
1177+1	**Liquefied Petroleum Gas Transfer and Dispensing (FUG-02)** *[Projected Emission Reduction: N/A]* Potential amendments may be proposed to include additional sources of emissions from the dispensing and transfer of LPG. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT B

Toxics Rule Activity Schedule

This attachment lists those rules or rule amendments for Board consideration that are designed to implement the Air Toxics Control Plan.

2015

November	
1156*	**Further Reductions of Particulate Emissions from Cement Manufacturing Facilities** *[Projected Emission Reduction: N/A]* Cement manufacturing facilities currently maintain a monitoring network for hexavalent chromium. The proposed amendments will address the conditions by which the existing monitoring requirements could be reduced, particularly as they pertain to partial or full facility shutdown and any change in ownership and land use. *Tracy Goss 909.396.3106 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

To-Be Determined 2015

To-Be Determined	
1403	**Asbestos Emissions from Demolition/Renovation Activities** *[Projected Emission Reduction: N/A]* Amendments to Rule 1403 will include specific requirements when conducting asbestos-emitting demolition/renovation activities at schools, daycares, and possibly establishments that have sensitive populations. Amendments may include other provisions to improve the implementation of the rule. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
1411	**Recovery of Recycling of Refrigerants from Motor Vehicle Air Conditioners** *[Projected Emission Reduction: TBD]* The proposed amendments to Rule 1411 will align with existing Clean Air Act requirements to minimize the release of refrigerants during the servicing of motor vehicle air conditioning, incorporate other clarifications and enhance enforceability. *Philip Fine 909.396.2239 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT B

Toxics Rule Activity Schedule (continued)

To-Be Determined 2015

To-Be Determined	(continued)
Reg. IV, IX, X, XI, XIV, XIV, XX, XXX and XXXV Rules	The Clean Communities Plan has been updated to include new measures to address toxic emissions in the basin. The CCP includes a variety of measures that will reduce exposure to air toxics from stationary, mobile, and area sources (Table 3 of the December 5, 2014 Rule and Control Measure Forecast). Rule amendments may include updates to provide consistency with CARB Statewide Air Toxic Control Measures.
---	**Mobile Source Measures** *[Projected Emission Reduction: TBD]* The District may adopt measures to limit emissions from mobile sources, both on-road and off-road (nonroad) sources, consistent with the Board's direction to counsel at the October 2014 meeting to explore the District's regulatory authority over mobile sources. These measures may include but are not limited to, transportation control measures, operational limits, fleet rules, credit generation rules, and indirect source rules, such as an indirect source rule for railyards and/or other sources which attract mobile sources. *Henry Hogo 909.396.3184 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

2016

February	
1450	**Control of Methylene Chloride Emissions** *[Projected Emission Reduction: N/A]* Proposed Rule 1450 will establish requirements to control methylene chloride from furniture stripping operations and other sources. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
March	
1402	**Control of Toxic Air Contaminants from Existing Sources** *[Projected Emission Reduction: TBD]* Amendments to Rule 1402 will address revised toxic air contaminant risk guidance that has been approved by OEHHA. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
1430	**Control of Toxic Air Contaminants from Metal Forging, Shredding, Grinding and Other Metal Processing Operations** *[Projected Emission Reduction: TBD]* Proposed Rule 1430 will establish emission reduction requirements to control toxic emissions from grinding operations. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT B

Toxics Rule Activity Schedule (continued)

2016

March	(continued)
1466	**Toxic Air Contaminant Emissions from Decontamination of Soil** *[Projected Emission Reduction: TBD]* Proposed Rule 1466 would establish requirements to control toxic metal emissions from activities involving storing, handling and transporting soils with toxic metals. This was previously listed as amendments to Rule 1166. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
May	
1430.1*[1]	**Control of Toxic Air Contaminants from Grinding Operations at Forging Facilities** *[Projected Emission Reduction: TBD]* Proposed Rule 1430.1 will establish emission reduction requirements to control toxic emissions from grinding operations at forging facilities. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
July	
1420+	**Emissions Standard for Lead** *[Projected Emission Reduction: TBD]* In October 2008, U.S. EPA lowered the National Ambient Air Quality Standard (NAAQS) for lead from 1.5 to 0.15 ug/m3. Proposed Rule 1420 will establish requirements for smaller lead-emitting sources that are not covered under Rules 1420.1 and Rule 1420.2 to ensure compliance with the lead NAAQS. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT C

Other Rule Activity Schedule

This attachments lists rules or rule amendments for Board consideration that are designed to improve rule enforceability, SIP corrections, or implementing state or federal regulations.

2015

December	
415	**Odors from Animal Rendering** *[Projected Emission Reduction: TBD]* Proposed Rule 415 will provide protection to the public from odors created during animal rendering operations. The proposed rule will incorporate a preventative approach to odors by establishing Best Management Practices and will consider enclosure and odor control requirements for the receipt and processing of rendering material and wastewater. The proposed rule may also contain requirements for an Odor Mitigation Plan for continuing odor issues at facilities subject to the rule. *Tracy Goss 909.396.3106 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
1110.2[1]	**Emissions from Gaseous- and Liquid-Fueled Engines** *[Projected Emission Reduction: N/A]* The proposed amendments to Rule 1110.2 would potentially extend the compliance date for biogas used to fuel power generators at landfills and municipal waste facilities. The amendment would result in delayed emission reductions. *Joe Cassmassi 909.396.3155 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

To-Be Determined 2015

To-Be Determined	
222	**Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation I** *[Projected Emission Reduction: N/A]* Amendments to Rule 222 may be proposed to add additional equipment categories to the streamlined filing/registration program of Rule 222. *Philip Fine 909.396.2239 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
224	**Incentives for Super-Compliant Technologies** *[Projected Emission Reduction: TBD]* This proposed rule will outline strategies and requirements to incentivize the development, establishment and use of super-compliant technologies. It may be considered as a part of Rule 219 amendments or proposed as a separate incentive rule. *Philip Fine 909.396.2239 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT C

Other Rule Activity (continued)

To-Be Determined 2015

To-Be Determined	(continued)
1107	**Coating of Metal Parts and Products** *[Projected Emission Reduction: N/A]* Potential amendments to Rule 1107 would further reduce VOC emissions and improve rule clarity and enforceability. *Philip Fine 909.396.2239 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
1147	**NOx Reductions from Miscellaneous Sources** *[Projected Emission Reduction: N/A]* Amendments may be necessary to address findings of ongoing technology assessment. *Joe Cassmassi 909.396.3155 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
1190 Series	**Fleet Vehicle Requirements** *[Projected Emission Reduction: TBD]* Amendments to Rule 1190 series fleet rules may be necessary to address remaining outstanding implementation issues and in the event the court's future action requires amendments. In addition, the current fleet rules may be expanded to achieve additional air quality and air toxic benefits. *Dean Saito 909.396.2647 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
Reg. XIII	**New Source Review** *[Projected Emission Reduction: TBD]* Amendments may be necessary to address U.S. EPA comments on SIP approvability issues and/or requirements. Amendments may also be proposed for clarity and improved enforceability. *Tracy Goss 909.396.3106 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
1902	**Transportation Conformity** *[Projected Emission Reduction: TBD]* Amendments to Rule 1902 may be necessary to bring the District's Transportation Conformity rule in line with current U.S. EPA requirements. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
2511	**Credit Generation Program for Locomotive Head End Power Unit Engines** *[Projected Emission Reduction: TBD]* Develop a rule to allow generation of PM mobile source emission reduction credits from Locomotive Head End Power Unit Engines. Credits will be generated by retrofitting engines with PM controls or replacing the engines with new lower-emitting engines. *Randall Pasek 909.396.2251 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT C

Other Rule Activity (continued)

To-Be Determined 2015

To-Be Determined	(continued)
2512	**Credit Generation Program for Ocean-Going Vessels at Berth** *[Projected Emission Reduction: TBD]* Develop a rule to allow generation of PM, NOx and SOx emission reduction credits from ocean-going vessels while at berth. Credits will be generated by controlling the emissions from auxiliary engines and boilers of ships while docked. *Randall Pasek 909.396.2251 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
Reg. IV, IX, X, XI, XIV, XX, XXX AND XXXV Rules	Various rule amendments may be needed to meet the requirements of state and federal laws, implement OEHHA revised risk assessment guidance, address variance issues/ technology-forcing limits, to abate a substantial endangerment to public health or welfare, or to seek additional reductions to meet the SIP short-term measure commitment. The associated rule development or amendments include, but are not limited to, SCAQMD existing rules listed in Table 1 of the December 5, 2014 Rule and Control Measure Forecast and new or amended rules to implement the 2012 AQMP measures in Table 2 of the December 5, 2014 Rule and Control Measure Forecast. The CCP has been updated to include new measures to address toxic emissions in the basin. The CCP includes a variety of measures that will reduce exposure to air toxics from stationary, mobile, and area sources (Table 3 of the December 5, 2014 Rule and Control Measure Forecast). Rule amendments may include updates to provide consistency with CARB Statewide Air Toxic Control Measures.

ATTACHMENT C

Other Rule Activity (continued)

2016

January	
1304.2*	**Greenfield or Existing Electrical Generating Facility Fee for Use of Offsets for Load Serving Entities** *[Projected Emission Reduction: TBD]* Proposed Rule 1304.2 would provide for new, greenfield or additions at existing electrical generating facilities to access the SCAQMD's internal offset account, subject to qualifying conditions, eligibility, and the payment of a fee to invest in air quality improvement projects consistent with the AQMP. This rule is a companion to Rule 1304.1 and will provide offsets so that new, proposed and other existing electrical generating facilities can compete on a level playing field with existing generating facilities with utility steam boilers, and implement the State's plan to maintain grid reliability. *Tracy Goss 909.396.3106 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
1304.3*	**Greenfield or Existing Electrical Generating Facility Fee for Use of Offsets for Municipalities** *[Projected Emission Reduction: TBD]* Proposed Rule 1304.3 would provide for new, greenfield or additions at existing electrical generating facilities to access the SCAQMD's internal offset account, subject to qualifying conditions, eligibility, and the payment of a fee to invest in air quality improvement projects consistent with the AQMP. This rule is a companion to Rule 1304.1 and will provide offsets so that new, proposed and other existing electrical generating facilities run by local municipalities can meet the electricity reliability needs of their customers. *Tracy Goss 909.396.3106 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
February	
219	**Equipment Not Requiring a Written Permit Pursuant to Regulation II** *[Projected Emission Reduction: N/A]* Amendments to Rule 219 may be proposed to exclude equipment with de minimis emissions from the requirement to obtain written permits. *Tracy Goss 909.396.3106 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT C

Other Rule Activity (continued)

2016

February	(continued)
416	**Odors from Kitchen Grease Processing** *[Projected Emission Reduction: TBD]* Proposed Rule 416 will provide protection to the public from odors created during kitchen grease processing operations. The proposed rule will establish Best Management Practices to address odors created during delivery and processing of trap grease to affected facilities. In addition, the proposed rule will examine enclosure for wastewater treatment operations and filter cake storage. The proposed rule may also contain requirements for an Odor Mitigation Plan for continuing odor issues at facilities subject to the rule. *Tracy Goss 909.396.3106 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
1136	**Wood Products Coatings** *[Projected Emission Reduction: TBD* The proposed amendments will include clarifications that may arise due to compliance verification activities or manufacturer and public input, including the sales prohibition clause. *Philip Fine 909.396.2239 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
April	
1118	**Control of Emissions from Refinery Flares** *[Projected Emission Reduction: TBD]* Amendments may be necessary to address results of the additional analysis required by the adopting resolution for the last amendment. Amendments may also be necessary to implement an AB 32 measure. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT D
Climate Change

This attachments lists rules or rule amendments for Board consideration that are designed to implement SCAQMD's Climate Change Policy or for consistency with state or federal rules.

To-Be Determined 2015

To-Be Determined	
Reg. XXVII	**Climate Change** *[Projected Emission Reduction: TBD]* Additional protocols may be added to Rules 2701 and 2702 and amendments to existing rules may be needed to address implementation issues. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
Reg. IV, IX, X, XI, XIV, XX, XXX and XXXV Rules	Rule developments/amendments may be needed to meet the requirements of state and federal laws related to climate change air pollutants.

2016

January	
1304.2*	**Greenfield or Existing Electrical Generating Facility Fee for Use of Offsets for Load Serving Entities** *[Projected Emission Reduction: TBD]* Proposed Rule 1304.2 would provide for new, greenfield or additions at existing electrical generating facilities to access the SCAQMD's internal offset account, subject to qualifying conditions, eligibility, and the payment of a fee to invest in air quality improvement projects consistent with the AQMP. This rule is a companion to Rule 1304.1 and will provide offsets so that new, proposed and other existing electrical generating facilities can compete on a level playing field with existing generating facilities with utility steam boilers, and implement the State's plan to maintain grid reliability. *Tracy Goss 909.396.3106 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

ATTACHMENT D
Climate Change

This attachments lists rules or rule amendments for Board consideration that are designed to implement SCAQMD's Climate Change Policy or for consistency with state or federal rules.

2016

January	**(continued)**
1304.3*	**Greenfield or Existing Electrical Generating Facility Fee for Use of Offsets for Municipalities** *[Projected Emission Reduction: TBD]* Proposed Rule 1304.3 would provide for new, greenfield or additions at existing electrical generating facilities to access the SCAQMD's internal offset account, subject to qualifying conditions, eligibility, and the payment of a fee to invest in air quality improvement projects consistent with the AQMP. This rule is a companion to Rule 1304.1 and will provide offsets so that new, proposed and other existing electrical generating facilities run by local municipalities can meet the electricity reliability needs of their customers. *Tracy Goss 909.396.3106 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*
April	
1118	1118**Control of Emissions from Refinery Flares** *[Projected Emission Reduction: TBD]* Amendments may be necessary to address findings from the additional analysis required by the adopting resolution for the last amendment. Amendments may also be necessary to implement an AB 32 measure. *Susan Nakamura 909.396.3105 CEQA: MacMillan 909.396.3244 Socio: Cassmassi 909.396.3155*

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 22

PROPOSAL: Report of RFPs Scheduled for Release in October

SYNOPSIS: This report summarizes the RFPs for budgeted services over $75,000 scheduled to be released for advertisement for the month of October.

COMMITTEE: Administrative, September 11, 2015; Recommended for Approval

RECOMMENDED ACTION:
Approve the release of RFPs for the month of October.

Barry R. Wallerstein, D.Env.
Executive Officer

MBO:lg

Background
At its January 8, 2010 meeting, the Board approved a revised Procurement Policy and Procedure. Under the revised policy, RFPs for budgeted items over $75,000, which follow the Procurement Policy and Procedure, no longer require individual Board approval. However, a monthly report of all RFPs over $75,000 is included as part of the Board agenda package and the Board may, if desired, take individual action on any item. The report provides the title and synopsis of the RFP, the budgeted funds available, and the name of the Deputy Executive Officer/Asst. Deputy Executive Officer responsible for that item. Further detail including closing dates, contact information, and detailed proposal criteria will be available online at http://www.aqmd.gov/grants-bids following Board approval on October 2, 2015.

Outreach
In accordance with SCAQMD's Procurement Policy and Procedure, a public notice advertising the RFPs and inviting bids will be published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin.

Additionally, potential bidders may be notified utilizing SCAQMD's own electronic listing of certified minority vendors. Notice of the RFPs will be emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations, and placed on the Internet at SCAQMD's website (http://www.aqmd.gov) where it can be viewed by making the selection "Grants & Bids."

Proposal Evaluation
Proposals received will be evaluated by applicable diverse panels of technically-qualified individuals familiar with the subject matter of the project or equipment and may include outside public sector or academic community expertise.

Attachment
Report of RFPs Scheduled for Release on October 2, 2015

October 2, 2015 Board Meeting
Report of RFPs Scheduled for Release on October 2, 2015

(For detailed information visit SCAQMD's website at http://www.aqmd.gov/rfp/index.html following Board approval on October 2, 2015)

STANDARDIZED SERVICES

RFP #P2016-08	Issue Request for Proposals for Elevator Maintenance The current elevator maintenance contract expires on December 31, 2015. This action is to issue an RFP to solicit bids from qualified contractors to provide elevator preventative maintenance and repairs at SCAQMD headquarters. Sufficient funds are available in the FY 2015-16 Budget.	JOHNSON/3018
RFP #P2016-10	Issue Request for Proposals for HVAC and Refrigeration Service, Maintenance and Repair The current contract with KLM for HVAC and refrigeration service, maintenance and repair will expire on December 31, 2015. This action is to issue an RFP to solicit bids from qualified contractors to provide HVAC and refrigeration preventative maintenance and repairs at SCAQMD headquarters. Sufficient funds are available in the FY 2015-16 Budget.	JOHNSON/3018

Back to Agenda

BOARD MEETING DATE: October 2, 2015 AGENDA NO. 23

PROPOSAL: Status Report on Major Projects for Information Management Scheduled to Start During First Six Months of FY 2015-16

SYNOPSIS: Information Management is responsible for data systems management services in support of all SCAQMD operations. This action is to provide the monthly status report on major automation contracts and projects to be initiated by Information Management during the first six months of FY 2015-16.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:
Receive and file.

Barry R. Wallerstein, D.Env.
Executive Officer

JCM:MAH:OSM:nv

Background
Information Management (IM) provides a wide range of information systems and services in support of all SCAQMD operations. IM's primary goal is to provide automated tools and systems to implement Board-approved rules and regulations, and to improve internal efficiencies. The annual Budget specifies projects planned during the fiscal year to develop, acquire, enhance, or maintain mission-critical information systems.

Summary of Report
The attached report identifies each of the major projects/contracts or purchases that are expected to come before the Board between July 1 and December 31, 2015. Information provided for each project includes a brief project description, FY 2015-16 Budget, and the schedule associated with known major milestones (issue RFP/RFQ, execute contract, etc.).

Attachment
Information Management Major Projects for Period July 1 through December 31, 2015

ATTACHMENT
October 2, 2015 Board Meeting
Information Management Major Projects
for the Period of July 1 through December 31, 2015

Item	Brief Description	Budgeted Funds	Schedule of Board Actions	Status
OnBase Software Support	Authorize the sole source purchase of OnBase software subscription and support for one year.	$122,980	Approve Sole Source Purchase July 10, 2015	Completed
Oracle PeopleSoft Software Support	Purchase of Oracle PeopleSoft software support and maintenance for the integrated Finance/HR system.	$328,800	Approve Purchase July 10, 2015	Completed
Hearing Board and GB Rooms Audio Visual System Upgrades	Select vendor to upgrade the audio visual systems in the Hearing Board and GB rooms at the Diamond Bar headquarters.	$401,000	Release RFP April 3, 2015; Award Contract September 4, 2015	On Schedule
Website Evaluation and Improvement Contract	Award contract to _____ to evaluate SCAQMD's current website, make recommendations and implement those improvements.	TBD	November 6, 2015	On Schedule
Systems Development, Maintenance, and Support	Provide Development, Maintenance and support for: • Web Application Development • e-Commerce Implementation • CLASS System Replacement • CLASS System Enhancements • Version Upgrades	$345,000	October 2, 2015	On Schedule
Telecomm Services	Select vendor(s) to provide local, long distance, internet, cellular services, and phone equipment maintenance for a three-year period.	$750,000	Release RFP September 4, 2015; Award Contract(s) December 4, 2015	On Schedule
Prequalify Vendor List for PCs, Network Hardware, etc.	Establish list of prequalified vendors to provide customer, network, and printer hardware and software, and to purchase desktop computer hardware upgrades.	$300,000	Release RFQ November 6, 2015; Approve Vendors List and Award Purchase February 5, 2016	On Schedule

ATTACHMENT
October 2, 2015 Board Meeting
Information Management Major Projects
for the Period of July 1 through December 31, 2015

Systems Development, Maintenance, and Support	Provide Development, Maintenance and support for: • Web portal system implementation • CLASS Systems enhancements	TBD	January 8, 2016	On Schedule

Double-lined Rows - Board Agenda items current for this month

Shaded Rows - activities completed

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 25

REPORT: Administrative Committee

SYNOPSIS: The Administrative Committee met on Friday, September 11, 2015. The Committee discussed various issues detailed in the Committee report. The next Administrative Committee meeting is scheduled for Friday, October 9, 2015 at 10:00 a.m.

RECOMMENDED ACTION:
Receive and file.

Dr. William A. Burke, Chair
Administrative Committee

drw

Attendance: Attending the September 11, 2015 meeting were Committee Vice Chair Dennis Yates at SCAQMD headquarters, and Committee Chair William A. Burke, Committee Members Clark Parker, Sr. and Judith Mitchell via videoconference.

ACTION/DISCUSSION ITEMS:

1. **Board Members' Concerns:** None.

2. **Chairman's Report of Approved Travel:** The Committee written report for September included a report on recent Sacramento travel by Chairman Burke, Dr. Parker, and Councilmember Mitchell for legislative visits and CARB Board meeting attendance, respectively; Council-member Buscaino's recent travel to Avalon to meet with local elected officials and Edison representatives; Mayor Pulido's attendance at the U.S. Conference of Mayors in Baltimore, MD, in October; and Councilmember Mitchell's attendance at the UCLA Transportation Symposium in Lake Arrowhead in October.

3. **Approval of Compensation for Board Member Assistant(s)/Consultant(s):** Executive Officer Barry Wallerstein reported that Board Member Ben Benoit is requesting that Dan York be approved as his Board Consultant.

   Moved by Parker; seconded by Mitchell; unanimously approved.

4. **Report of Approved Out-of-Country Travel:** None.

5. **Amend Contracts for Emission Reduction Projects with Mitigation Fees from CPV Sentinel Project Provided Pursuant to AB 1318 (V.M. Perez):** Assistant DEO/Science & Technology Advancement Fred Minassian provided an update on projects approved for the City of Coachella from the AB 1318 mitigation funds. He reported on staff's recommendation to redirect funds from a planned CNG fueling station to an expansion of previously approved weatherization projects, given the availability of additional nearby CNG stations which were installed subsequent to the Board's January 2013 approval of the mitigation projects which are sufficient to handle the City's projected fueling demands. All of the additional weatherization will be within the City of Coachella.

   At Chairman Burke's prompting, staff reviewed the environmental justice designation of the City of Coachella pursuant to the Sentinel Power Plant mitigation funds, as well as the Board's previous approval of the City's signal synchronization project and resulting pollutant reductions therefrom. Dr. Burke noted his reservation about funding synchronization projects. Upon recognizing that CNG fueling demands are well met by the several nearby CNG stations, the Committee agreed that such developments had overtaken the merits of the proposed original station previously approved for these funds and that such funds be redirected to better use via the additional weatherization projects, with contracts to be deobligated and amended accordingly. Dr Parker, however, noted that additional alternative fuel stations are needed in Environmental Justice areas.

   Moved by Mitchell; seconded by Yates; unanimously approved.

6. **Presentation of Sensis Outreach Plan for the FY 2015-16 Check Before You Burn Program:** Media Manager Sam Atwood introduced representatives from Sensis to present their draft plan for the outreach campaign for the 2015-16 "Check Before You Burn" program. The design includes efforts to increase air alert subscriptions by 5,000 and increase awareness of the program using traditional digital and social media strategies, as well as the use of event-driven "street teams" equipped to obtain additional sign-ups. The Committee considered the cost-effectiveness of the proposal, given the proposed media allocation of $343,000. Dr. Parker recommended use of the SCAQMD's available database for email-based outreach and Dr. Wallerstein emphasized benefits of the hands-on approach offered by this campaign, as opposed to a passive email campaign.
   The Committee remarked on local network television's unwillingness to run daily PSAs related to air quality updates and alerts similar to ABC 7. Mayor Yates mentioned his preference and the convenience of being able to note the air quality status updates via the morning weather report on the local news rather than taking the time to sign-up for social media notification on no-burn days.

Mayor Yates further suggested partnering with the Lung Association and environmental justice groups in an effort to encourage local news channels to provide gratis coverage of air quality status, alerts and no-burn days, whereupon Dr. Parker advised that television stations are required to devote a certain percentage of their air time to PSAs and suggested the stations be approached to use air quality PSAs to receive credit for such allocation. Chairman Burke agreed all around, supported the Sensis proposal, and suggested an email "blast" be sent out to test the response and effectiveness of the method and database.

Moved by Parker; seconded by Yates; unanimously approved.

7. **Execute Contract for Website Evaluation and Improvements:** Assistant DEO/Information Management Chris Marlia advised this item would provide for the evaluation and enhancement of the SCAQMD's website after the first task of the contract was completed (the website evaluation), presented here to allow the Committee to better assess the performance and proposals of the bidders. The bidders would thus present their findings and entertain questions from the Committee. Before introducing the presentations, Mr. Marlia provided a brief comparison of the two proposals' costs in terms of hours and labor rate(s), previous work with SCAQMD, and general qualifications and references, whereupon presentations were made by the two contractors, as follows.

A representative of Xivic, Inc., reported on their evaluation methods, stakeholder interviews and results; their compatibility, accessibility and website usability analyses; selected results of the website audit and existing user survey, as well as the site's analytics and high-traffic pages; a review of multiple similar websites in a comparative/competitive analysis; and, suggestions for immediate and longer-term updates. Mayor Yates inquired why the proposed costs were high; however the Xivic representative indicated their rates were industry standard. Mayor Yates further commented on the complexity of the reporting documents provided by the contractor with its evaluation, and recommended the final website design reflect the knowledge and abilities of the average layperson computer user rather than be designed for use by a higher-level technical user. In response, the contractor offered to provide websites of their past work to demonstrate the effectiveness of their redesigns, whereupon Dr. Wallerstein requested that she suggest a single website which might demonstrate their work in an easily navigable site. The Meinke and LACCD sites were offered in response. Dr. Parker inquired on the search engine origin question; however the outside analytics are not available for that data. In response to Dr. Parker's follow-up question, the contractor advised that SCAQMD website searches were primarily related to the FIND database which Dr. Wallerstein indicated provides emissions and permit/equipment data relative to specific facilities by name or geographic location. Dr. Parker remarked that these approximately 3,000 searches per day should be capitalized upon in relation to the previous agenda item to enhance the email database and air alert registrations. Councilmember

Mitchell inquired how the contractor would make navigation easier on SCAQMD's website, and the contractor reported on the preference for a horizontal navigation bar for ease by the user. Chairman Burke inquired whether the contractor had previously worked with SCAQMD, and the contractor noted previous work with staff on the uploading end of the site, rather than the design/appearance/use of the website.

At Chairman Burke's inquiry, Dr. Wallerstein advised that anticipated work with Google was awaiting staff input and completion of proposed video-links and display ads. At Councilmember Mitchell's prompting, Dr. Wallerstein elaborated for the Committee that staff had contracted with Google for a three-month test period in an effort to drive users to our website via pop-up display ads and videos based on Google's search engine. Dr. Wallerstein anticipated Google's preliminary effort would be evaluated on its effectiveness and staff would come before the Committee for review and further direction on possible broader use. Chairman Burke expressed his enthusiasm for the significant exposure such an approach may provide.

Representatives of 360 Business Consulting reported on their analysis process; research results on user experience, functionality and user interaction; stakeholder interviews; competitive analysis in comparison with other municipal and regulatory sites; and, recommended action regarding design, functionality, data exchange and engagement. Mayor Yates encouraged the contractor to "keep it simple" and design the site for ease of use by the average lay person without much computer experience and, should they receive the contract, to remember the end-user customer for whom they are designing. Upon Dr. Parker's inquiry, the contractor advised the site could be streamlined and organized to make data access more efficient to limit the number of "clicks" to access documents in a relatable manner from the user's point of view; and, recommended a two-tier approach in the conversion of the website in a 30-day window. Councilmember Mitchell requested clarification on the proposed cost, whereupon the contractor advised that the initial analysis cost would be rebated back into the contract for design, if awarded; and, advised that the firm's labor rates are a good living wage, that no work is outsourced outside of the U.S., and that their larger retainer-based contracts allow them to keep their prices competitive for contracts such as this. The contractor also emphasized the firm's tenured staff and efficiencies, as well as the fact that any code written for SCAQMD remains the property of SCAQMD. Finally, Dr. Wallerstein requested the contractor provide an example of one site which would serve as a good example of their best work in comparison to SCAQMD's website, and the contractor provided the Henkelna.com site, as well as the soon-to-be launched site for the San Diego Unified School District.

At the conclusion of the presentations, Dr. Wallerstein recommended that the item be continued for one month, allowing staff to provide the above "best

example" website URLs to the Committee for review as they consider the award of this contract. Hearing no objection, Chairman Burke agreed and the item was continued to the October Administrative Committee for decision.

8. **Amend Contracts to Provide Short- and Long-Term Systems Development, Maintenance and Support Services:** Chris Marlia advised that four contractors are recommended to support the efforts of SCAQMD in regard to transportation online data entry, PeopleSoft benefits administration, online training registration, and CLASS systems web application support in the total amount of $345,000.

Moved by Yates; seconded by Parker; unanimously approved.

9. **Execute Contract for Consultant Services for SCAQMD Environmental Justice Outreach and Initiatives:** Assistant DEO/Legislative & Public Affairs Derrick Alatorre advised this item would provide assistance with community and stakeholder outreach efforts related to the Environmental Justice (EJ) Program and recently adopted EJ Community Partnership Initiative. Before introducing the presentations, Mr. Alatorre advised that out of five proposals received, two were deemed to be technically qualified; and he provided a brief comparison of the two proposals in terms of contractor qualifications, previous work experience with SCAQMD, labor rates and cost. Dr. Wallerstein noted that in staff evaluation of the proposals, the Lee Andrews Group received the better score. Upon Chairman Burke's inquiry on contract length, Dr. Wallerstein advised it is a proposed one-year contract with options for up to two one-year term renewals, for a three-year total. Thereafter, presentations were made by the two contractors, as follows.

Representatives of the Lee Andrews Group presented their schedule and timeline, beginning with the creation, charter, membership and implementation of the Partnership Advisory Council, the annual educational workshops and conference, and recognition of local EJ heroes; and they emphasized that such meetings include content that is informative and timely with respect to current events locally and in Sacramento. The contractors also remarked on their previous work with SCAQMD staff on the inaugural Cesar Chavez event, their ten-year working relationship with SCAQMD, the policy outreach and event management experience of the consultants assigned to this program, as well as their contacts within the political/labor/faith communities, all of which would ensure a valuable two-way dialog between SCAQMD and the EJ community in their outreach. Hearing no questions from the Committee, Chairman Burke commended the consultants for their work on the Cesar Chavez event and noted it was exceptionally well done.

Representatives of Estolano Lesar Perez Advisors and subcontractor Better World Group began their presentation by mentioning their depth of experience and expertise working with the environmental and EJ communities, facilitating

large groups to bring people together, and event management. In relating their public affairs experience, the consultants emphasized their media and event experience, as well as coalition building and management in advocacy involving regulatory issues around air, clean energy, climate change and clean transportation, particularly among EJ communities. The consultants attributed their past success to the importance of listening and respecting EJ communities and giving them space to share their concerns and increase capacity for understanding, rather than forced compromise, thus finding opportunities to accelerate agendas and for once-disparate agendas to overlap and merge. Councilmember Mitchell requested the consultants highlight their EJ community experience, whereupon they reported such experience both in the context of EJ clients and in advising agencies on EJ issues; advising on economic development legislation addressing EJ issues; advising CBE on an EPA Brownfield Grant project implemented in Huntington Park; advising on a complex land-use/development strategy for an environmental health coalition in National City to relocate autobody shops from impacted low-income minority residential communities to an industrial area; and an extensive social media campaign on water conservation for MWD which included EJ groups. The contractor also noted their strong credibility in the EJ communities as a result of working directly for and with those communities. In addition, the consultants had worked on climate change issues, noting some EJ communities had challenged cap-and-trade strategies, but the contractor had helped to overcome opposition and distrust, and found common ground to build coalitions. Chairman Burke thanked the consultants for their outstanding presentation.

Chairman Burke then turned the decision over to the Committee for discussion. The majority of members preferred the Lee Andrews Group. Thus, the Committee recommended the Lee Andrews Group be awarded the contract. Mayor Yates departed the meeting at 11:35 a.m. in order to Chair the LG&SBA Advisory Group, which was scheduled to meet at 11:30 a.m.

Moved by Yates; seconded by Parker; approved 3-1.

10. **Execute Contract for Community Outreach with Los Angeles Sentinel, Inc.:** Waiving the staff presentation on this item, Chairman Burke requested a motion in support of the staff recommendation, whereupon Dr. Parker moved approval, Councilmember Mitchell seconded, and it passed without opposition.

Moved by Parker; seconded by Mitchell; unanimously approved.

11. **Amend SCAQMD Conflict of Interest Code and Incorporate Code, as Amended, into the SCAQMD Administrative Code:** Principal Deputy District Counsel John Olvera introduced staff's recommendation to amend the Conflict of Interest Code, as is periodically done, to add/delete positions required to disclose financial interests and file financial disclosure via the 700 Form, as set forth in

the Political Reform Act and required by the Fair Political Practices Commision. The draft revisions were subject to a 45-day notice for public comment/request for public hearing, which would expire the following week, but was without comment or hearing request thus far. These revisions are to be incorporated into the SCAQMD Administrative Code.

Motion by Mitchell; second by Parker; unanimously approved.

12. **Execute Contract for Security Guard Services at Diamond Bar Headquarters:** Assistant DEO/Administrative & Human Resources Bill Johnson advised staff is recommending a three-year contract for armed and unarmed headquarters security guard services with Contact Security, Inc.

Motion by Parker; second by Mitchell; unanimously approved.

13. **Execute Contracts to Implement Two Major Recommendations by Abt Associates to Enhance Socioeconomic Assessments:** DEO/Planning, Rule Development & Area Sources Philip Fine reported on staff's recommendation to award two contracts to implement socioeconomic assessments for analysis of small scale/small business impacts and to review EJ analysis methodologies.

Motion by Parker; second by Mitchell; unanimously approved.

14. **Execute Contract for Enhancement of Web-Based Annual Emissions Reporting Tool:** Assistant DEO/Planning, Rule Development & Area Sources Jill Whynot recommended approval of a contract to enhance web-based annual emissions reporting, whereupon Dr. Parker inquired how this contract might relate to the previous item for website evaluation and improvement. Ms. Whynot responded that this proposed contract involves support of the FIND program, eases data entry for the web-based reporting tool, supports the AB 2488 inventory, and forms the basis for fees. Dr. Wallerstein added that these enhancements involve the data-gathering tool, used instead of paper submittals, for information that goes into the "back-end" of the website, whereas the previously considered item was for the website's "front-end."

Moved by Parker; second by Mitchell; unanimously approved.

15. **Report of RFPs Scheduled for Release in October:** Chief Financial Officer Michael O'Kelly advised that this item requests the release of two building maintenance RFPs in the month October.

Moved by Parker; seconded by Mitchell; unanimously approved.

16. **Local Government & Small Business Assistance Advisory Group Minutes for the May 15, 2015 Meeting:** Attached for information only are the draft minutes from the May 15, 2015 meeting of the Local Government & Small Business Assistance Advisory Group.

17. **Review of the October 2, 2015 Governing Board Agenda:** There were no questions from the Committee in regard to the Governing Board Agenda.

18. **Other Business:** None.

19. **Public Comment:** None.

Meeting adjourned at 11:42 a.m.

Attachment
Local Government & Small Business Assistance Advisory Group Minutes from the May 15, 2015 Meeting

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

LOCAL GOVERNMENT & SMALL BUSINESS ASSISTANCE ADVISORY GROUP
FRIDAY, MAY 15, 2015
MEETING MINUTES

MEMBERS PRESENT:
Dennis Yates, Mayor, City of Chino and LGSBA Chairman
Felipe Aguirre
Paul Avila, P.B.A. & Associates
Geoffrey Blake, Metal Finishers of Southern California/All Metals
Rita Loof, RadTech International
David Rothbart, Los Angeles County Sanitation District

MEMBERS ABSENT:
Ben Benoit, Councilman, City of Wildomar and LGSBA Vice Chairman
Todd Campbell, Clean Energy
Maria Elena Kennedy, Kennedy Communications
Lupe Ramos Watson, Councilmember, City of Indio

OTHERS PRESENT:
Bob Ulloa, Board Member Assistant *(Yates)*

SCAQMD STAFF:
Derrick J. Alatorre, Asst. Deputy Executive Officer/Public Advisor
Philip Fine, Ph.D., Deputy Executive Officer
Henry Hogo, Asst. Deputy Executive Officer
Laki Tisopulos, Ph.D., P.E., Asst. Deputy Executive Officer
Nicholas Sanchez, Senior Deputy District Counsel
Naveen Berry, Planning & Rules Manager
Rudy Eden, Senior Enforcement Manager
Elaine-Joy Hills, AQ Inspector II
Lori Langrell, Secretary
Brian Sinajon, AQ Chemist

Agenda Item #1 - Call to Order/Opening Remarks
Mayor Dennis Yates called the meeting to order at 1:30 p.m.

Agenda Item #2 – Approval of March 13, 2015 Meeting Minutes/Review of Follow-Up/Action Items
Chair Yates called for approval of the March 13, 2015 meeting minutes. The Minutes were approved unanimously.

Agenda Item #2 –Review of Follow-Up/Action Items

Mr. Derrick Alatorre advised there were two follow-up items from the March meeting. The first was a request for the health effects studies article mentioned by Dr. Phil Fine at the March meeting, which was emailed to the Advisory Group members on May 6, 2015. Mr. Alatorre further advised regarding the request for information pertaining to the body shops assisted in the Small Business Assistance report, where none of the body shops in the report had issues with Rule 1147.

Agenda Item #3 – Review of ASTM International Meeting

Mr. Brian Sinajon provided a review of the activities and discussions held at the American Society for Testing and Materials (ASTM) International Meeting held in Canada.

Mr. Paul Avila asked if the 98 non-profit members are all chemists from different segments and disciplines, and if they focus on one issue, until everyone agrees. Mr. Sinajon replied they all know what issues they are talking about in their discussions.

Ms. Rita Loof asked why the district has the chairmanship of this committee if this is an industry group and that it's a backroom door policymaking through ASTM. Mr. Sinajon indicated as chairman he is only there to facilitate discussions, gather people for meetings, ensure correspondences are sent out to all members, it's purely administrative, with only one vote like everyone else, and it's equal.

Mr. Avila inquired regarding demographics of the members, are they young, old, or a mix. Mr. Sinajon advised it is a very mixed group, experienced to younger generation members with new perspectives, and history and wisdom received from others in the group.

Ms. Loof commented on the association's decision regarding a method encompassed in SCAQMD Rule1130. The method in question was approved by the District after 20 years of effort and input. Ms. Loof objects to any further revisions made to the agreed upon method, especially if prompted through administrative changes.

Mr. Geoff Blake asked if this affects Method 304. Mr. Sinajon indicated no.

Mr. David Rothbart asked if ASTM is a separate entity with volunteers only. Mr. Sinajon indicated yes, and administrative oversight is there.

Mr. Avila asked if membership is for chemists only. Mr. Sinajon replied no, anyone can join.

Agenda Item #4 – Rule 148.1 – Oil and Gas Production Wells

Dr. Phil Fine provided an update on proposed amended rule that seeks to address potential odor and associated exposure concerns from the operation and maintenance of oil and gas production wells.

Mr. Avila asked for an example of what would be considered sensitive receptors. Dr. Fine indicated sensitive receptors include children, senior citizens, people with compromised immune systems, and those with respiratory issues. Anywhere there is a potential for a sensitive receptor, for example schools, nursing homes, and hospitals.

Mr. Blake inquired what constitutes a confirmed odor event. Dr. Fine indicated once the complaint is received, the inspector must visit, confirm the odor, and track it to where it came from.

Mr. Avila asked if this rule is specific to oil and gas only, or would this apply to the Huy Fong Sriracha plant. Dr. Fine indicated yes this applies to oil and gas only, not applicable to Sriracha.

Mr. Blake asked if this rule applies to stripper wells, for example, those you see in a backyard, and how many stripper wells are there, approximately. Dr. Fine replied yes it applies, there are in the 300-400 range, and as far as complaints, maybe 3 to 4.

Ms. Loof asked if the rule will contain what a confirmed event is; Dr. Fine replied yes.

Mr. Avila asked Dr. Laki Tisopulos if the machines were good enough in the older wells that are pushing 100 years old, if they were to burst and contaminate the soil, would the machines be able to tell. Dr. Tisopulos indicated it is still premature technology, but the technology is improving so two to three years from now, we may be able to have sensors with that kind of sensitivity.

Mr. Rothbart inquired if having sensors is good for verifying problems, what if the public wants their own sensor. Dr. Tisopulos replied in a scenario like this that the Board felt compelled to authorize the creation of this new testing center to start testing the sensors, to evaluate the accuracy and reliability, and communicate the results back to the community the effectiveness of the sensors. Mr. Rothbart asked if a group of community members may have interest in finding some type of result that they want, would there be some kind of QA program or something that would screen out data that the district would not be in control of. Dr. Tisopulos indicated that can happen; however, we hope that the sensors are tested and be able to interpret the results. For example, if a particular sensor has an accuracy level of plus or minus 50% and the message out there says that the sensors indicate your emissions are 10% above the limits, you can say that the accuracy level is plus or minus 50%.

Mr. William Thompson indicated if the district relied on third party data to take the compliance action, which would be a negative. We would go to the lab first before any action is taken in that regard.

Agenda Item #5 – Further Emission Reduction from Mobile Sources Needed to Attain Federal Air Quality Standards

Mr. Henry Hogo presented an overview of the mobile source contribution and needed emission reductions in order to attain the federal ozone air quality standards in 2023 and 2031.

Mr. Rothbart asked as far as the 2032 inventory, is that what is projected after the rules have been in place to reduce emissions. Mr. Hogo replied yes. Mr. Rothbart asked if the source 2012 AQMP inventory just estimates what the inventory will be after we get the reductions we need, which is the 2032 inventory. Mr. Hogo replied it is the baseline emissions inventory based on projections from 2008 during the 2012 AQMP process, 2008 to 2032, taking into account growth in the region, as well as any regulations in the books today and emission reductions associated with those regulations. It's not meeting the ozone standard, it's just in the baseline.

Ms. Loof commented, that staff should consider the relationship of manufacturers moving out and goods movement increasing. Mr. Hogo responded that there are various regulatory activities that causes manufacturers to leave or come back, not only air regulations, but also land use permitting. Whatever those factors are, they are taking into account the economic projects developed by Southern California Association of Governments (SCAG) for various industries, so we have that incorporated.

Mr. Avila asked whether the State of California has an economic department that would look at the scenario of what Ms. Loof inquired, for instance what are the financial impacts of manufacturing companies leaving this area because of regulatory issues. Mr. Alatorre replied that it might be the Department of Finance that studies that, they look at the State's finance, laws that may impact government finances, and tax revenues and impacts. Mr. Avila asked if there is an interaction between the District and the State's Department of Finance, and if there is any information exchanged. Mr. Alatorre responded he was not aware of any. Mr. Hogo indicated they audit the Carl Moyer program, and all our State funded programs are audited by Department of Finance, which is the only interaction we are aware of.

Mr. Rothbart asked what further needed to be done to reach attainment as it is unlikely that everyone would switch to electric vehicles simply because of a USEPA dictate. Chair Yates indicated we are looking into seeking control of mobile polluters, if we can't regulate them, we need credit towards our goals.

Ms. Loof inquired about what the manufacturing/industrial source entailed, if it included all stationary sources in the basin. Mr. Hogo replied no and that it was a separate category and referred to the 2012 AQMP, Appendix 3, emissions are broken down by various source categories.

Mr. Avila asked if there are different measurements for new trucks built, say 2015, versus old trucks. Mr. Hogo indicated there are different emissions standards.

Mr. Blake inquired if the trucks were running on natural gas instead of diesel, what would the emissions be. Mr. Hogo indicated the number would still be the same because today's natural gas engine meets the current emission standards.

Mr. Rothbart asked what impact it has that EPA takes more time to implement a standard than we have to meet our clean air requirements. Mr. Hogo replied we would have adopted this standard four years ago. Sixteen years from now is 2031, which we are already behind, but if it's adopted early enough, and we can offer incentives, we can accelerate having 0.2 gram engines. We need to have a full package, not only the standards, but also incentive funding to help accelerate that.

Ms. Loof asked what is the time line for the Rule 9510 recommendations to the Board. Mr. Hogo indicated they are not developed yet, perhaps the 2016 AQMP will contain control measures, but in the AQMP process we may have early action items that could occur in parallel.

Mr. Avila inquired if a lot of the big trucks were purchased out of State, except for the price, and maybe sales tax, why are they purchased in Texas or Arizona. Mr. Hogo replied the number of trucks that operate in California is approximately one million, and over a half are purchased out of State. Many times the companies purchase their fleets directly from the factory.

Agenda Item #6 –Monthly Report on Small Business Assistance Activities
No comments.

Agenda Item #7 - Other Business
No comments.

Agenda Item #7 - Public Comment
No comments.

Adjournment
The meeting adjourned at 2:34 p.m.

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 26

REPORT: Mobile Source Committee

SYNOPSIS: The Mobile Source Committee met on Friday, September 18, 2015. Following is a summary of that meeting. The next Mobile Source Committee meeting is scheduled for Friday, October 16, 2015 at 9:00 a.m.

RECOMMENDED ACTION:
Receive and file.

Dr. Clark E. Parker, Chair
Mobile Source Committee

PMF:AFM

Attendance
Committee Chair Dr. Clark E. Parker, Councilmember Judith Mitchell, and Mayor Ben Benoit attended at SCAQMD headquarters. Supervisor Shawn Nelson attended via videoconference. Dr. Parker called the meeting to order at 9:00 a.m.

The following items were presented:

INFORMATIONAL ITEMS:

1) Energy Outlook White Paper

Jill Whynot, Assistant Deputy Executive Officer for Planning, Rule Development and Area Sources, provided a briefing on the draft Energy Outlook White Paper, which is one of ten white papers has been prepared for the 2016 AQMP effort. Dr. Parker suggested that the chart regarding energy flows in California be simplified, and Councilmember Mitchell noted that the chart was developed by CEC and therefore may not be easily modified. Dr. Parker asked if SB 350, which was intended to implement the Governor's 50/50/50 plan and was adopted by the legislature without the portion related to decrease in petroleum use, was reflected in the White Paper. Staff replied that the white paper scenario notes the Governor's

50/50/50 goals and does not reference the SB 350 legislation. Staff will now update the scenario analysis to include the latest provisions of the legislation in the next draft of the paper. Dr. Barry Wallerstein, Executive Officer, commented that the reductions in NOx that would occur from the 50/50/50 greenhouse gas reduction strategies are desperately needed for meeting air quality standards, especially with the anticipated lowering of the federal ozone standard. Dr. Parker commented that fuels and cars have become cleaner over time, which helps air quality and fuel economy.

2) 2016 AQMP Development Update

Dr. Philip M. Fine, Deputy Executive Officer (DEO) for Planning, Rule Development and Area Sources, provided an update on the 2016 AQMP development to address air quality standards and some of the key challenges to meet attainment. Dr. Fine described a 'glidepath' approach (i.e., that becomes more conservative the closer we get to federal deadlines) whereby emission reductions occur over time, so we will be able to meet these targets using a unified, efficient plan. Dr. Fine added that there is a fact sheet available that describes the integrated strategies and measures to meet the National Ambient Air Quality Standards (NAAQS). Dr. Wallerstein commented that this is a unique plan that will require the federal government to take action on issues such as tax credits and targeted programs for the Basin. The plan will require more political fortitude, commitment and money than has been assembled before, and staff will seek the Board's guidance on what to seek from the federal government beyond regulatory action.

Dr. Parker stated that the model used to develop projections for the number of cars and sources of emissions is mandated by state law. He asked whether the model takes into consideration the efficiencies that are projected from cleaner cars, trucks, locomotives and how that would relate to our region. Dr. Fine responded that anything that is in regulatory form and that is enforceable is included in the baseline projections. Mr. Henry Hogo, Assistant DEO, Science and Technology Advancement added that we also recognize actions, such as the Carl Moyer program that have reductions. Dr. Parker asked whether the SCAQMD receives credit for the additional amount of emission reductions from cleaner vehicles, relative to other regions. Mr. Hogo responded that CARB has the primary authority on the fuel efficiency of mobile sources, similar to U.S. EPA's greenhouse gas regulations. Dr. Wallerstein added that both CARB and the SCAQMD take credit for actions that are documented, and which will be implemented. This is done to ensure that a local region does not include outrageous assumptions in the analysis in order to avoid necessary controls. Dr. Parker concluded that the SCAQMD should continue to work with CARB.

Supervisor Shawn Nelson joined the meeting via videoconference at 9:33a.m.

WRITTEN REPORTS:

3) Rule 2202 Activity Report
The report was received as submitted.

4) Monthly Report on Environmental Justice Initiatives – CEQA Document Commenting Update
The report was received as submitted.

OTHER BUSINESS:
None.

PUBLIC COMMENT:
None.

The meeting was adjourned at 9:50 a.m.

Attachment
Attendance Roster

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
MOBILE SOURCE COMMITTEE MEETING
Attendance Roster – September 18, 2015

NAME		AFFILIATION
Dr. Clark E. Parker (via Videoconference)		SCAQMD Governing Board
Mayor Ben Benoit		SCAQMD Governing Board
Councilmember Judith Mitchell		SCAQMD Governing Board
Board Consultant Mark Abramowitz		SCAQMD Governing Board (Lyou)
Board Consultant Chung Liu		SCAQMD Governing Board (Mitchell)
Board Consultant Debra Mendelsohn		SCAQMD Governing Board (Antonovich)
Board Consultant Ruthanne Taylor-Berger		SCAQMD Governing Board (Benoit)
Board Consultant Andrew Silva		SCAQMD Governing Board (Rutherford)
Curtis Coleman		SoCal Air Quality Alliance
Sue Gornick		Western States Petroleum Association
Lisa Rothbart		Orange County Sanitation District
Tara Tisopulos		Orange County Transportation Authority
Barry Wallerstein		SCAQMD Staff
Philip Fine		SCAQMD Staff
Jill Whynot		SCAQMD Staff
Joe Cassmassi		SCAQMD Staff
Barbara Baird		SCAQMD Staff
Matt Miyasato		SCAQMD Staff
Chris Marlia		SCAQMD Staff
Laki Tisopulos		SCAQMD Staff
Sam Atwood		SCAQMD Staff
Carol Gomez		SCAQMD Staff

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 27

REPORT: Stationary Source Committee

SYNOPSIS: The Stationary Source Committee met Friday, September 18, 2015. Following is a summary of that meeting.

RECOMMENDED ACTION:
Receive and file.

Dennis Yates, Chair
Stationary Source Committee

MN:am

Attendance
The meeting began at 10:30 a.m. In attendance at SCAQMD Headquarters were Committee Chair Dennis Yates and Committee Members Judith Mitchell and Ben Benoit. Committee Member Shawn Nelson attended via videoconference. Absent was Committee Member Dr. Joseph Lyou.

INFORMATIONAL ITEMS

1. **Proposed Amendments to Rule 1156 – Further Reductions of Particulate Emissions from Cement Manufacturing Facilities**
   Ms. Jill Whynot, Assistant Deputy Executive Officer of Planning, Rule Development and Area Sources, provided an update on PAR 1156 – Further Reductions of Particulate Emissions from Cement Manufacturing Facilities, including background information, key proposed amendments, and staff responses to issues raised by Riverside Cement (RC) at the September Board meeting.

   Mr. Michael Meinen (from RC) provided handouts (Board Resolution from the March 2009 Rule 1156 amendment, annotated pages from the staff report, aerial and other photos, three tables of data, and some proposed rule language related to facility closure and monitoring requirements). He expressed concern that the facility may not be able to comply with the proposed lowered hexavalent chromium (Cr^{+6}) fence-line threshold.

Mr. Howard Valentine (with AECOM, consultant for RC) discussed results of some duplicate sampling analysis, a proposal for setting the background level to be used for RC, and commented that a 1975 study used by OEHHA to determine the cancer potency value for hexavalent chromium was not based on cement workers.

Mr. David Perkins (from RC) asked for higher background and fence-line levels based on information provided in their handout and described the basis for their suggestion for revised rule language related to facility closure.

Ms. Judith Praitis (attorney working for RC) requested a delay in rule development so that they can validate background levels and the fence-line standard proposed by SCAQMD staff. She stated that some parts of the rule are not clear, and some requirements are subjective because they include Executive Officer discretion.

Mr. Jay Grady (Cal Portland Cement) stated support for PAR 1156, and suggested a revision to the rule for facilities to use the past year's data (instead of an additional 12 months of monitoring) as the basis for reducing the number of monitoring stations. He is supportive, in concept, of the RC proposal for post closure requirements.

Councilmember Mitchell asked about the laboratory data and the suggestion for setting the background and fence-line limits in the RC handout. Staff indicated that they need time to review the materials and the industry proposal, since they just received it, but initial reactions are that it is not appropriate to use the facility monitoring data for determining background. Dr. Phil Fine, Deputy Executive Officer for Planning, Rule Development and Area Sources, and Ms. Whynot explained the efforts that staff conducted with RC to split samples and do side-by-side monitoring. These results showed very good agreement with no bias between samplers, but the inter-laboratory differences were being provided by the facilities for the first time. Dr. Fine mentioned that laboratory differences can be investigated and likely corrected, and that using SCAQMD's lab continues to be an option for the facilities.

Ms. Whynot added that RC could clean up the facility before the sale of the property to reduce the time that monitoring would be required. Staff is considering adding rule language that would enable a facility to appeal a decision related to facility closure and monitoring to the SCAQMD Hearing Board.

Mayor Benoit asked staff about Cal Portland's recommendation, which staff will evaluate.
Mayor Yates asked what other agencies would be involved in cleanup efforts. He expressed concern about job loss for this industry and the need for SCAQMD to avoid obstructing re-development efforts. However, public health is the number

one priority. Dr. Wallerstein, SCAQMD Executive Officer, responded that DTSC is one agency with oversight. Dr. Wallerstein reiterated the need to protect public health from dust containing hexavalent chromium leaving the property. Mayor Yates encouraged staff to continue working with the industry before the November Board meeting.

2. **Status Update on Proposed Amended Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities**

   Ms. Susan Nakamura, Director of Strategic Initiatives in Planning, Rule Development and Area Sources, provided an update on recent revisions to Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities based on comments received from the Battery Council International (BCI) and Senior Aerospace. Mayor Yates mentioned that he did not recall Senior Aerospace's participation in the rule development process. SCAQMD staff explained that this facility currently melts four times the rule applicability threshold and wants to increase their current lead throughput by a factor of five. Councilmember Mitchell asked what specifically are BCI's concerns regarding national implications of the proposed rule. Ms. Nakamura responded that it is staff's understanding that BCI is concerned that other air agencies throughout the nation may adopt similar rules and that there may be implications for the lead National Ambient Air Quality Standard. Mayor Benoit thanked staff for addressing many issues raised by stakeholders.

3. **Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines**

   Mr. Joe Cassmassi, Planning and Rules Director of the Planning, Rule Development and Area Sources, presented the Committee a brief summary of the proposal to provide biogas engines additional time to meet the emissions limit for Rule 1110.2. The focus of his presentation and later discussion was on a new provision to the rule to address U.S. EPA's new breakdown policy called for in its recent 2014 NOx SIP call. While not specifically directed at SCAQMD rules, U.S. EPA was targeting breakdowns that result in significant emissions releases calling on agencies to establish criteria and rules to minimize the number of occurrences of these events as well as the amount of emissions released. Mr. Cassmassi received notice from U.S. EPA Region IX that the breakdown provisions in a prior submittal of Rule 1110.2 which was being reviewed for inclusion in the SIP would not be approved given the new federal regulations. Staff worked with U.S. EPA to craft a response to the existing breakdown language. The proposal would provide three incidences per quarter where excessive exceedances of the emissions limit would not be considered in violation of the rule, provided the breakdowns were associated with equipment or software malfunctions that were verifiable. The language provided a reset after each quarter resulting in a possible 12 breakdowns without violations in a calendar year.

At the Committee meeting, stakeholders commented that the SCAQMD proposal was very fair but were split on supporting the proposal or an alternate provided by SCAP and Los Angeles County Sanitation Districts representative David Rothbart. Mr. Rothbart recommended that all exceedances resulting from a breakdown be a violation and then sources could rely on SCAQMD Rule 430 to provide time to remedy the breakdown. Staff responded this action would leave the sources open to U.S. EPA actions and possible citizen suits. Mr. Dan McGivney of SoCal Gas concurred with Mr. Rothbart but added that the biogas portion of the rule should go forward, essentially bifurcating the different portions of the rule being submitted to U.S. EPA. Mr. Cassmassi pointed out that staff had received written notification of the potential rule disapproval by U.S. EPA and that he was reluctant to bring an amendment of Rule 1110.2 to the Board that was unapprovable at the federal level.

Ms. Lisa Rothbart of Orange County Sanitation District requested that their organization be given additional time for compliance since they were also part of the demonstration program. Staff said that they would consider this option. Ms. Suparna Chakladar of Fortistar requested that their equipment be given extensions to comply with the rule emissions limit until 2024 when the power purchase agreements (PPA) terminate and they can renegotiate with the landfill operators. Mr. Cassmassi pointed out that the mitigation fee option proposed was adjusted to a quarterly basis specifically for Fortistar in effect to minimize their fiscal exposure while controls were being installed. Questions were posed by Committee Members as to when Fortistar entered into the PPA and if they were aware of the proposed rule amendments. Mr. Cassmassi responded that staff had been in discussions with Fortistar over the rule compliance issues for several years. Supervisor Nelson commented that he was concerned both about the costs that Fortistar would incur and the impact of not using the renewable source of energy if Fortisar was compelled to shut down.

WRITTEN REPORTS

All written reports were acknowledged by the Committee.

PUBLIC COMMENTS

There were no Public Comments.

The next Stationary Source Committee meeting is scheduled for October 16, 2015, and the meeting was adjourned at 12:20 p.m.

Attachments
Attendance Roster

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
STATIONARY SOURCE COMMITTEE
September 18, 2015
ATTENDANCE ROSTER (Voluntary)

NAME		AFFILIATION
Mayor Dennis Yates		SCAQMD Governing Board Member
Councilmember Judith Mitchell		SCAQMD Governing Board Member
Mayor Ben Benoit		SCAQMD Governing Board Member
Supervisor Shawn Nelson (Videoconference)		SCAQMD Governing Board Member
Board Consultant Mark Abramowitz		SCAQMD Governing Board (Lyou)
Board Consultant Andrew Silva		SCAQMD Governing Board (Rutherford)
Barry Wallerstein		SCAQMD staff
Barbara Baird		SCAQMD staff
Kurt Wiese		SCAQMD staff
Philip Fine		SCAQMD staff
Mohsen Nazemi		SCAQMD staff
Susan Nakamura		SCAQMD staff
Joe Cassmassi		SCAQMD staff
Cher Snyder		SCAQMD staff
Amir Dejbakhsh		SCAQMD staff
Bill Wong		SCAQMD staff
Rudy Eden		SCAQMD staff
Sam Atwood		SCAQMD staff
Bayron Gilchrist		SCAQMD staff
Bill Lamarr		California Small Business Alliance
Tiffany Tran		Inland Empire Utilities Agency
Pietro Cambiaso		Inland Empire Utilities Agency
Chuck Tobin		Industrial Battery Engineering

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
STATIONARY SOURCE COMMITTEE
September 18, 2015
ATTENDANCE ROSTER (Voluntary)

Leizl Lontok		Los Angeles Department of Water & Power
Peter Whittingham		Curt Pringle & Associates
Clayton Miller		Construction Industry Air Quality Coalition
Rita Loof		Radtech
Melissa Estrada-Maravilla		City of Corona, DWP

Back to Agenda

BOARD MEETING DATE: October 2, 2015 AGENDA NO. 28

REPORT: Special Meeting of the Stationary Source Committee

SYNOPSIS: The Stationary Source Committee met Wednesday, September 23, 2015. Following is a summary of that meeting.

RECOMMENDED ACTION:
Receive and file.

Dennis Yates, Chair
Stationary Source Committee

MN:am

Attendance
The meeting began at 1:00 p.m. In attendance at SCAQMD Headquarters were Committee Chair Dennis Yates and Committee Members Judith Mitchell, Ben Benoit and Dr. Joseph Lyou. Committee Member Shawn Nelson attended via teleconference. The meeting was also webcast.

INFORMATIONAL ITEM

Status Report on Proposed Regulation XX NOx RECLAIM Rule Amendments
The Special Stationary Source Committee included 30-minutes time slots for presentations from staff, an Industry RECLAIM Coalition and environmental/community representatives. Dr. Philip Fine, Deputy Executive Officer for Planning, Rule Development and Area Sources, provided an update of the proposed amendments to Regulation XX, which includes a 14 ton per day NOx RECLAIM Trading Credit (RTC) reduction for the top 90 percent of RTC holders and power plants. The amount of reduction would depend on the industry category, and the programmatic reductions would occur on a proposed schedule from 2016-2022. Also under consideration is the establishment of an Adjustment Account for new power plants that are required to hold RTCs at their potential to emit (PTE) level.

After Dr. Fine's presentation, Ms. Barbara Baird, Chief Deputy Counsel, presented information regarding the statutory requirements for Best Available Retrofit Control Technology (BARCT) that RECLAIM must meet, and discussed how Industry's RECLAIM proposal does not meet the legal requirements as described in the California Health and Safety Code.

Several Industry Representatives, Bill Quinn (California Council for Environmental and Economic Balance), Mike Carroll (Latham and Watkins), Sue Gornick (Western States Petroleum Association), and Curt Coleman (Southern California Air Quality Alliance) presented an industry proposal for the BARCT shave that amounts to approximately 8.8 tpd or less instead of 14 tons per day of NOx RTC reductions, and commented on the NOx RTC shave implementation schedule for the timing proposed to be used for reducing RTC holdings.

Evan Gillespie (Sierra Club) gave a presentation to the Committee in support of the staff proposal, but favoring even more stringent requirements. He also highlighted the energy production on hot summer days from power plants and solar generation to illustrate their view that additional power plants should not be sited in the South Coast air basin. Since this presentation ended before the allotted time provided, the Committee Chair Dennis Yates allowed other representatives from the environmental community to address the Board Members. Nine representatives from the community spoke, including Jim Stewart (Sierra Club). Testimony included the need for additional NOx reductions from RECLAIM sources, especially refineries and power plants, to help improve air quality.

Mayor Yates expressed concern that there is such a large disparity between the staff and industry proposals and asked if the rule would be ready for a November public hearing. Mayor Yates left the meeting at 2:30 p.m. and requested that Councilmember Mitchell moderate the remainder of the meeting.

Councilmember Mitchell stated that all the groups involved need to work toward a consensus and that she was concerned with the timing of the RTC reductions. Dr. Lyou stated that he was not concerned with the lack of consensus and recommended that if staff's analysis shows what level of NOx reductions are required to meet our obligations to clean the air and meet federal and state ambient air quality standards, we should proceed with presenting the current staff proposal to the full Board.

Mayor Benoit requested that SCAQMD staff address the Norton Environmental Consultants (NEC) issues with the BARCT analysis. Staff explained that there were reasonable differences in engineering assumptions but that the amount of emission reductions that would be calculated based on the NEC report had already been included in the adjustments that staff was recommending for the RTC reduction amounts.

Councilmember Mitchell recommended that this item also be presented at the October Stationary Source Committee Meeting for an update, and supported a November Board Hearing.

Supervisor Nelson also had concerns with SCAQMD staff's disagreement with NEC on the BARCT analysis and the selection of a 25-year equipment life, instead of a 10-year equipment life, as used by other regulatory agencies.

PUBLIC COMMENTS

During the public comment period, four representatives from the regulated and six members of the environmental community addressed the Committee. Edward Krisnadi (Montrose Environmental) recommended a change to Table 1 emission factors to enable a circuit board manufacturer that he represents to get a better allocation. Staff will continue to work with him on this issue. Marnie Dorsz (Montrose Environmental) voiced concerns on the Rule 219 exempt equipment relative to source testing requirements for certified boiler provisions of the proposed amendment and Joe Hower (Environ) had concerns on the current $15,000 per ton safety valve trigger for RECLAIM program review. Mr. Hower was concerned that there would not be a sufficient response time, especially if the price trigger is over a twelve-month rolling average period. Representatives from the environmental community commented on the effects of air pollution in this area on their family members and others in their community and strongly urged the Board to support SCAQMD staff's proposal.

The meeting was adjourned at 3:05 p.m. The next regularly scheduled meeting of the Stationary Source Committee meeting will be held on October 16, 2015.

Attachments
1.Attendance Roster
2. NOx RECLAIM Presentation
3. NOx RECLAIM Presentation (2)
4. Industry RECLAIM Coalition Presentation
5. Environmental/Community Stakeholder Presentation

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
SPECIAL MEETING OF STATIONARY SOURCE COMMITTEE
September 23, 2015
ATTENDANCE ROSTER (Voluntary)

NAME		AFFILIATION
Mayor Dennis Yates		SCAQMD Governing Board Member
Councilmember Judith Mitchell		SCAQMD Governing Board Member
Mayor Ben Benoit		SCAQMD Governing Board Member
Supervisor Shawn Nelson (teleconference)		SCAQMD Governing Board Member
Dr. Joseph Lyou		SCAQMD Governing Board Member
Board Consultant Andrew Silva		SCAQMD Governing Board (Rutherford)
Barry Wallerstein		SCAQMD staff
Mohsen Nazemi		SCAQMD staff
Philip Fine		SCAQMD staff
Barbara Baird		SCAQMD staff
Kurt Wiese		SCAQMD staff
Jill Whynot		SCAQMD staff
Joe Cassmassi		SCAQMD staff
Mark Sedlacek		Los Angeles Department of Water & Power
Pete Corritori		Norton Engineering
James A. Norton		Norton Engineering
Frank Colcac		Tesoro
Craig Sakamoto		Exxon Mobil
Marie Olson		Derdau
Bill Lamarr		California Small Business Alliance
Linda Bermudez		Bizfed
Scott Weaver		ERM
Jim Stewart		Sierra Club

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
SPECIAL MEETING OF STATIONARY SOURCE COMMITTEE
September 23, 2015
ATTENDANCE ROSTER (Voluntary)

Marshall Waller		Phillips 66
Patty Senecal		Western States Petroleum Association
Sue Gornick		Western States Petroleum Association
Danielle Leker		Natural Resources Defense Council
Mary Ames		Sierra Club & NRDC Temecula
Felicia Bander		Sierra Club
Peter Whittingham		Curt Pringle & Associates
Thomas Cheng		Valero
Howard Chang		PPCLA
Kathy Prokey		York Engineering, LLC
Chuck Casey		City of Riverside
James Perez		City of Riverside
Edward Krisnadi		SCEC
Marnie Dorsz		SCEC
Kimet Lansing		New-Indy
A Ross		Tesoro
Daryl		Sierra Club
Spike Lewis		Sierra Club
Yvonne Watson		Sierra Club
Kathleen Katz		Sierra Club Temecula
Kent Minnult		Sierra Club
Scott Witcher		Element Market
Joe McLaughlin		Sierra Club

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
SPECIAL MEETING OF STATIONARY SOURCE COMMITTEE
September 23, 2015
ATTENDANCE ROSTER (Voluntary)

Jeff Wilson		Chevron
John Doyle		Chevron
Bill Quinn		CCEEB
Angelica Gonzalez		Sierra Club
Daniel McGivney		SoCal Gas
John Padlenski		Pod Technologies
B Sharma		Tesoro
Wayne Feragon		Norfesco
Evan Gillespie		Sierra Club
Art Silva		Pasadena
Jeff Wright		Riverside
Krishna Nand		EMP
Wendy Legachi		Sierra Club
Scott McBride		Miratech
Uve Sillat		SCE
Tom Gross		SCE
Alisa Moretto		IEEC
Jenifer Lee		Talperion
Lee Wallace		So Cal Gas
Kim Yapp		Pasadena Water & Power
Julio Santizo		
Marina Barrayam		Sierra Club
Selene Hernandez		Sierra Club

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
SPECIAL MEETING OF STATIONARY SOURCE COMMITTEE
September 23, 2015
ATTENDANCE ROSTER (Voluntary)

Raul Zendejas		Sierra Club
Elijah Cervantes		Sierra Club
Jacob Jackson		Sierra Club
Delilah Cervantes		Sierra Club
Alejandro		Sierra Club
Allen Hernandez		Sierra Club

Proposed Amendments to Regulation XX – NOx RECLAIM Special Stationary Source Committee Meeting

September 23, 2015
SCAQMD
Diamond Bar, CA

Background – RECLAIM

- RECLAIM originally adopted in 1993
  - Establishes annual facility-wide emission limits for NOx and SOx
  - Allows emission trading amongst facilities
  - Subject to reduction of limits over time
- Compliance options
  - Install air pollution controls
  - Process changes
  - Purchasing of RECLAIM Trading Credits (RTCs) from other facilities and investors
- Last shave amendment was in 2005

Significant NOx Reductions Needed for Ozone and PM 2.5 Attainment

Equipment Categories Identified with Potential Further NOx Reductions

- Refinery Gas Turbines
- Metal Heat Treating Furnaces >150 MMBTU/hr
- Sodium Silicate Furnace
- Glass Melting Furnaces
- Non-Refinery Internal Combustion Engines (Non-Power Plant)
- Cement Kilns
- Refinery Fluid Catalytic Cracking Units
- Non-Refinery Gas Turbines (Non-Power Plant)
- Coke Calciner
- Refinery Boilers/Heaters
- Refinery Sulfur Recovery Units/Tail Gas Units

Working Group Meetings*

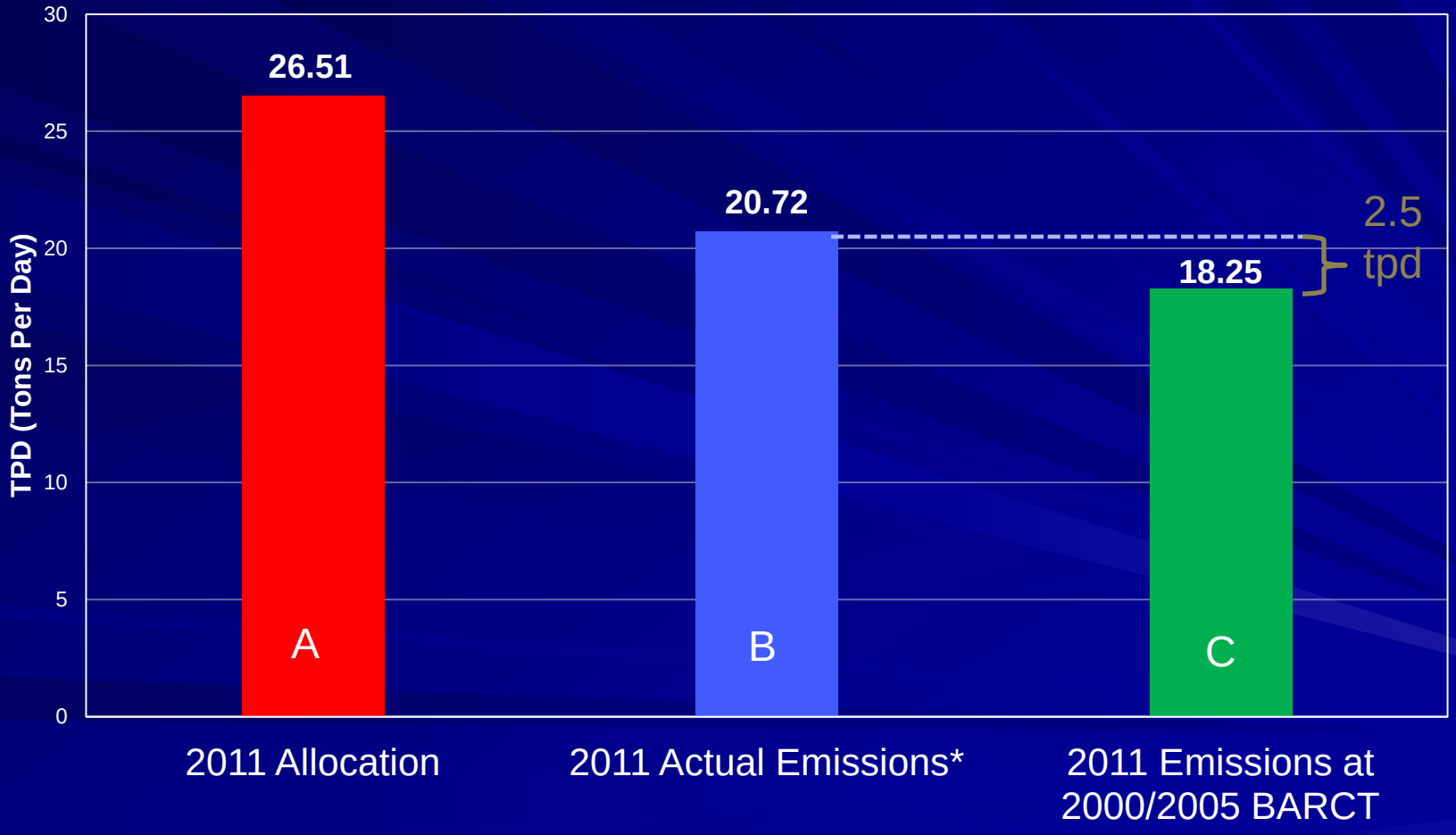
- January 31, 2013
- March 20, 2013
- June 13, 2013
- September 19, 2013
- January 22, 2014
- March 18, 2014
- July 31, 2014
- January 7, 2015
- April 29, 2015
- June 4, 2015
- July 9, 2015
- July 22, 2015 (Public Workshop)
- August 19, 2015

*Rulemaking Analysis initiated over 3 years ago

Major Proposed RECLAIM Amendments

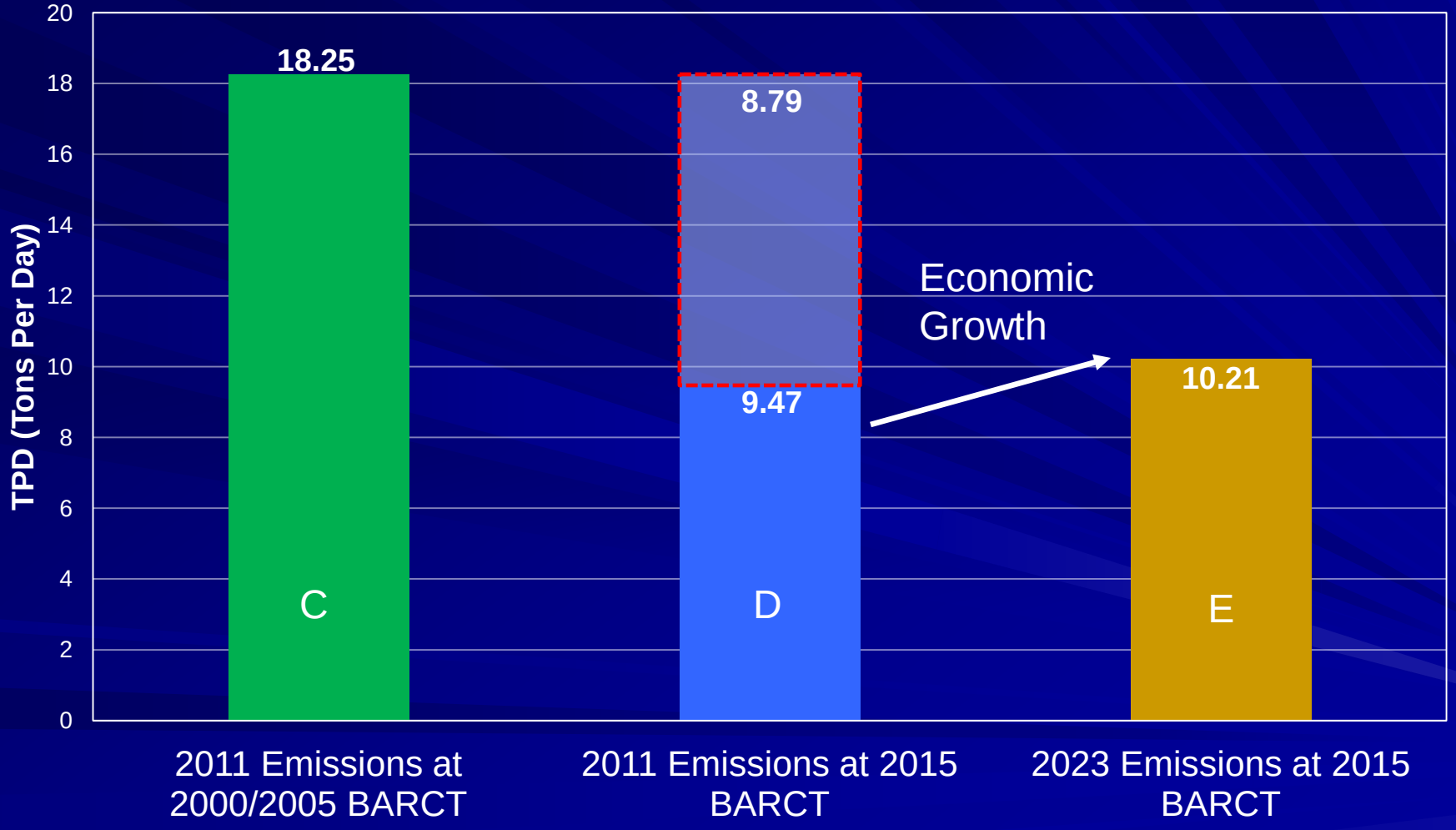
- BARCT Equivalency required by State law (H&SC § 40440 and § 40914)
- Total proposed RTC reductions = 14 tons per day based on BARCT analysis
- Updated BARCT emission factors
- Timing and distribution of shave
- Establishment of Adjustment Account for Power Plants

Comparison of NOx RECLAIM Emission Levels Relative to Total Allocation (2011 Base Year)

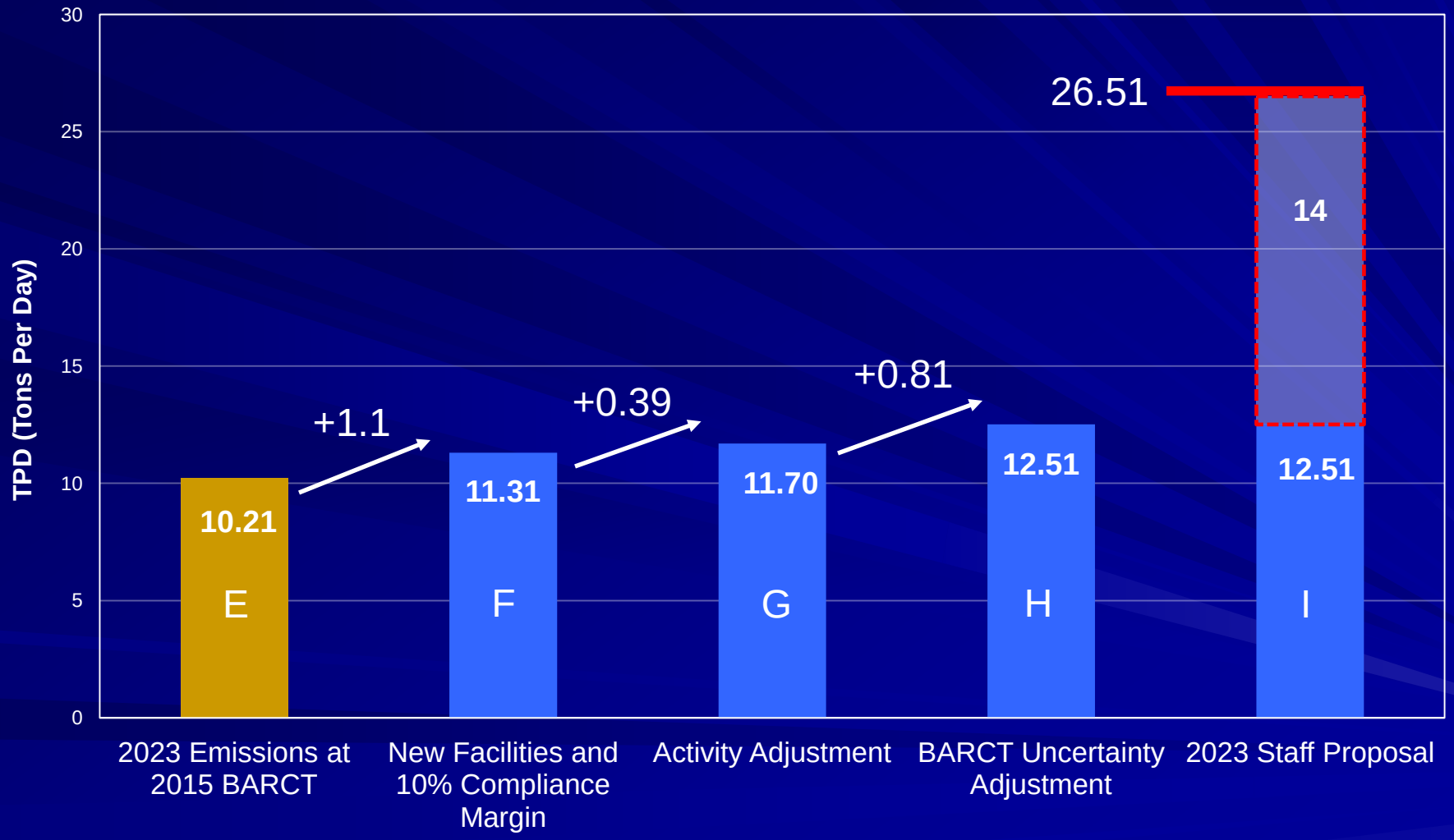


*Includes 2012 Power Plant Calculated Emissions

2023 NOx Emissions at BARCT



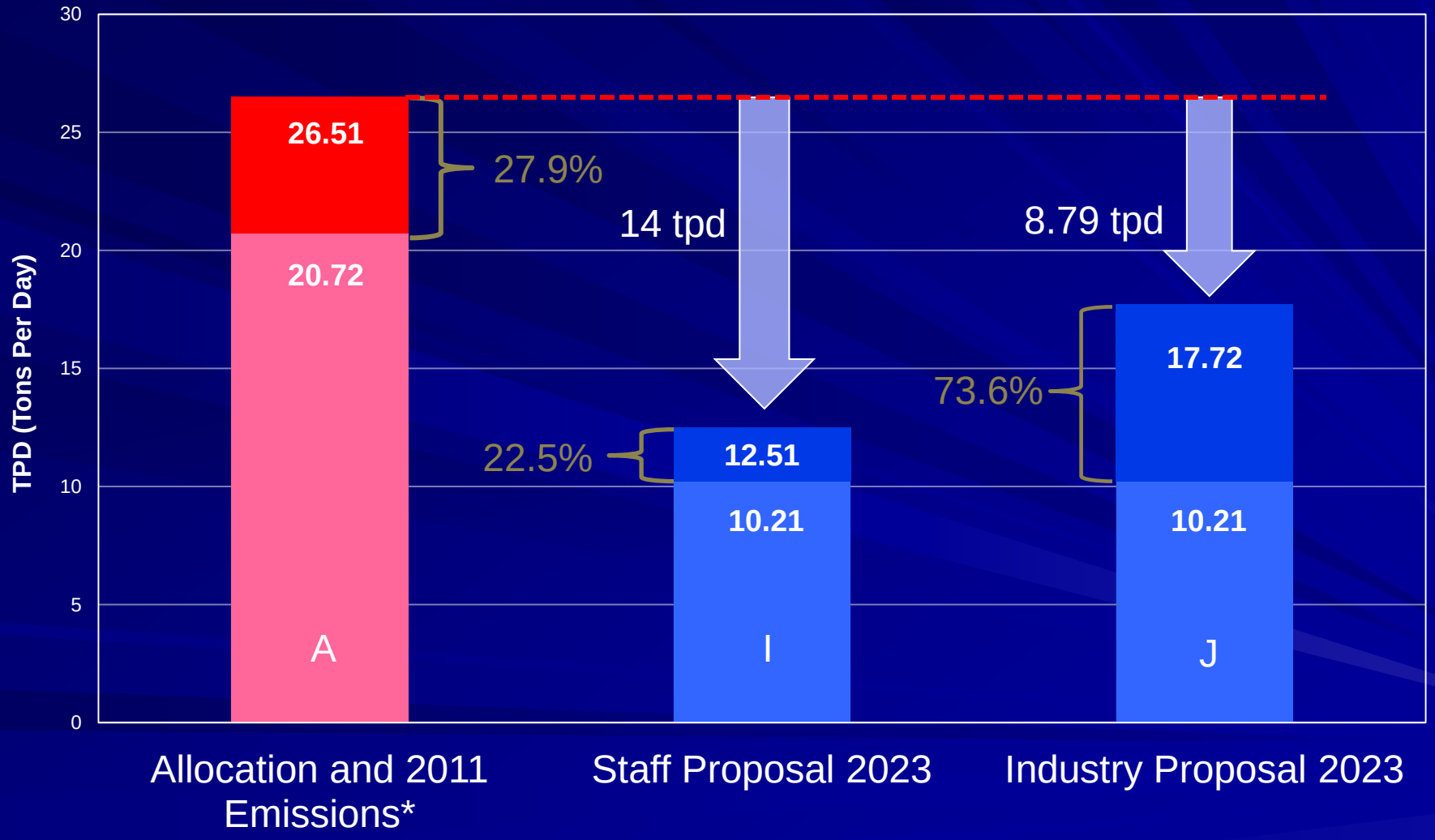
2023 Adjustments and Allocation Target



Key Issue: Amount of Shave

- BARCT Analysis
  - NEC Assumptions for Refinery Sector
  - SCAQMD Responses
    - Different approaches and engineering assumptions
    - No impact on proposed RTC reduction
    - Resulting 0.33 tpd difference less than proposed 0.81 tpd adjustment
- Industry proposal for shave amount (8.79 tpd)

NOx RECLAIM Allocations vs. Emissions



*Includes 2012 Power Plant Calculated Emissions

Timing/Distribution of Shave

- Staff Proposal: 14 ton per day RTC reduction
  - 4 tons per day reduced in 2016
  - Remainder to be reduced equally from 2018 to 2022
  - Proposed reductions based on share of BARCT opportunities
    - Refineries and Investors: 66%
    - Non-Refinery facilities and power plants among the top 90% of RTC holders: 47%
    - 210 facilities not among the top 90% of RTC holders: 0% Facilities)
- Key Issues
  - Sufficient time for engineering, permitting, procurement, and construction
  - Equity of shave distribution
  - Addressing refinery turnaround schedules

NSR for Natural Gas Power Plants

- Newer power producing facilities required by federal NSR regulations to hold RTCs to offset their potential to emit (PTE), even though actual emissions are well below this level
- Adjustment Account for newer power producing facilities (already required to be at BACT or BARCT)
  - Assist compliance with NSR holding requirements
  - To be held by SCAQMD regionally
  - Difference between pre- and post- shave holdings
  - Not to be used to offset actual emissions unless state of emergency regarding power supply is declared by the Governor

Key Issues regarding Adjustment Account

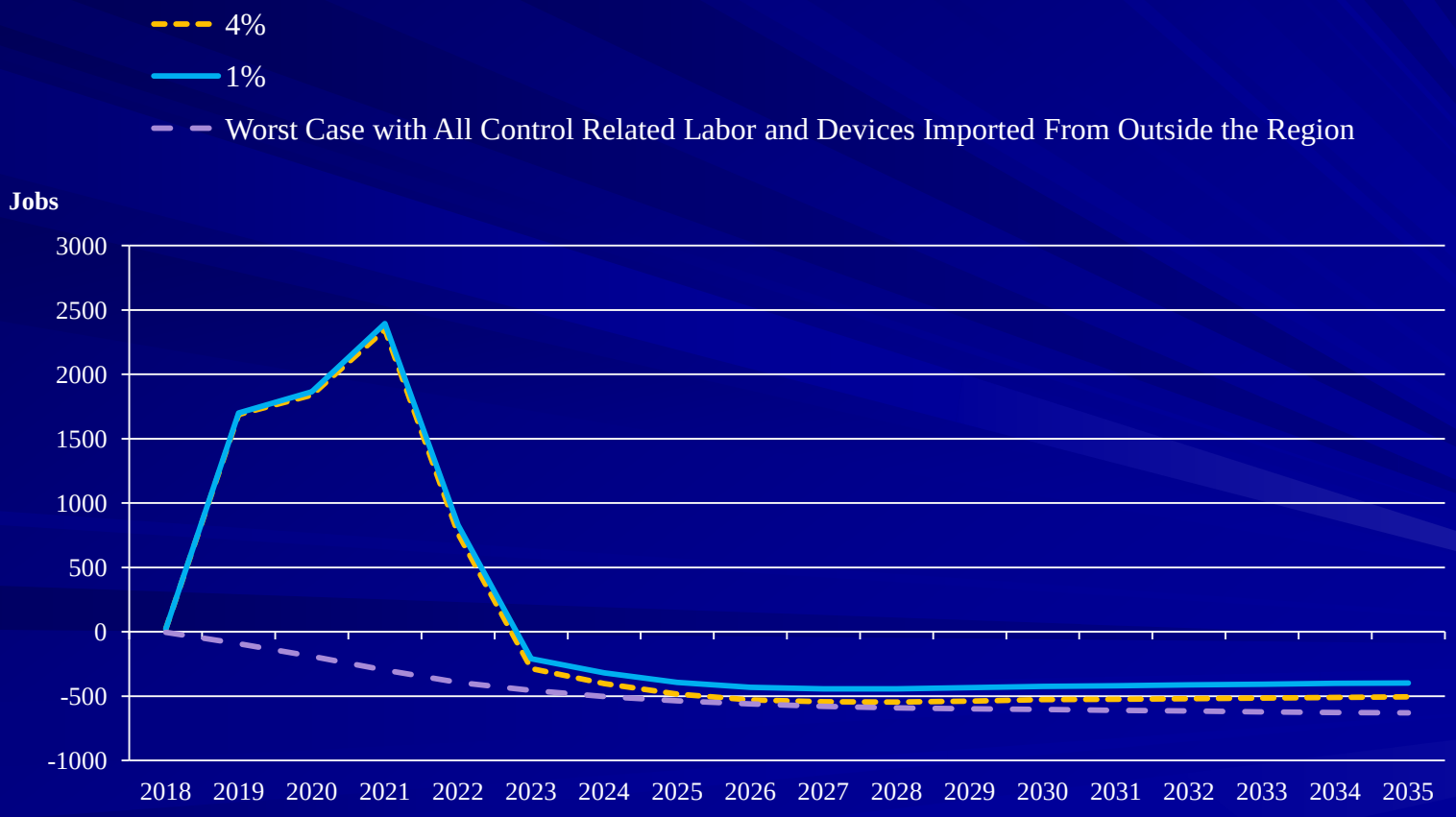
- Regional account or held by individual facilities
- Criteria to access RTCs to offset actual emissions

10-Year Equipment Life

- Industry believes 10-year equipment life is appropriate given frequency of RECLAIM amendments
- Equipment lasts 25 years, thus 25-year life is appropriate and consistent with SCAQMD past practices
- Little or no equipment was identified as obsolete or a stranded asset from the last shave in 2005
- Even with future NOx shaves, not all equipment becomes obsolete / stranded assets

Costs and Job Impact of BARCT Installation

- **Total Potential Cost: $0.62 – 1.09 Billion (100% control installation)**
- **Average Annual Costs: $52 – $63 MM**
- **Average Annual Job Impact: +13 to +90 (over 2018-2035)**
- **Not Expecting Shift from High-Pay to Low-Pay Jobs**



RECLAIM BARCT

Special Stationary Source Committee
September 23, 2015

Barbara Baird
Chief Deputy Counsel

RECLAIM BARCT

SCAQMD must adopt rules to require "best available retrofit control technology" (BARCT) for existing sources.

H & S Code § 40440(b)(1)

RECLAIM BARCT

BARCT is defined as:
an emission limitation based on the "maximum degree of reduction achievable" considering "environmental, energy and economic impacts. . ."

H & S § 40406

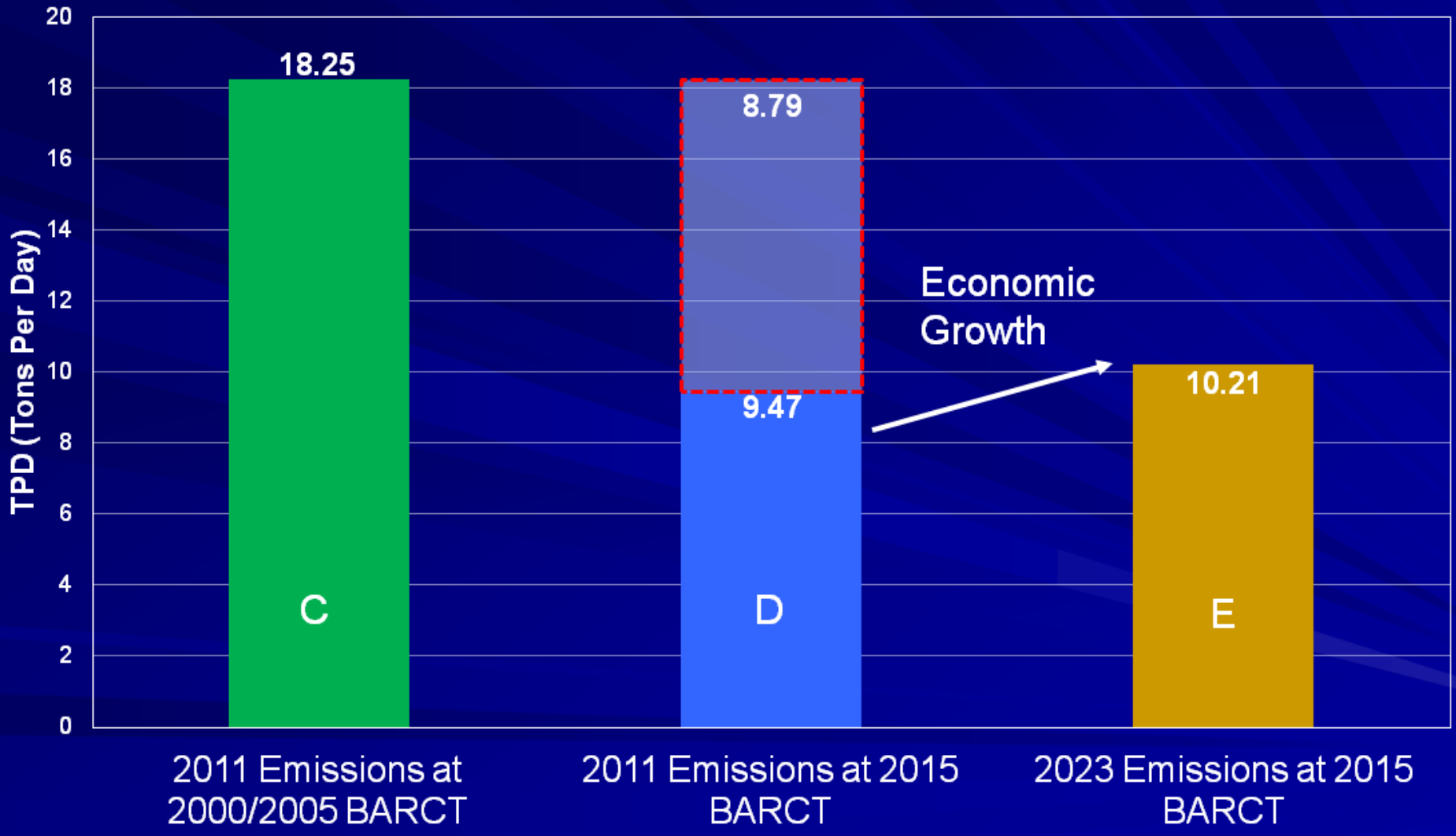
CARB Legal Opinion, 1992

- BARCT can be met in the aggregate, including emissions trading
- But must be equivalent to what command-and-control would achieve
- Must be updated as technology advances

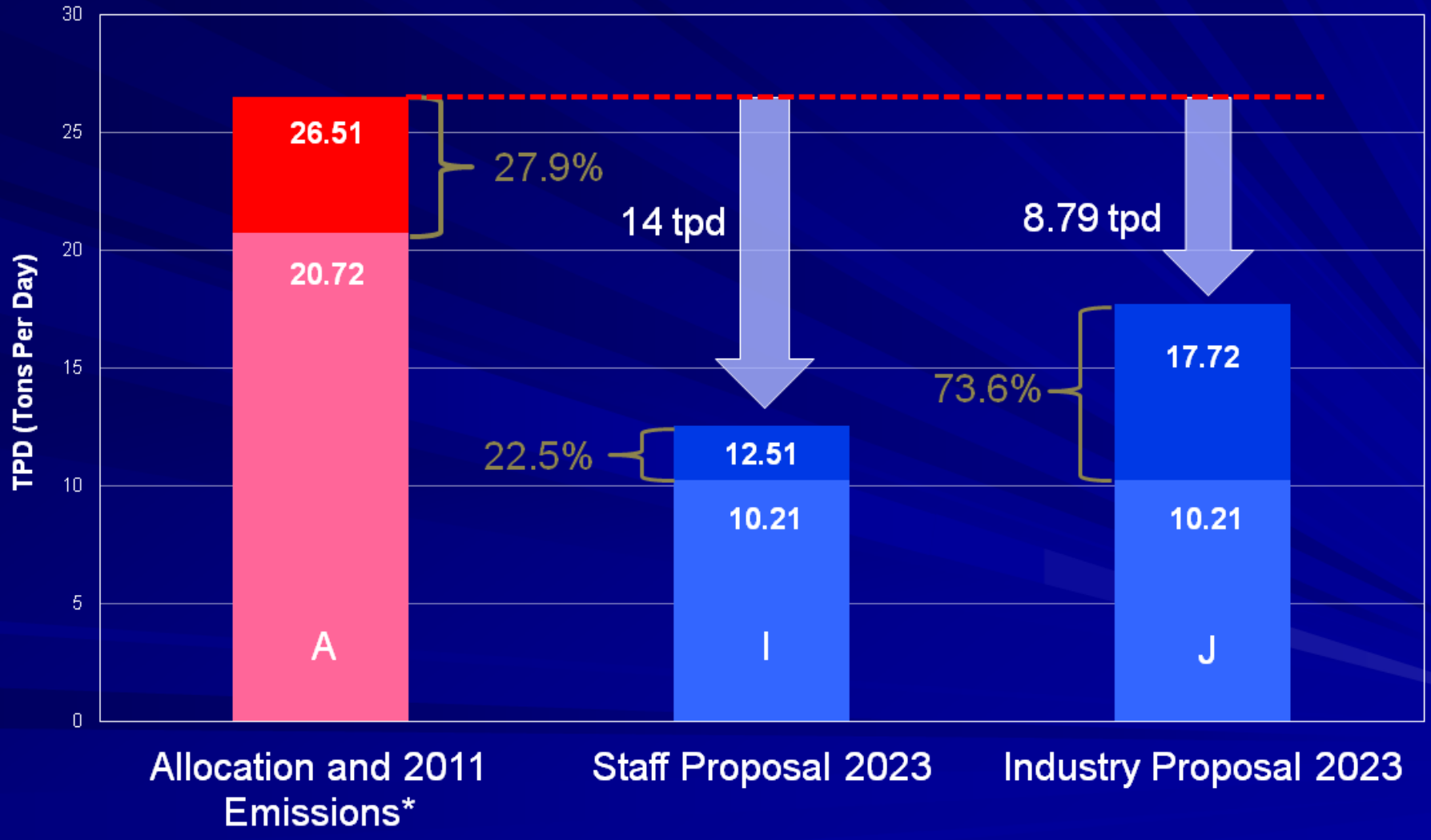
Industry Proposal

- Takes a goal derived from actual emission reductions, but then subtracts from allowable emissions
- Only guarantees small amount of actual reductions; rest are “paper reductions”

2023 NOx Emissions at BARCT



NOx RECLAIM Allocations vs. Emissions



*Includes 2012 Power Plant Calculated Emissions

Industry Proposal (cont'd)

- Is not designed to attain "maximum reductions achievable" as required by H & S § 40406
- Is not equivalent to levels that would be achieved under command-and-control
- Does not meet legal requirements

Industry RECLAIM Coalition

California Asphalt Pavement Association (CalAPA)
California Construction & Industrial Materials Association (CalCIMA)
California Council for Environmental and Economic Balance (CCEEB)
California Manufacturers & Technology Association (CMTA)
California Metals Coalition (CMC)
California Small Business Alliance (CSBA)
Regulatory Flexibility Group (RFG)
Southern California Air Quality Alliance (SCAQA)
Western States Petroleum Association (WSPA)

Los Angeles Business Federation (BizFed)*
***Representing 272,000 businesses - employing 3 million people**

NOx RECLAIM Shave

23 September 2015

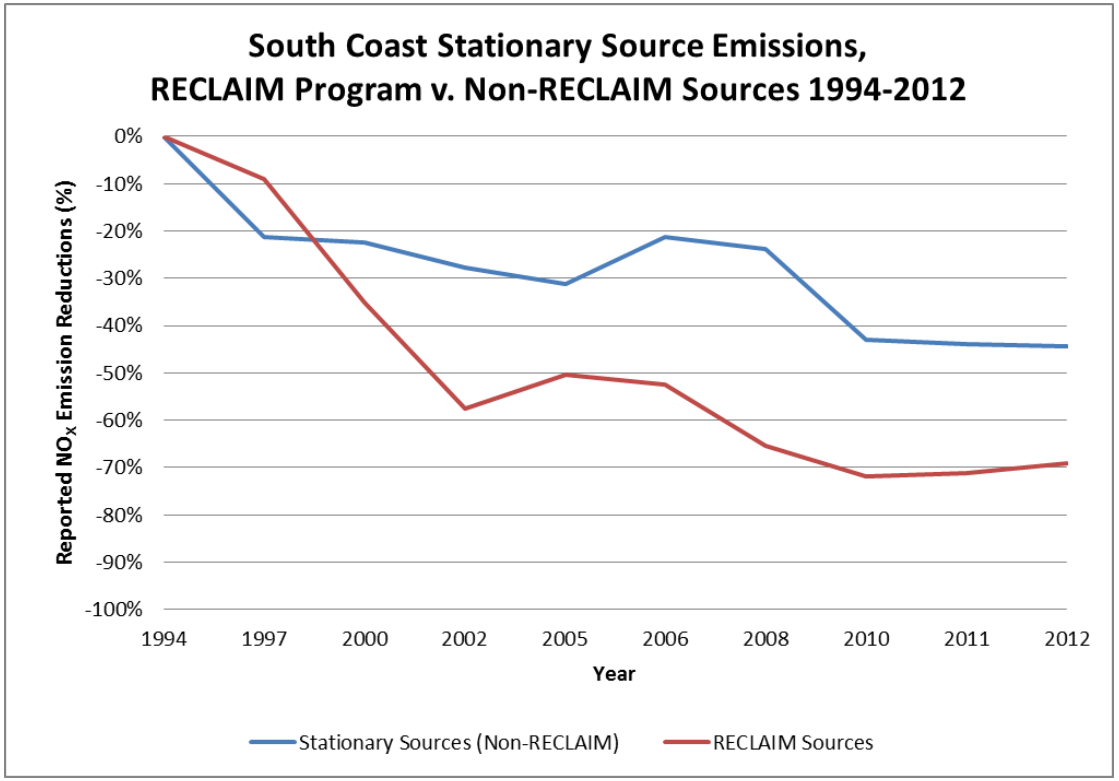
Industry Coalition's Objectives

- Preserve a successful program and a healthy RECLAIM market
- Reflect the emission reductions possible from advancements in BARCT between 2005 and 2015 (Technology Shave)
- Fulfill obligations in H&SC §39616(c) as opposed to the District's proposal which goes **beyond BARCT**
- Fulfill at a minimum the 2012 AQMP commitments to the State Implementation Plan (SIP) and USEPA
  - 3 to 5 tons per day NOx
- Recognize successful emission reductions from RECLAIM Program's 2005 shave

Emissions for RECLAIM facilities have declined faster than South Coast facilities under command & control rules (i.e., non-RECLAIM sources)

RECLAIM program's emissions have been reduced 69% since 1994

Non-RECLAIM stationary source emissions declined by about 44% during that same period



Sources: "RECLAIM Sources" data is reported (audited) emissions from SCAQMD RECLAIM Audit Report (March 2015). "Stationary Sources (Non-RECLAIM)" is taken from SCAQMD Air Quality Management Plans (1997, 2003, 2007, 2012) and AQMP Working Group Meeting #5, Agenda Item #3.

Legal Requirements

- Allows facilities the "flexibility to achieve emission reductions using methods which include, but are not limited to: add-on controls, equipment modifications, reformulated products, operational changes, shutdowns, and the purchase of excess emission reductions." [1]

- CA Health & Safety Code (H&SC) §39616(c) requires on a program basis:
  - equal or greater emission reductions than command-and-control
  - equal or less cost than command-and-control

- Under the 2005 market adjustment, a 23% reduction in RTCs resulted in a 24% reduction in NOx RECLAIM emissions [2]

- The District is going **BEYOND BARCT**

[1] Source: SCAQMD Rue 2000(a).
[2] Source: SCAQMD Annual RECLAIM Audit Report, March 2015.

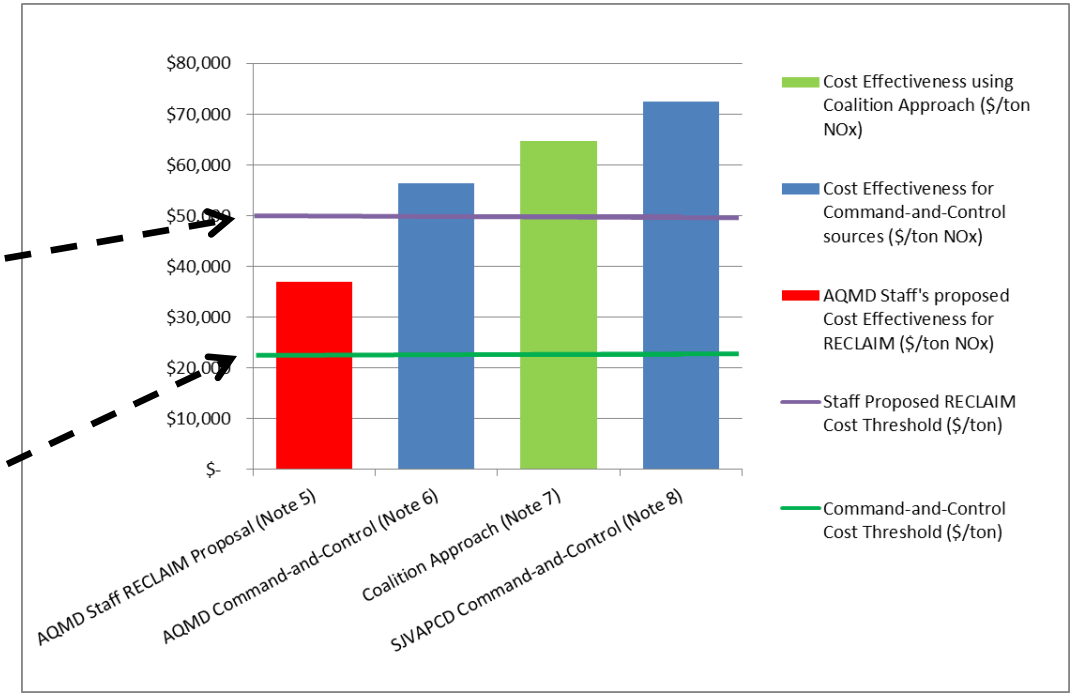
Staff Proposal would treat RECLAIM disproportionately as compared to Command-and-Control

RECLAIM program is required to be equivalent or less costly than command-and-control rules [1]

AQMD use of DCF method and 25-year useful life overstates cost-effectiveness of controls [2]

Staff are proposing a cost effectiveness threshold that is twice that used for AQMD's command-and-control rules [3]

Cost effectiveness threshold for this rule should be the same one used for command-and-control rules; $22,500 per ton [4]



Example is $5M emission control project with 25 tpy NOx reduced. Notes: (1) H&SC 39616(c)(1). (2) Comparison of AQMD Staff method proposed v. AQMD BACT method. (3) Comparison of SCAQMD cost threshold in 2012 AQMP and 2015 RECLAIM. (4) SCAQMD 2012 AQMP. (5) AQMD Staff method proposed for RECLAIM in Preliminary Draft Staff Report (July 2015) using DCF method, 25-year Useful Life assumption, and 4% interest rate. (6) AQMD BACT Guidelines, Part C (2006) using DCF method, 10-year Useful Life assumption, and 4% interest rate. (7) Industry Coalition proposed method using LCF method, 10-year Useful Life, and 4% interest rate. (8) SJVAPCD BACT Guidelines.

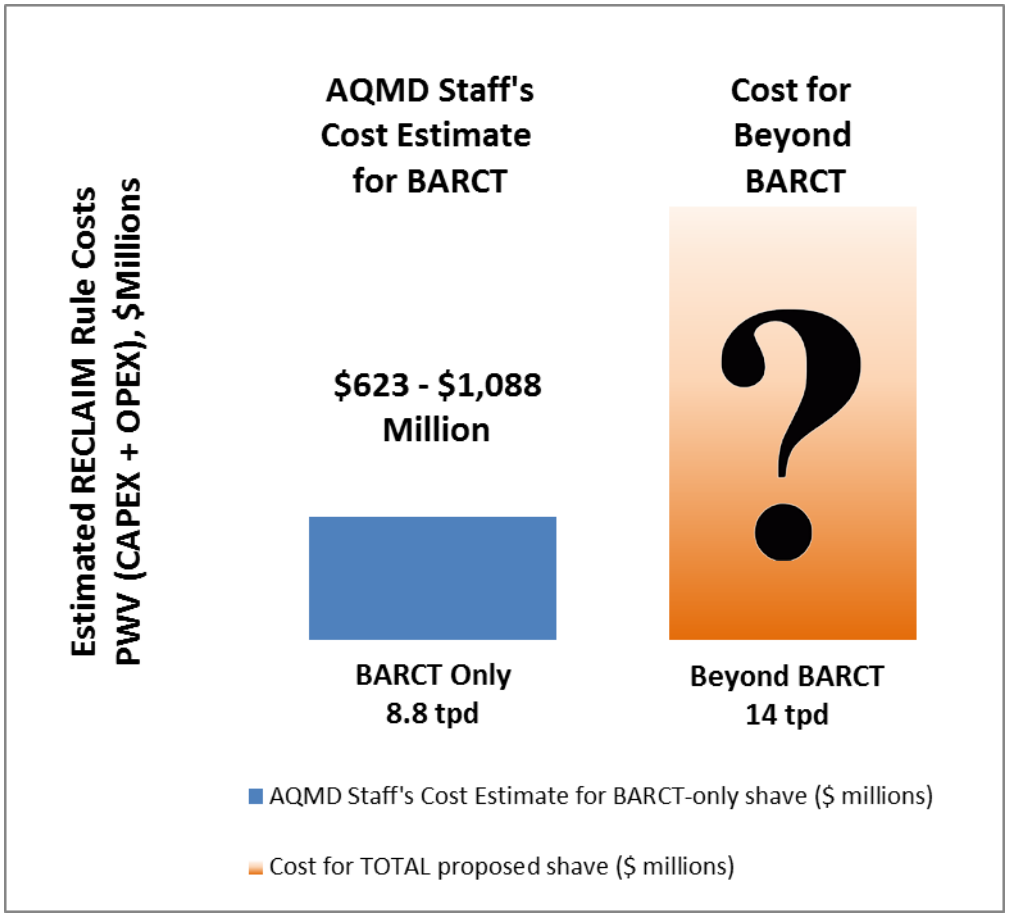
Command and Control Equivalency is not more than 6.6 TPD

- AQMD Staff's current analysis only demonstrates 7.9 TPD of reductions can be justified by technology advancement (i.e. BARCT) [1]
- AQMD Staff have not reconciled the discrepancies between their cost analysis and the recommendations of the third-party expert, Norton Engineering
- The Industry Coalition further believes corrections to the AQMD Staff's cost effectiveness methodology would trim BARCT reductions by an estimated 1.3 tpd [2]
- A reduction greater than 6.6 TPD would be **BEYOND BARCT**

1 AQMD Preliminary Draft Staff Report, Proposed NOx RECLAIM Amendments, July 2015, p. 18. Presented BARCT reduction adjusted pursuant Staff's 0.85 TPD adjustment factor to account for discrepancies between Staff analysis and third-party expert, Norton Engineering.

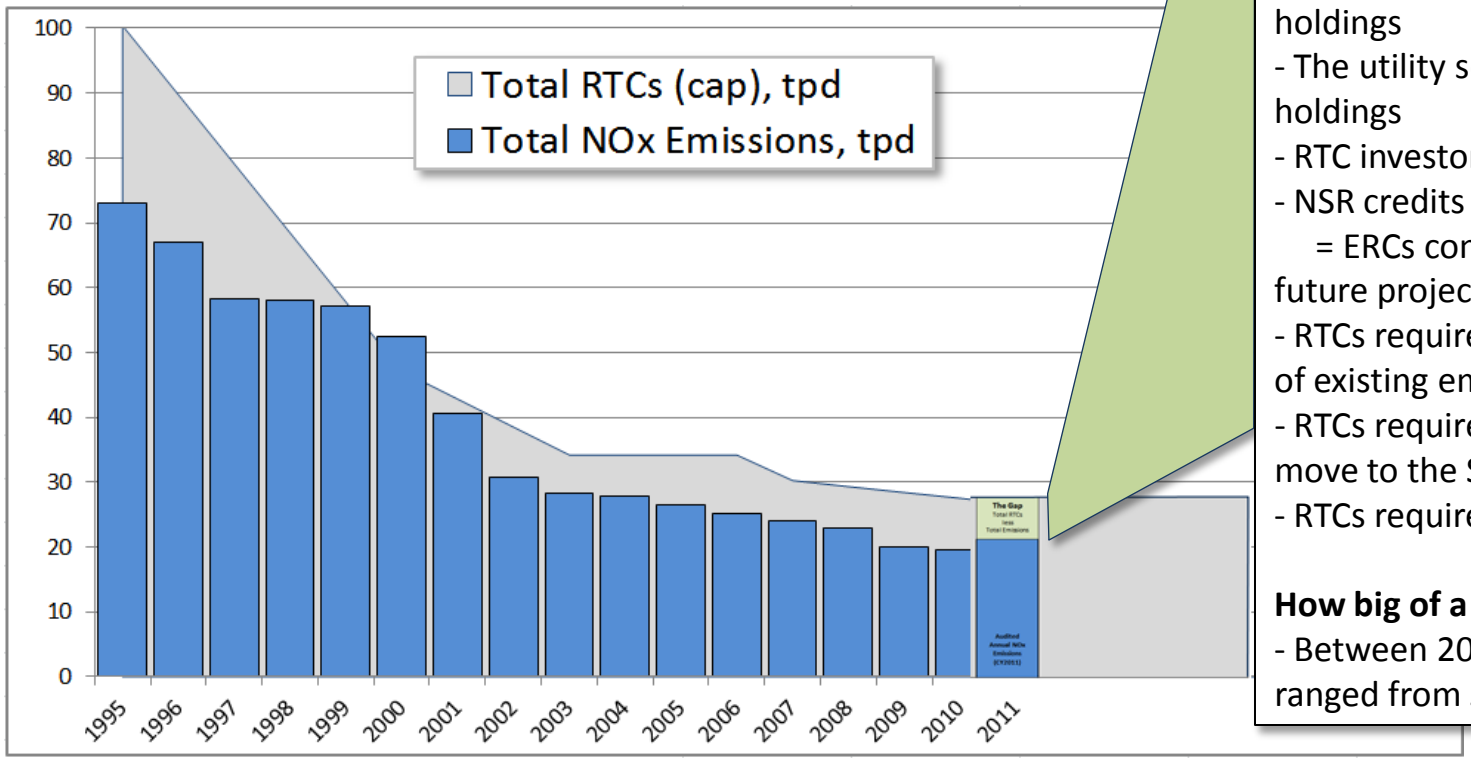
2 Industry Coalition/ERM analysis of AQMD BARCT calculations assuming a 10-year useful equipment life (Sept 2015).

BARCT $ ≠ BARCT $ + BEYOND BARCT



Sources: "AQMD Staff's Estimate for BARCT-Only Shave taken from SCAQMD Preliminary Draft Staff Report, Proposed NOx RECLAIM Amendments, July 2015, p. 23-24. To date, AQMD Staff have not provided a "Cost Estimate for the TOTAL proposed shave" of 14 tpd.

Mind the "Gap"



What is The Gap?
- The difference between the total RTCs issued and the total actual emissions.

What is in the Gap?
- All emitter's compliance margin holdings
- The utility sector's potential-to-emit holdings
- RTC investors' holdings
- NSR credits
  = ERCs converted to RTCs for future projects
- RTCs required for economic growth of existing emitters
- RTCs required for new businesses to move to the South Coast
- RTCs required for structural buyers

How big of a Gap is needed?
- Between 2005 – 2013, unused RTCs ranged from 5.1 to 9.1 tpd

[1] Source: SCAQMD, Annual RECLAIM Audit Report

Arbitrary Removal of RTCs

- CMB-01 Phase 1 (approved in the 2012 AQMP) explicitly considered and rejected removal of all RTCs in excess of actual emissions, except what was needed for the $PM_{2.5}$ contingency measure (2 tpd)[1]

- The proposed "compliance margin" of 10% is not adequate to meet the market's historical need for RTCs which have averaged in the 15-30% (5 to 9 TPD) range (except for the early 2000's power crisis) [2]

- The Industry Coalition approach negates the need for a "compliance margin"

[1] Source: SCAQMD, 2012 AQMP. Page 4-9 states: "The control measure will seek further reductions of 2 tpd of NOx allocations if triggered." Appendix A, page IV-A-13 presents rationale for that conclusion.

[2] Source: SCAQMD, Annual RECLAIM Audit Report for 2013 Compliance Year, 6 March 2015. See Table 3-2.

Shave Implementation Schedule

- A shave of 4 TPD in 2 months does not allow adequate time for industry to install emission control projects which take several years to design, permit and implement[1]

- It also conflicts with CMB-01 Phase 1 which explicitly considered and rejected removal of all RTCs in excess of actual emissions, except what was needed for the $PM_{2.5}$ contingency measure (2 tpd)[2]

- The Industry Coalition supports a schedule consistent with approved Control Measure CMB-01 Phase 1, which begins with 2 tpd in the first year

[1]Source: Industry Coalition letter to SCAQMD, August 21, 2015, p. 2.

[2]Source: SCAQMD, 2012 AQMP. Page 4-9 states: "The control measure will seek further reductions of 2 tpd of NOx allocations if triggered." Appendix A, page IV-A-13 presents rationale for that conclusion.

Summary of Concerns

- Size of the proposed District shave could imperil the RECLAIM program
  - Shave is well beyond amount indicated by BARCT analysis
  - Depth of District's proposed shave potentially requires market to function with amount of "unused" RTCs only seen during the power crisis
- Shave Implementation schedule is too aggressive
- District BARCT analysis is flawed
  - Staff has selectively disregarded the recommendations of Norton Engineering, the AQMD's third-party consultant
  - Inappropriately equates BARCT with BACT
  - Assumes technology will develop in extremely short timeframe and w/o safeguards provided under command and control rules
  - Understates true cost by assuming 25-year equipment life
  - Corrections to the BARCT analysis could reduce the 8.8 TPD by approximately 2 TPD

Please support:

- The Industry Coalition alternative technology shave
- A feasible and cost effective BARCT assessment including a 10 year useful life
- A reasonable and achievable implementation schedule

South Coast AQMD Rule XX

Stationary Source Committee

September 23, 2015

Health Advocates Position

- Rule is a good step towards fixing a flawed program
- Strong rule realizes a previous commitment to near term reductions.
- Emission reductions should total *at least* 14.85 tons.
- Timeline for reductions should be faster
- Focus on refineries and power plants
- Industry concerns don’t hold water

Background

- South Coast facing steep reductions to meet 2023, 2032 NOx standards
- Missed 2010 1-hr standard
- Dirty air still plagues region
  - 1.1 million missed school days
  - 5,000 premature deaths
- Impact of dirty air inequitable

Cal. Health & Safety Code §39616.

- *"The program will result in an equivalent or greater reduction in emissions at equivalent or less cost compared with current command and control regulations and future air quality measures that would otherwise have been adopted as part of the district's plan for attainment."*
- Proposal should shave *at least* 14.85 tons per day.

The need for reductions is urgent

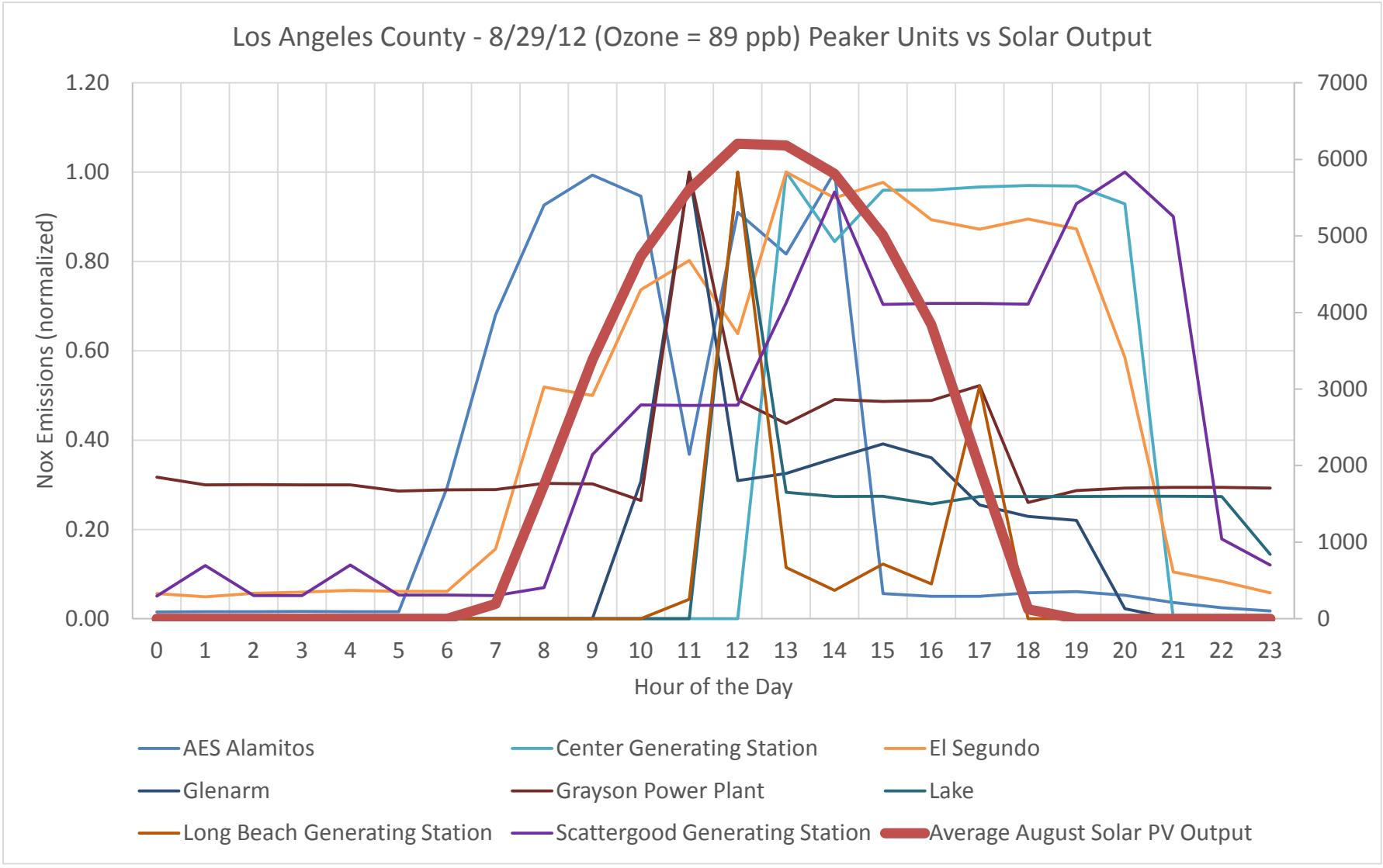
Year	Current Proposal	Health Advocates Proposal
2016	4 tpd	5 tpd
2018	2 tpd	3 tpd
2019	2 tpd	3 tpd
2020	2 tpd	2 tpd
2021	2 tpd	1.85 tpd
2022	2 tpd	0 tpd

Focus on refineries & power plants

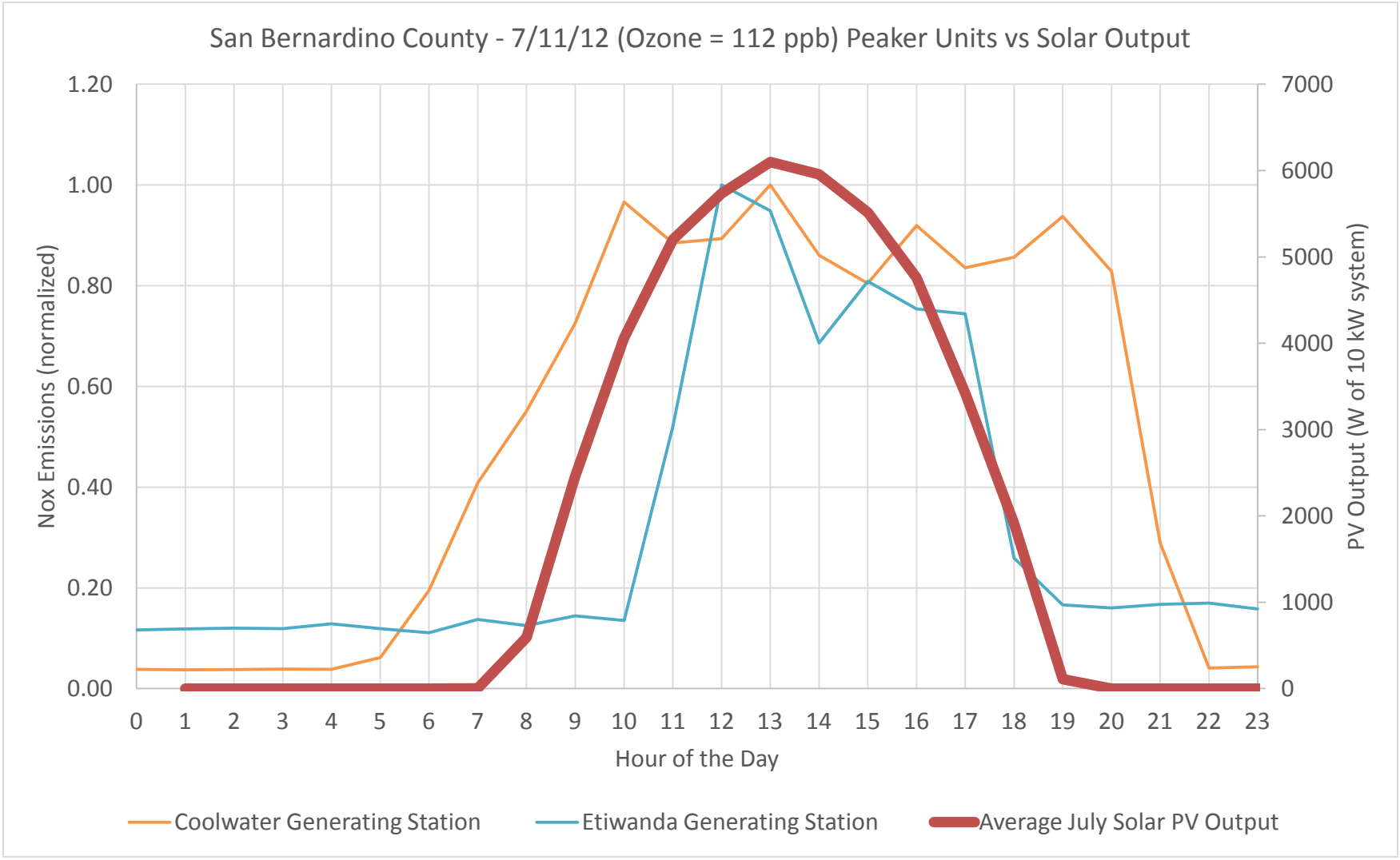
The Current Gas Boom

- Many power projects proposed for region:
  - Stanton Energy Reliability Center (98 MW)
  - Haynes (600 MW)
  - Harbor (449 MW)
  - Scattergood Generating Station (830 MW)
  - San Gabriel Generating Station (656 MW)
  - Huntington Beach/Alamitos (1,234 MW)
  - Sun Valley Energy Project (500 MW)

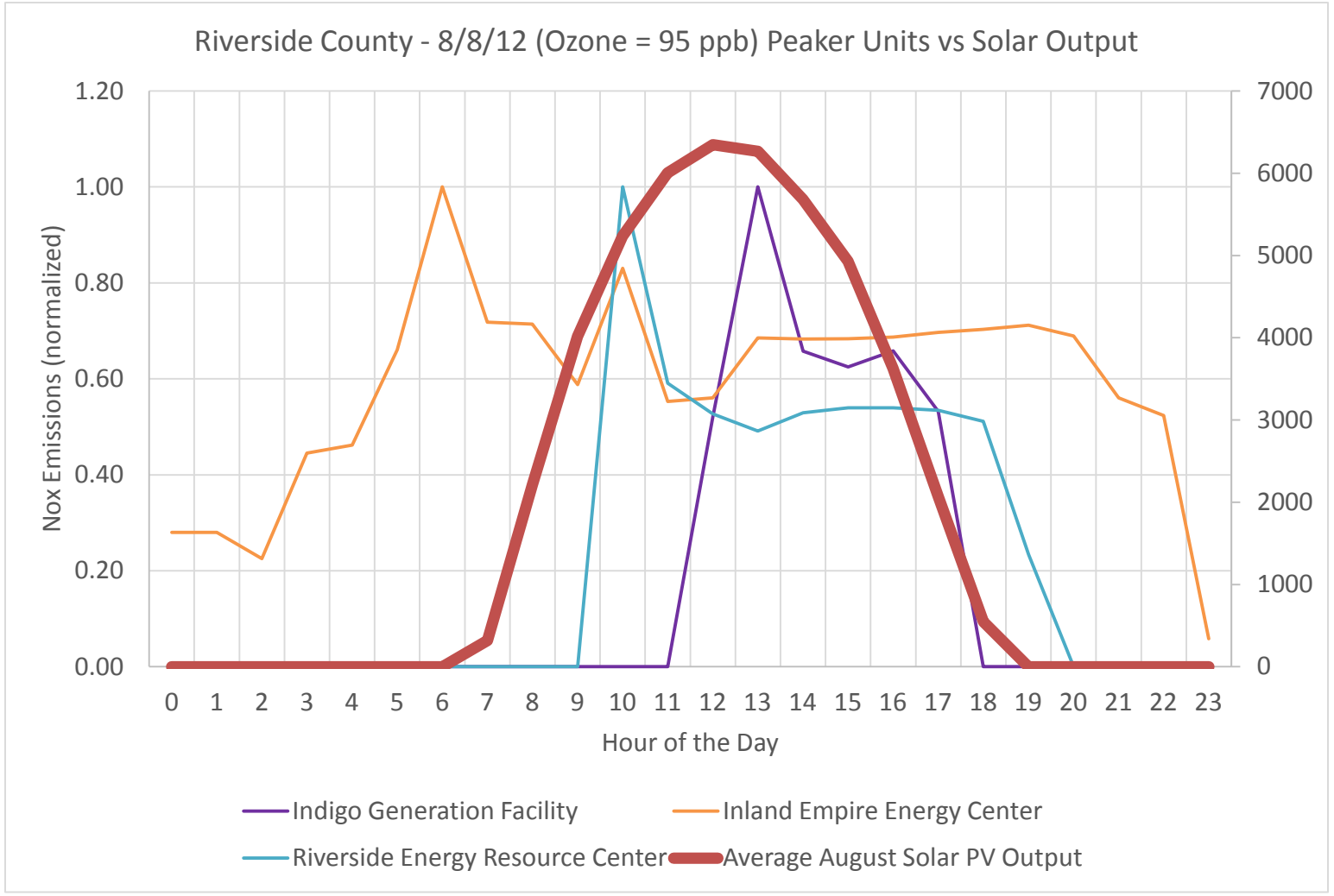
NOx, Gas Plants, and Solar Potential



Ozone, Gas, and Solar (cont'd)



Ozone, Gas, and Solar (cont'd)



Thank You

Back to Agenda

BOARD MEETING DATE: October 2, 2015 AGENDA NO. 29

REPORT: Technology Committee

SYNOPSIS: The Technology Committee met on September 18, 2015. Major topics included Technology Advancement items reflected in the regular Board Agenda for the October Board meeting. A summary of these topics with the Committee's comments is provided. The next Technology Committee meeting will be held on October 16, 2015.

RECOMMENDED ACTION:
Receive and file.

John J. Benoit
Technology Committee Chair

MMM:pmk

Attendance: Supervisor John J. Benoit participated by videoconference. Councilmember Judith Mitchell and Mayor Dennis Yates were in attendance at SCAQMD headquarters. Councilmember Joe Buscaino, Mayor Miguel Pulido, and Supervisor Janice Rutherford were absent due to a conflict with their schedule. Chair Supervisor Benoit appointed Mayor Ben Benoit as a one-time Committee Member for today's meeting.

OCTOBER BOARD AGENDA ITEMS

1. **Execute Contracts for FY 2014-15 "Year 17" Carl Moyer Program and SOON Provision**
   On June 3, 2015, proposals were received in response to the Program Announcements issued for the "Year 17" Carl Moyer Program and the SOON Provision. These actions are to execute contracts for the "Year 17" Carl Moyer Program and the SOON Provision in an amount not to exceed $27,092,992, comprised of $24,419,832 from the SB 1107 Fund (32), $2,521,963 from the AB 923 Fund (80) and $151,197 in accrued interest from the Carl Moyer Program Fund (32). This action is to also execute contracts for projects from a backup list upon availability of funds from returned or partially completed projects.

Moved by Yates; seconded by Mitchell; unanimously approved.

2. **Approve Awards for School Bus Replacements and Retrofits**
At its March 6, 2015 meeting, the Board issued a Program Announcement to solicit applications for replacement and retrofit of school buses. These actions are to approve awards to replace pre-1994 diesel school buses with new alternative fuel buses and to retrofit 1994 and newer buses with particulate traps in an amount not to exceed $25,136,000 from the Carl Moyer Program AB 923 Fund (80).

Supervisor Benoit asked whether repowering older school buses with electric drive trains would be more cost-effective than buying new CNG buses. He also asked if AB 923 funds could be used for that purpose. Staff responded that SB 513, which allows electric repower of school buses, was recently passed by the legislature and is now awaiting the Governor's signature. Subsequently, CARB will issue an advisory allowing air districts to fund electric repower projects of school buses with AB 923 funds.

Moved by Mayor Benoit; seconded by Yates; unanimously approved.

3. **Execute Contract to Cosponsor Hydrogen Station Equipment Performance Project**
The California Department of Food and Agriculture, Division of Measurement Standards (DMS) is requesting cofunding for the Hydrogen Station Equipment Performance (HyStEP) project to develop and operate equipment used to evaluate station performance pursuant to SAE Standard J2601. This action is to execute a contract with DMS to cosponsor the HyStEP project in an amount not to exceed $100,000 from the Clean Fuels Fund (31).

Councilmember Mitchell inquired about SCAQMD already providing support for this project as a member of CaFCP. Staff responded that CaFCP support for this project was approved at the CaFCP Executive Board meeting in April; therefore, SCAQMD would be providing over $100,000.

Moved by Mitchell; seconded by Mayor Benoit; unanimously approved.

4. **Execute Contract for Renewable Natural Gas Production and Vehicle Demonstration Project**
In order to fuel their fleet of natural gas solid waste collection vehicles, CR&R Environmental Services (CR&R) is producing biomethane, a renewable natural gas (RNG), at its material recovery facility in Perris, CA. CR&R proposes to expand their current RNG production with the addition of a second anaerobic digester. This expansion would displace 890,000 gallons of fossil-based fuel annually used in their vehicles and additional RNG produced would be injected into the Southern

California Gas Company pipeline. CR&R is also interested in demonstrating the use of RNG with the next generation natural gas engine that achieves 90 percent lower NOx emissions than the existing 2010 heavy-duty engine exhaust emissions standard. This action is to execute a contract with CR&R in an amount not to exceed $900,000 from the Clean Fuels Fund (31) to cost-share construction of a second anaerobic digester and demonstrate the use of RNG with the next generation natural gas engine.

Supervisor Benoit recused himself due to a campaign contribution from CR&R.

Mayor Benoit asked about the costs and funding for this project indicating that there have been increases in rates for waste collection to cover the cost of using renewable natural gas (RNG). Staff indicated that cities have asked SCAQMD staff to evaluate the benefits of RNG in terms of greenhouse gas emissions reduction. Staff believes cities can use the benefits to reduce their carbon footprint to meet climate goals. Staff will follow up with CR&R as to how credits for RNG production can be used to offset rate increases associated with use of RNG.

Moved by Mitchell; seconded by Mayor Benoit; unanimously approved.

5. Recognize Funds and Amend Contracts to Extend Implementation of Enhanced Fleet Modernization Program

On December 5, 2014, the Board recognized funds and authorized contracts to implement the Enhanced Fleet Modernization Program (EFMP) and EFMP Plus-Up, which provides increasing incentives to eligible low- and middle-income owners of older vehicles to scrap their existing vehicle and receive a voucher to help acquire a newer vehicle or cover the cost of alternative mobility options. The EFMP is well received by the public and already oversubscribed. Staff has requested $21,400,000 from CARB to extend implementation of the EFMP. These actions are to: 1) recognize up to $21,400,000 in grants as approved by CARB to extend implementation of the EFMP and authorize the Executive Officer to accept grant terms and conditions; 2) amend four contracts in an amount not to exceed $1,000,000 from the HEROS II Special Revenue Fund (56); 3) authorize the Executive Officer to allocate up to an additional $300,000 from the HEROS II Special Revenue Fund (56) to increase any of the four contracts on an as-needed basis; and 4) authorize the Executive Officer to approve vouchers to qualified program participants up to $30,592,000.

Dr. Wallerstein indicated that other air districts will be looking at accessing the maximum amount of funding from CARB. Councilmember Mitchell asked what vehicles are being purchased under the program. Staff indicated that there have been a number of Nissan Leafs purchased so far. Supervisor Benoit asked about the disadvantaged communities and how they were calculated, and the distribution of

the benefits from the program. Staff indicated that the information is from CalEnviroscreen. Staff will provide a map under separate cover showing the disadvantaged communities. In addition, the application distributions are around 73% for Los Angeles County, 10% in Orange County, 6% in Riverside County, and 11% in San Bernardino County.

Moved by Yates; seconded by Mitchell; unanimously approved.

6. Recognize Revenue and Appropriate Funds to Support Air Quality Sensor Performance Evaluation Center Program

SCAQMD applied for U.S. EPA "Community-Scale Air Toxics Ambient Monitoring" funds for FY 2015-16 through FY 2017-18 and was awarded $569,682 to study air toxic emissions from refineries and the spatial and temporal distribution of such emissions over impacted local communities, utilizing next generation monitoring technologies. This action is to recognize $569,682 in revenue into the General Fund and appropriate $508,729 to the Science & Technology Advancement Budget (exclusive of the $60,953 in Salaries and Benefits), to support the Air Quality Sensor Performance Evaluation Center Program.

Moved by Yates; seconded by Mitchell; unanimously approved.

INFORMATION ONLY ITEM

7. Alternative Fuel Signage at SCAQMD

Staff provided an update on efforts to provide signage on the various fueling types at the SCAQMD Headquarters including CNG, hydrogen and electric vehicle charging. Staff is working with the Gateway Corporate Association on signage on the property, the City of Diamond Bar on street signage, and Caltrans for freeway signage. A decision from Gateway Corporation Association is expected shortly. Staff will be meeting with the City of Diamond Bar to address concerns raised on providing signage on city streets. Caltrans indicated that they can move ahead with freeway signage once the City has approved street signage.

8. Other Business

There was no other business.

9. Public Comment Period

There was no public comment.

Next Meeting: October 16, 2015

Attachment

Attendance

Attachment – Attendance

Mayor Ben Benoit	SCAQMD Governing Board
Supervisor John J. Benoit (via Videoconference)	SCAQMD Governing Board
Councilmember Judith Mitchell	SCAQMD Governing Board
Mayor Dennis Yates	SCAQMD Governing Board
Mark Abramowitz	Board Consultant (Lyou)
Buford Crites	Board Consultant (JBenoit)
Andrew Silva	Board Consultant (Rutherford)
Bob Ulloa	Board Consultant (Yates)
Barry Wallerstein, Executive Officer	SCAQMD
John Olvera, Principal Deputy District Counsel	SCAQMD
Matt Miyasato, STA	SCAQMD
Henry Hogo, STA	SCAQMD
Laki Tisopulos, STA	SCAQMD
Jason Low, STA	SCAQMD
Randall Pasek, STA	SCAQMD
Andrea Polidori, STA	SCAQMD
Dean Saito, STA	SCAQMD
Phil Barroca, STA	SCAQMD
Ranji George, STA	SCAQMD
Lisa Mirisola, STA	SCAQMD
Vicki White, STA	SCAQMD
Liliana Garcia, STA	SCAQMD
Mary Leonard, FIN	SCAQMD
Gregory Rowley, IM	SCAQMD
Donna Vernon, STA	SCAQMD
Pat Krayser, STA	SCAQMD
Matt Essex	A-Z Bus
Ed Kendzierski	A-Z Bus
Mike Doherty	Marine Engine Service
Noel Muyco	SoCalGas

Back to Agenda

BOARD MEETING DATE: October 2, 2015 AGENDA NO. 30

REPORT: Mobile Source Air Pollution Reduction Review Committee

SYNOPSIS: Below is a summary of key issues addressed at the MSRC's meeting on September 17, 2015. The next meeting is scheduled for Thursday, October 15, 2015, at 2:00 p.m., in Conference Room CC8.

RECOMMENDED ACTION:
Receive and file.

Michael D. Antonovich
SCAQMD Representative on MSRC

MMM:HH:AP

Local Government Match Program

As an element of the FYs 2014-16 Work Program, the MSRC allocated $13.0 million for the Local Government Match Program. A Program Announcement was developed and released on May 1, 2015. As in the previous Work Program, the Local Government Match Program offers to co-fund qualifying medium- and heavy-duty alternative fuel vehicles, alternative fuel infrastructure projects, electric vehicle charging infrastructure, and regional street sweeping in the Coachella Valley. The bicycle projects category was expanded to include "active transportation" projects, and commercial zero emission riding lawnmowers was added as a new category. In all categories, funding is provided on a dollar-for-dollar match basis, and funding for all eligible entities shall be distributed on a first-come, first-served basis with a geographic minimum per county of $1.625 million. The Program Announcement includes an open application period commencing June 2, 2015 and closing September 4, 2015. To date, the MSRC has awarded a total of $5,114,228 to 25 applications. The MSRC approved 11 additional applications totaling $2,581,925 as part of the FYs 2014-16 AB 2766 Discretionary Fund Work Program. These awards will be considered by the SCAQMD Board at its October 2, 2015 meeting.

Alternative Fuel Infrastructure Program

As part of the FYs 2014-16 Work Program, the MSRC allocated $5.0 million for the implementation of new and expanded CNG and LNG refueling stations and modification of maintenance facilities to accommodate gaseous-fueled vehicles. A Program Announcement, #PA2015-12, was developed and released on May 1, 2015, with an open application period commencing that day and closing July 29, 2016. One application was received prior to the September 3, 2015 MSRC-TAC meeting. As part of the FYs 2014-16 AB 2766 Discretionary Fund Work Program, the MSRC approved a contract award to LBA Realty Company LLC, in an amount not to exceed $100,000, for the installation of a limited access CNG station. This contract award will be considered by the SCAQMD Board at its October 2, 2015 meeting.

Enhanced Fleet Modernization Program

The Enhanced Fleet Modernization Program (EFMP) is a vehicle retirement and replacement program authorized by the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (AB 118). The program focuses on providing greater incentives to eligible low- and middle-income owners of older vehicles to scrap their existing vehicle and receive a voucher either to help acquire a newer vehicle or cover the cost for transit passes or participation in car-sharing programs. In conjunction, the EFMP Plus-Up supplements the EFMP by increasing incentives for certain advanced technology replacement vehicles.

The MSRC previously allocated $800,000 to partner with SCAQMD in its implementation of the EFMP. Of this amount, $200,000 was awarded to one of the four contractors implementing the program, and $600,000 was to cover vouchers. Since implementation began in May 2015, the EFMP has generated significant interest from the public and is currently oversubscribed. SCAQMD staff initiated discussions with CARB staff regarding the availability of additional funding from the State, and in a separate item at its October 2, 2015 meeting, the SCAQMD Board will be considering allocation of additional SCAQMD funds. SCAQMD staff also initiated discussions with MSRC staff regarding potential expansion of the current partnership. The MSRC considered this partnership opportunity and approved an allocation of up to $6,201,000 to augment the SCAQMD funds to implement the EFMP and EFMP Plus-Up as an element of the FYs 2014-16 AB 2766 Discretionary Fund Work Program. The MSRC contribution would be for the voucher program only. This allocation of funds will be considered by the SCAQMD Board at its October 2, 2015 meeting.

Contract Modification Requests

The MSRC considered two contract modification requests and took the following unanimous actions:

1. For City of West Covina, Contract #ML12018, which provides $300,000 to expand their CNG station, approval of a 15-month term extension; and

2. For City of Corona, #ML14019, which provides $178,263 to install EV charging and bicycle infrastructure, approval to reduce the number of locations at which they will install EV charging infrastructure from 4 to 2, but increase the total number of vehicles able to be charged from 10 to 15; the installation of 3 “fast” chargers which have a longer operational requirement under the MSRC’s FYs 2012-14 Local Government Match Program; as well as a two-year no-cost term extension.

Received and Approved Final Reports

The MSRC received and unanimously approved three final report summaries this month as follows:

1. City of Corona, Contract #MS11019, which provided $225,000 for the expansion of their existing CNG station;
2. Border Valley Trading Company, Contract #MS11010, which provided $150,000 to construct an LNG fueling station; and
3. FirstCNG, LLC, Contract #MS12073, which provided $150,000 towards a new CNG station in Lake Forest.

Contracts Administrator’s Report

The MSRC’s AB 2766 Contracts Administrator provides a written status report on all open contracts from FY 2004-05 through the present. The Contracts Administrator’s Report for September, 2015 is attached *(Attachment 1)* for your information.

Attachment

1. September 2015 Contracts Administrator’s Report

Clean Transportation
Funding from the MSRC
Mobile Source Air Pollution Reduction Review Committee

MSRC Agenda Item No. 3

DATE: September 17, 2015

FROM: Cynthia Ravenstein

SUBJECT: AB 2766 Contracts Administrator's Report

SYNOPSIS: This report covers key issues addressed by MSRC staff, status of open contracts, and administrative scope changes from July 30 to August 26, 2015.

RECOMMENDATION: Receive and file report

WORK PROGRAM IMPACT: None

Contract Execution Status

2014-16 Work Program

On December 5, 2014, the SCAQMD Governing Board approved an award under the AB118 Enhanced Fleet Maintenance Program. This contract is executed.

On June 5, 2015, the SCAQMD Governing Board approved two awards under the Event Center Transportation Program and one award to provide low-emission transportation services to the Special Olympics World Games. These contracts are undergoing internal review or with the prospective contractor for signature.

2012-14 Work Program

On April 5, 2013, the SCAQMD Governing Board approved three awards under the Event Center Transportation Program. These contracts are executed.

On July 5, 2013, the SCAQMD Governing Board approved an additional award to Orange County Transportation Authority under the Event Center Transportation Program. This contract is executed.

On September 6, 2013, the SCAQMD Governing Board approved an award to Transit Systems Unlimited under the Event Center Transportation Program. This contract is executed.

On November 1, 2013, the SCAQMD Governing Board approved two awards under the Event Center Transportation Program. These contracts are executed.

On December 6, 2013, the SCAQMD Governing Board approved 25 awards under the Local Government Match Program, 12 awards under the Alternative Fuel Infrastructure Program, one award under the Alternative Fuel School Bus Incentives Program, and one award under the Event Center Transportation Program. These contracts are with the prospective contractor for signature, with the SCAQMD Board Chair for signature, or executed.

On January 10, 2014, the SCAQMD Governing Board approved three awards under the Local Government Match Program, one award under the Alternative Fuel Infrastructure Program, and one award under the Alternative Fuel School Bus Incentives Program. These contracts are executed.

On February 7, 2014, the SCAQMD Governing Board approved two awards under the Local Government Match Program and one award under the Alternative Fuel Infrastructure Program. These contracts are executed.

On April 4, 2014, the SCAQMD Governing Board approved two awards under the Local Government Match Program and three awards under the Traffic Signal Synchronization Partnership Program. These contracts are executed.

On May 2, 2014, the SCAQMD Governing Board approved 12 awards under the Local Government Match Program. These contracts are awaiting responses from the prospective contractor, with the prospective contractor for signature, or executed.

On June 6, 2014, the SCAQMD Governing Board approved an award under the Traffic Signal Synchronization Partnership Program. This contract is executed.

On July 11, 2014, the SCAQMD Governing Board approved an award under the Traffic Signal Synchronization Partnership Program. This contract is executed.

On September 5, 2014, the SCAQMD Governing Board approved an award under the Event Center Transportation Program. This contract is executed.

On October 3, 2014, the SCAQMD Governing Board approved an award under the Alternative Fuel Infrastructure Program. This contract is executed.

On December 5, 2014, the SCAQMD Governing Board approved 12 awards under the Alternative Fuel Infrastructure Program and two awards under the Event Center Transportation Program. These contracts are awaiting responses from the prospective contractor, undergoing internal review, with the prospective contractor for signature, with the SCAQMD Board Chair for signature, or executed.

On February 6, 2015, the SCAQMD Governing Board approved 3 awards under the Alternative Fuel Infrastructure Program. These contracts are awaiting responses from the prospective contractor or executed.

Work Program Status

Contract Status Reports for work program years with open and pending contracts are attached. MSRC or MSRC-TAC members may request spreadsheets covering any other work program year.

FY 2004-05 Work Program Contracts
One contract from this work program year is open.

FY 2004-05 Invoices Paid
No invoices were paid during this period.

FY 2005-06 Work Program Contracts
3 contracts from this work program year are open; and 4 are in "Open/Complete" status, having completed all obligations save ongoing operation.

FY 2005-06 Work Program Invoices Paid
No invoices were paid during this period.

FY 2006-07 Work Program Contracts
2 contracts from this work program year are open; and 14 are in "Open/Complete" status. Two contracts closed during this period: City of Inglewood, Contract #ML07045 – Purchase Three Heavy-Duty Natural Gas Vehicles; and City of Baldwin Park, Contract #ML07039 – Purchase Two Heavy-Duty Natural Gas Vehicles.

FY 2006-07 Invoices Paid
No invoices were paid during this period.

FY 2007-08 Work Program Contracts
8 contracts from this work program year are open; and 21 are in "Open/Complete" status. One contract moved into "Open/Complete" status during this period: Los Angeles County Department of Public Works, Contract #MS08018 – Purchase Two Heavy-Duty CNG Vehicles. Four contracts closed during this period: City of Irvine, Contract #ML08080 – Purchase 2 Heavy-Duty Natural Gas Vehicles; County of San Bernardino Public Works, Contract #ML08034 – Purchase 8 Heavy-Duty CNG Vehicles; and City of Santa Clarita, Contract #ML08048 – Purchase One Heavy-Duty CNG Vehicle.

FY 2007-08 Invoices Paid
No invoices were paid during this period.

FY 2008-09 Work Program Contracts
6 contracts from this work program year are open; and 14 are in "Open/Complete" status. One contract closed during this period: City of La Palma, Contract #ML09034 – Purchase One Heavy-Duty LPG Vehicle.

FY 2008-09 Invoices Paid
One invoice in the amount of $80,411.18 was paid during this period.

FY 2009-10 Work Program Contracts
One contract from this work program year is open; and 14 are in "Open/Complete" status.

FY 2009-10 Invoices Paid
No invoices were paid during this period.

FY 2010-11 Work Program Contracts
30 contracts from this work program year are open; and 23 are in "Open/Complete" status. One proposed contract with the Los Angeles Unified School District is still with them for signature following MSRC approval of modifications.

FY 2010-11 Invoices Paid
4 invoices totaling $336,487.25 were paid during this period.

FY 2011-12 Work Program Contracts
42 contracts from this work program year are open, and 20 are in "Open/Complete" status. One contract was cancelled during this period: City of Whittier, Contract #ML12052 – Expansion of Existing CNG Station. The award amount reverted to the AB 2766 Discretionary Fund.

FY 2011-12 Invoices Paid
One invoice in the amount of $32,635.20 was paid during this period.

FYs 2012-14 Work Program Contracts
53 contracts from this work program year are open, and one is in "Open/Complete" status. One contract closed during this period: City of Orange, Contract #ML14065 – Electric Vehicle Charging Infrastructure.

FYs 2012-14 Invoices Paid
7 invoices totaling $239,705.46 were paid during this period.

FYs 2014-16 Work Program Contracts
One contract from this work program year is open.

FYs 2014-16 Invoices Paid
No invoices were paid during this period.

Administrative Scope Changes
2 administrative scope changes were initiated during the period of July 30 to August 26, 2015:
- ML12041 – City of Anaheim (EV Charging Infrastructure) – One-year no-cost term extension
- ML14050 – City of Yucaipa (Bicycle Lane Improvements) – 10-month no-cost term extension

Attachments
- FY 2004-05 through FYs 2014-16 Contract Status Reports

MSRC Database
Mobile Source Air Pollution Reduction Review Committee

AB2766 Discretionary Fund Program Invoices

July 30, 2015 to August 26, 2015

Contract Admin.	MSRC Chair	MSRC Liaison	Finance	Contract #	Contractor	Invoice #	Amount
2008-2009 Work Program							
8/7/2015	8/19/2015	8/19/2015	8/20/2015	ML09026	Los Angeles County Department of Public Work	l50000150 F	$80,411.18
Total: $80,411.18							
2010-2011 Work Program							
8/25/2015	8/28/2015	8/28/2015	9/1/2015	MS11010	Border Valley Trading	11010-1	$135,000.00
8/21/2015	8/28/2015	8/28/2015	9/1/2015	MS11016	CR&R Incorporated	Final	$10,000.00
8/21/2015	8/28/2015	8/28/2015	9/1/2015	MS11056	The Better World Group	1435	$16,487.25
8/7/2015	8/19/2015	8/19/2015	8/20/2015	MS11060	Rowland Unified School District	1-Final	$175,000.00
Total: $336,487.25							
2011-2012 Work Program							
8/20/2015	8/28/2015	8/28/2015	9/1/2015	MS12061	Orange County Transportation Authority	R137524 Fin	$32,635.20
Total: $32,635.20							
2012-2014 Work Program							
8/19/2015	8/28/2015	8/28/2015	9/1/2015	MS14052	Arcadia Unified School District	1 Final	$78,000.00
8/19/2015	8/28/2015	8/28/2015	9/1/2015	MS14073	Anaheim Transportation Network	51160	$12,499.76
8/19/2015	8/28/2015	8/28/2015	9/1/2015	MS14073	Anaheim Transportation Network	51162	$14,999.99
8/19/2015	8/28/2015	8/28/2015	9/1/2015	MS14073	Anaheim Transportation Network	51161	$14,999.99
8/19/2015	8/28/2015	8/28/2015	9/1/2015	MS14073	Anaheim Transportation Network	51159	$12,485.72
8/11/2015	8/19/2015	8/19/2015	8/20/2015	MS14005	Transit Systems Unlimited, Inc.	53652	$80,960.00
8/11/2015	8/19/2015	8/19/2015	8/20/2015	MS14005	Transit Systems Unlimited, Inc.	53421	$25,760.00
Total: $239,705.46							

Total This Period: $689,239.09

MSRC Database
Mobile Source Air Pollution Reduction Review Committee

FYs 2004-05 Through 2014-16 AB2766 Contract Status Report

9/10/2015

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
FY 2004-2005 Contracts									
Open Contracts									
ML05014	Los Angeles County Department of	5/21/2007	11/20/2008	3/20/2016	$204,221.00	$0.00	Traffic Signal Synchronization	$204,221.00	No
Total: 1									
Declined/Cancelled Contracts									
ML05005	City of Highland				$20,000.00	$0.00	2 Medium Duty CNG Vehicles	$20,000.00	No
ML05008	Los Angeles County Department of				$140,000.00	$0.00	7 Heavy Duty LPG Street Sweepers	$140,000.00	No
ML05010	Los Angeles County Department of				$20,000.00	$0.00	1 Heavy Duty CNG Bus	$20,000.00	No
MS05030	City of Inglewood				$31,662.00	$0.00	2 CNG Street Sweepers	$31,662.00	No
MS05032	H&C Disposal				$34,068.00	$0.00	2 CNG Waste Haulers	$34,068.00	No
MS05044	City of Colton				$78,720.00	$0.00	CNG Station Upgrade	$78,720.00	No
Total: 6									
Closed Contracts									
ML05006	City of Colton Public Works	7/27/2005	7/26/2006		$30,000.00	$30,000.00	3 Medium Duty CNG Vehicles	$0.00	Yes
ML05011	Los Angeles County Department of	8/10/2006	12/9/2007	6/9/2008	$52,409.00	$51,048.46	3 Heavy Duty LPG Shuttle Vans	$1,360.54	Yes
ML05013	Los Angeles County Department of	1/5/2007	7/4/2008	1/4/2013	$313,000.00	$313,000.00	Traffic Signal Synchronization	$0.00	Yes
ML05015	City of Lawndale	7/27/2005	7/26/2006		$10,000.00	$10,000.00	1 Medium Duty CNG Vehicle	$0.00	Yes
ML05016	City of Santa Monica	9/23/2005	9/22/2006	9/22/2007	$350,000.00	$350,000.00	6 MD CNG Vehicles, 1 LPG Sweep, 13 CNG	$0.00	Yes
ML05017	City of Signal Hill	1/16/2006	7/15/2007		$126,000.00	$126,000.00	Traffic Signal Synchronization	$0.00	Yes
ML05018	City of San Bernardino	4/19/2005	4/18/2006		$40,000.00	$40,000.00	4 M.D. CNG Vehicles	$0.00	Yes
ML05019	City of Lakewood	5/6/2005	5/5/2006		$10,000.00	$10,000.00	1 M.D. CNG Vehicle	$0.00	Yes
ML05020	City of Pomona	6/24/2005	6/23/2006		$10,000.00	$10,000.00	1 M.D. CNG Vehicle	$0.00	Yes
ML05021	City of Whittier	7/7/2005	7/6/2006	4/6/2008	$100,000.00	$80,000.00	Sweeper, Aerial Truck, & 3 Refuse Trucks	$20,000.00	Yes
ML05022	City of Claremont	9/23/2005	9/22/2006		$20,000.00	$20,000.00	2 M.D. CNG Vehicles	$0.00	Yes
ML05024	City of Cerritos	4/18/2005	3/17/2006		$10,000.00	$10,000.00	1 M.D. CNG Vehicle	$0.00	Yes
ML05025	City of Malibu	5/6/2005	3/5/2006		$10,000.00	$10,000.00	1 Medium-Duty CNG Vehicle	$0.00	Yes
ML05026	City of Inglewood	1/6/2006	1/5/2007	2/5/2009	$60,000.00	$60,000.00	2 CNG Transit Buses, 1 CNG Pothole Patch	$0.00	Yes
ML05027	City of Beaumont	2/23/2006	4/22/2007	6/22/2010	$20,000.00	$20,000.00	1 H.D. CNG Bus	$0.00	Yes
ML05028	City of Anaheim	9/8/2006	9/7/2007	5/7/2008	$85,331.00	$85,331.00	Traffic signal coordination & synchronization	$0.00	Yes
ML05029	Los Angeles World Airports	5/5/2006	9/4/2007		$140,000.00	$140,000.00	Seven CNG Buses	$0.00	Yes
ML05071	City of La Canada Flintridge	1/30/2009	1/29/2011		$20,000.00	$20,000.00	1 CNG Bus	$0.00	Yes

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
ML05072	Los Angeles County Department of	8/24/2009	5/23/2010	1/23/2011	$349,000.00	$349,000.00	Traffic Signal Synchronization (LADOT)	$0.00	Yes
MS05001	A-Z Bus Sales, Inc.	2/4/2005	12/31/2005	12/31/2006	$1,385,000.00	$1,385,000.00	CNG School Bus Buydown	$0.00	Yes
MS05002	California Bus Sales	2/4/2005	12/31/2005	12/31/2006	$1,800,000.00	$1,800,000.00	CNG School Bus Buydown	$0.00	Yes
MS05003	BusWest	1/28/2005	12/31/2005	12/31/2006	$2,100,000.00	$1,620,000.00	CNG School Bus Buydown	$480,000.00	Yes
MS05004	Johnson/Ukropina Creative Marketin	11/27/2004	1/18/2006	4/18/2006	$1,000,000.00	$994,612.56	Implement "Rideshare Thursday" Campaign	$5,387.44	Yes
MS05031	City of Ontario, Housing & Municipal	7/22/2005	3/21/2007		$191,268.00	$191,268.00	11 CNG Waste Haulers	$0.00	Yes
MS05033	Waste Management of the Desert	9/26/2005	5/25/2007		$202,900.00	$202,900.00	10 CNG Waste Haulers	$0.00	Yes
MS05034	Sukut Equipment, Inc.	9/9/2005	5/8/2007		$1,151,136.00	$1,151,136.00	Repower 12 Scrapers	$0.00	Yes
MS05035	Varner Construction Inc.	11/28/2005	4/27/2007	2/27/2008	$334,624.00	$334,624.00	Repower 5 Off-Road H.D. Vehicles	$0.00	Yes
MS05036	Camarillo Engineering	8/18/2005	1/17/2007		$1,167,276.00	$1,167,276.00	Repower 12 Scrapers	$0.00	Yes
MS05037	Road Builders, Inc.	11/21/2005	4/20/2007	6/20/2008	$229,302.00	$229,302.00	Repower 2 Scrapers	$0.00	Yes
MS05038	SunLine Transit Agency	3/30/2006	9/29/2007		$135,000.00	$135,000.00	15 CNG Buses	$0.00	Yes
MS05039	Los Angeles County MTA	4/28/2006	4/27/2008		$405,000.00	$405,000.00	75 CNG Buses	$0.00	Yes
MS05040	Orange County Transportation Autho	3/23/2006	12/22/2007	6/22/2008	$200,000.00	$200,000.00	25 CNG Buses	$0.00	Yes
MS05041	The Regents of the University of Cali	9/5/2006	8/4/2007	9/4/2008	$15,921.00	$15,921.00	CNG Station Upgrade	$0.00	Yes
MS05042	City of Ontario, Housing & Municipal	11/21/2005	9/20/2006	7/20/2007	$117,832.00	$74,531.27	CNG Station Upgrade	$43,300.73	Yes
MS05043	Whittier Union High School District	9/23/2005	7/22/2006		$15,921.00	$15,921.00	CNG Station Upgrade	$0.00	Yes
MS05045	City of Covina	9/9/2005	7/8/2006		$10,000.00	$7,435.61	CNG Station Upgrade	$2,564.39	Yes
MS05046	City of Inglewood	1/6/2006	5/5/2007		$139,150.00	$56,150.27	CNG Station Upgrade	$82,999.73	Yes
MS05047	Orange County Transportation Autho	10/20/2005	10/19/2006	1/19/2007	$75,563.00	$75,563.00	CNG Station Upgrade	$0.00	Yes
MS05048	City of Santa Monica	7/24/2006	11/23/2007		$150,000.00	$150,000.00	CNG Station Upgrade	$0.00	Yes
MS05049	Omnitrans	9/23/2005	2/22/2007		$25,000.00	$7,250.00	CNG Station Upgrade	$17,750.00	Yes
MS05050	Gateway Cities Council of Governme	12/21/2005	4/20/2010		$1,464,839.00	$1,464,838.12	Truck Fleet Modernization Program	$0.88	Yes
MS05051	Jagur Tractor	1/16/2006	4/15/2007	10/15/2007	$660,928.00	$660,928.00	Repower 6 Scrapers	$0.00	Yes
MS05052	Caufield Equipment, Inc.	8/3/2005	1/2/2007		$478,000.00	$478,000.00	Repower 4 Scrapers	$0.00	Yes
MS05070	Haaland Internet Productions (HIP D	6/24/2005	5/31/2007	11/30/2011	$100,715.00	$92,458.24	Design, Host & Maintain MSRC Website	$8,256.76	Yes
Total: 44									
Closed/Incomplete Contracts									
ML05007	Los Angeles County Dept of Beache	6/23/2006	6/22/2007	12/22/2007	$50,000.00	$0.00	5 Medium Duty CNG Vehicles	$50,000.00	No
ML05009	Los Angeles County Department of	6/22/2006	12/21/2007	9/30/2011	$56,666.00	$0.00	2 Propane Refueling Stations	$56,666.00	No
ML05012	Los Angeles County Department of	11/10/2006	5/9/2008	1/9/2009	$349,000.00	$0.00	Traffic Signal Synchronization (LADOT)	$349,000.00	No
ML05023	City of La Canada Flintridge	3/30/2005	2/28/2006	8/28/2008	$20,000.00	$0.00	1 CNG Bus	$20,000.00	No
Total: 4									

FY 2005-2006 Contracts

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
Open Contracts									
ML06031	City of Inglewood	4/4/2007	6/3/2013	9/3/2015	$150,000.00	$65,602.40	Purchase 4 H-D LPG Vehicles & Install LPG	$84,397.60	No
ML06035	City of Hemet, Public Works	11/10/2006	12/9/2012	1/9/2017	$338,107.00	$175,000.00	7 Nat Gas Trucks & New Nat Gas Infrastruct	$163,107.00	No
ML06070	City of Colton	4/30/2008	2/28/2015	4/30/2015	$50,000.00	$0.00	Two CNG Pickups	$50,000.00	No
Total: 3									
Declined/Cancelled Contracts									
ML06018	Los Angeles County Dept of Beache				$375,000.00	$0.00	New CNG Station & 2 CNG Dump Trucks	$375,000.00	No
ML06019	Los Angeles County Dept of Beache				$250,000.00	$0.00	New CNG Station & 2 CNG Dump Trucks	$250,000.00	No
ML06023	City of Baldwin Park	6/16/2006	9/15/2012		$20,000.00	$0.00	CNG Dump Truck	$20,000.00	No
ML06024	City of Pomona	8/3/2007	7/2/2013	7/2/2014	$286,450.00	$0.00	New CNG Station	$286,450.00	No
ML06030	City of Burbank	3/19/2007	9/18/2011		$287,700.00	$0.00	New CNG Fueling Station	$287,700.00	No
ML06037	City of Lynwood				$25,000.00	$0.00	1 Nat Gas Dump Truck	$25,000.00	No
ML06039	City of Inglewood	2/9/2007	2/8/2008	4/8/2011	$50,000.00	$0.00	Modify Maintenance Facility for CNG Vehicle	$50,000.00	No
ML06055	City of Los Angeles, Dept. of Genera				$125,000.00	$0.00	5 Gas-Electric Hybrid Buses	$125,000.00	No
ML06059	City of Fountain Valley				$25,000.00	$0.00	One H.D. CNG Truck	$25,000.00	No
MS06009	Clean Energy Fuels Corp.	6/23/2006	12/22/2012		$250,000.00	$0.00	New CNG Station - Laguna Niguel	$250,000.00	Yes
MS06040	Capistrano Unified School District				$136,000.00	$0.00	New CNG Fueling Station	$136,000.00	No
MS06041	Clean Energy Fuels Corp.	12/1/2006	3/31/2013	6/18/2009	$250,000.00	$0.00	New CNG Station-Newport Beach	$250,000.00	No
MS06046	City of Long Beach, Dept. of Public				$250,000.00	$0.00	LNG Fueling Station	$250,000.00	No
MS06051	Menifee Union School District	3/2/2007	7/1/2014		$150,000.00	$0.00	CNG Fueling Station	$150,000.00	No
Total: 14									
Closed Contracts									
ML06016	City of Whittier	5/25/2006	5/24/2012	11/24/2012	$50,000.00	$50,000.00	2 CNG Refuse Trucks	$0.00	Yes
ML06017	City of Claremont	8/2/2006	4/1/2012		$50,000.00	$50,000.00	2 CNG Refuse Trucks	$0.00	Yes
ML06020	Los Angeles Department of Water a	3/19/2007	9/18/2013	4/18/2014	$25,000.00	$25,000.00	CNG Aerial Truck	$0.00	Yes
ML06021	Los Angeles World Airports	9/13/2006	5/12/2013		$150,000.00	$150,000.00	6 CNG Buses	$0.00	Yes
ML06022	City of Los Angeles, Bureau of Sanit	5/4/2007	1/3/2014		$1,250,000.00	$1,250,000.00	50 LNG Refuse Trucks	$0.00	Yes
ML06025	City of Santa Monica	1/5/2007	11/4/2012	12/14/2014	$300,000.00	$300,000.00	12 H.D. CNG Vehicles	$0.00	Yes
ML06026	City of Cerritos	10/27/2006	9/26/2010		$60,500.00	$60,500.00	CNG Station Upgrade	$0.00	Yes
ML06027	City of Redondo Beach	9/5/2006	5/4/2012	10/4/2012	$50,000.00	$50,000.00	2 Heavy-Duty CNG Trucks	$0.00	Yes
ML06028	City of Pasadena	9/29/2006	11/28/2012	3/28/2014	$245,000.00	$245,000.00	New CNG Station & Maint. Fac. Upgrades	$0.00	Yes
ML06029	City of Culver City Transportation De	9/29/2006	8/28/2012	12/28/2012	$50,000.00	$50,000.00	2 CNG Heavy-Duty Trucks	$0.00	Yes
ML06032	City of Rancho Cucamonga	2/13/2007	3/12/2013	2/12/2014	$237,079.00	$237,079.00	New CNG Station & 2 CNG Dump Trucks	$0.00	Yes
ML06033	City of Cathedral City	11/17/2006	12/16/2012	12/16/2013	$125,000.00	$125,000.00	5 Heavy-Duty CNG Trucks	$0.00	Yes
ML06034	City of South Pasadena	9/25/2006	9/24/2012		$16,422.42	$16,422.42	2 Nat. Gas Transit Buses	$0.00	Yes

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
ML06036	City of Riverside	3/23/2007	3/22/2013		$200,000.00	$200,000.00	8 Heavy-Duty Nat Gas Vehicles	$0.00	Yes
ML06038	City of Los Angeles, Department of	5/21/2007	1/20/2014		$625,000.00	$625,000.00	25 CNG Street Sweepers	$0.00	Yes
ML06044	City of Pomona	12/15/2006	3/14/2013		$50,000.00	$50,000.00	2 CNG Street Sweepers	$0.00	Yes
ML06052	City of Hemet, Public Works	4/20/2007	2/19/2013		$25,000.00	$25,000.00	Purchase One CNG Dump Truck	$0.00	Yes
ML06053	City of Burbank	5/4/2007	7/3/2013		$125,000.00	$125,000.00	Five Nat. Gas Refuse Trucks	$0.00	Yes
ML06056	City of Los Angeles, Dept. of Genera	11/30/2007	11/29/2008		$350,000.00	$350,000.00	Maintenance Facility Mods.	$0.00	Yes
ML06057	City of Rancho Cucamonga	8/28/2007	6/27/2013	8/27/2014	$100,000.00	$100,000.00	4 H.D. Nat. Gas Vehicles	$0.00	Yes
ML06058	City of Santa Monica	7/12/2007	7/11/2013		$149,925.00	$0.00	3 H.D. CNG Trucks & CNG Fueling Station	$149,925.00	No
ML06060	City of Temple City	6/12/2007	6/11/2013		$31,885.00	$0.00	Upgrade existing CNG infrastructure	$31,885.00	No
ML06061	City of Chino Hills	4/30/2007	4/29/2013		$25,000.00	$25,000.00	One H.D. CNG Vehicle	$0.00	Yes
ML06062	City of Redlands	5/11/2007	5/10/2013		$100,000.00	$100,000.00	4 H.D. LNG Vehicles	$0.00	Yes
ML06063	City of Moreno Valley	3/23/2007	11/22/2012		$25,000.00	$25,000.00	One H.D. CNG Vehicle	$0.00	Yes
ML06064	City of South Pasadena	1/25/2008	11/24/2013	11/24/2014	$50,000.00	$50,000.00	2 H.D. CNG Vehicles	$0.00	Yes
ML06065	City of Walnut	6/29/2007	6/28/2013		$44,203.00	$44,203.00	Upgrade Existing CNG Infrastructure	$0.00	Yes
ML06066	City of Ontario, Housing & Municipal	5/30/2007	1/29/2013		$125,000.00	$125,000.00	5 H.D. CNG Vehicles	$0.00	Yes
ML06067	City of El Monte	3/17/2008	5/16/2014	11/16/2014	$157,957.00	$157,957.00	Upgrade existing CNG infrastructure	$0.00	Yes
ML06068	City of Claremont	8/28/2007	6/27/2013		$60,000.00	$60,000.00	Expand existing CNG infrastructure	$0.00	Yes
ML06069	City of Palos Verdes Estates	11/19/2007	11/18/2013		$25,000.00	$25,000.00	One H.D. CNG Vehicle	$0.00	Yes
MS06001	Riverside County Transportation Co	8/3/2007	9/2/2011		$825,037.00	$825,037.00	New Freeway Service Patrol	$0.00	Yes
MS06002	Orange County Transportation Autho	11/7/2007	11/6/2013		$928,740.00	$925,091.00	New Freeway Service Patrol	$3,649.00	Yes
MS06003	San Bernardino Associated Govern	10/19/2006	6/18/2010		$804,240.00	$804,239.87	New Freeway Service Patrol	$0.13	Yes
MS06004	Los Angeles County MTA	8/10/2006	7/9/2010		$1,391,983.00	$1,391,791.98	New Freeway Service Patrol	$191.02	Yes
MS06010	US Airconditioning Distributors	12/28/2006	6/27/2012		$83,506.00	$83,506.00	New CNG Station - Industry	$0.00	Yes
MS06011	County Sanitation Districts of L.A. C	6/1/2006	7/31/2012		$150,000.00	$150,000.00	New CNG Station - Carson	$0.00	Yes
MS06012	Consolidated Disposal Service	7/14/2006	9/13/2012	9/13/2014	$297,981.00	$297,981.00	New LNG Station & Facility Upgrades	$0.00	Yes
MS06042	Clean Energy Fuels Corp.	1/5/2007	1/4/2013		$150,000.00	$150,000.00	New CNG Station-Baldwin Park	$0.00	Yes
MS06043X	Westport Fuel Systems, Inc.	2/3/2007	12/31/2010	9/30/2011	$2,000,000.00	$2,000,000.00	Advanced Natural Gas Engine Incentive Pro	$0.00	Yes
MS06045	Orange County Transportation Autho	8/17/2007	12/16/2013		$200,000.00	$200,000.00	CNG Fueling Station/Maint. Fac. Mods	$0.00	Yes
MS06047	Hemet Unified School District	9/19/2007	11/18/2013		$125,000.00	$125,000.00	CNG Refueling Station	$0.00	Yes
MS06048	Newport-Mesa Unified School Distric	6/25/2007	8/24/2013	8/24/2014	$50,000.00	$50,000.00	CNG Fueling Station	$0.00	Yes
MS06050	Rossmoor Pastries	1/24/2007	10/23/2012		$18,750.00	$14,910.50	CNG Fueling Station	$3,839.50	Yes
Total: 44									
Open/Complete Contracts									
ML06054	Los Angeles County Department of	6/17/2009	6/16/2016		$125,000.00	$125,000.00	3 CNG & 2 LPG HD Trucks	$0.00	Yes
ML06071	City of Santa Monica	6/13/2014		11/30/2016	$149,925.00	$149,925.00	3 H.D. CNG Trucks & CNG Fueling Station	$0.00	Yes
MS06013	City of Commerce	1/9/2008	7/8/2014	7/8/2015	$350,000.00	$350,000.00	New L/CNG Station - Commerce	$0.00	Yes
MS06049	Clean Energy Fuels Corp.	4/20/2007	7/19/2013	11/30/2015	$250,000.00	$228,491.18	CNG Fueling Station - L.B.P.D.	$21,508.82	Yes

FY 2006-2007 Contracts

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
Open Contracts									
ML07044	City of Santa Monica	9/8/2008	3/7/2015	3/7/2017	$600,000.00	$50,000.00	24 H.D. Nat. Gas Vehicles	$550,000.00	No
MS07080	City of Los Angeles, Bureau of Sanit	10/31/2008	8/30/2010	8/28/2016	$63,192.00	$62,692.00	Off-Road Diesel Equipment Retrofit Program	$500.00	No
Total: 2									
Declined/Cancelled Contracts									
ML07031	City of Santa Monica				$180,000.00	$0.00	Upgrade N.G. Station to Add Hythane	$180,000.00	No
ML07032	City of Huntington Beach Public Wor				$25,000.00	$0.00	One H.D. CNG Vehicle	$25,000.00	No
ML07035	City of Los Angeles, General Service				$350,000.00	$0.00	New CNG Refueling Station/Southeast Yard	$350,000.00	No
ML07038	City of Palos Verdes Estates				$25,000.00	$0.00	One H.D. LPG Vehicle	$25,000.00	No
MS07010	Palos Verdes Peninsula Transit Auth				$80,000.00	$0.00	Repower 4 Transit Buses	$80,000.00	No
MS07014	Clean Energy Fuels Corp.				$350,000.00	$0.00	New L/CNG Station - SERRF	$350,000.00	No
MS07015	Baldwin Park Unified School District				$57,500.00	$0.00	New CNG Station	$57,500.00	No
MS07016	County of Riverside Fleet Services D				$36,359.00	$0.00	New CNG Station - Rubidoux	$36,359.00	No
MS07017	County of Riverside Fleet Services D				$33,829.00	$0.00	New CNG Station - Indio	$33,829.00	No
MS07018	City of Cathedral City				$350,000.00	$0.00	New CNG Station	$350,000.00	No
MS07021	City of Riverside				$350,000.00	$0.00	New CNG Station	$350,000.00	No
MS07050	Southern California Disposal Co.				$320,000.00	$0.00	Ten Nat. Gas Refuse Trucks	$320,000.00	No
MS07062	Caltrans Division of Equipment				$1,081,818.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$1,081,818.00	No
MS07065	ECCO Equipment Corp.				$174,525.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$174,525.00	No
MS07067	Recycled Materials Company of Calif				$99,900.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$99,900.00	No
MS07069	City of Burbank	5/9/2008	3/8/2010	9/8/2011	$8,895.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$8,895.00	No
MS07074	Albert W. Davies, Inc.	1/25/2008	11/24/2009		$39,200.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$39,200.00	No
MS07081	Clean Diesel Technologies, Inc.				$240,347.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$240,347.00	No
MS07082	DCL International, Inc.				$153,010.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$153,010.00	No
MS07083	Dinex Exhausts, Inc.				$52,381.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$52,381.00	No
MS07084	Donaldson Company, Inc.				$42,416.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$42,416.00	No
MS07085	Engine Control Systems Limited				$155,746.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$155,746.00	No
MS07086	Huss, LLC				$84,871.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$84,871.00	No
MS07087	Mann+Hummel GmbH				$189,361.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$189,361.00	No
MS07088	Nett Technologies, Inc.				$118,760.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$118,760.00	No
MS07089	Rypos, Inc.				$68,055.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$68,055.00	No
MS07090	Sud-Chemie				$27,345.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$27,345.00	No
Total: 27									
Closed Contracts									
ML07025	City of San Bernardino	8/12/2008	7/11/2010		$350,000.00	$350,000.00	Maintenance Facility Modifications	$0.00	Yes

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
ML07026	City of South Pasadena	6/13/2008	6/12/2014		$25,000.00	$25,000.00	One H.D. CNG Vehicle	$0.00	Yes
ML07027	Los Angeles World Airports	6/3/2008	7/2/2014		$25,000.00	$25,000.00	One H.D. LNG Vehicle	$0.00	Yes
ML07028	City of Los Angeles, General Service	3/13/2009	3/12/2014		$350,000.00	$350,000.00	New CNG Refueling Station/Hollywood Yard	$0.00	Yes
ML07029	City of Los Angeles, General Service	3/13/2009	3/12/2014		$350,000.00	$350,000.00	New CNG Refueling Station/Venice Yard	$0.00	Yes
ML07033	City of La Habra	5/21/2008	6/20/2014	11/30/2013	$25,000.00	$25,000.00	One H.D. Nat Gas Vehicle	$0.00	Yes
ML07034	City of Los Angeles, General Service	3/13/2009	3/12/2014		$350,000.00	$350,000.00	New CNG Refueling Station/Van Nuys Yard	$0.00	Yes
ML07036	City of Alhambra	1/23/2009	2/22/2015		$50,000.00	$50,000.00	2 H.D. CNG Vehicles	$0.00	Yes
ML07039	City of Baldwin Park	6/6/2008	6/5/2014	8/5/2015	$50,000.00	$50,000.00	Two N.G. H.D. Vehicles	$0.00	Yes
ML07040	City of Moreno Valley	6/3/2008	9/2/2014		$25,000.00	$25,000.00	One Heavy-Duty CNG Vehicle	$0.00	Yes
ML07041	City of La Quinta	6/6/2008	6/5/2014		$25,000.00	$25,000.00	One CNG Street Sweeper	$0.00	Yes
ML07042	City of La Quinta	8/15/2008	9/14/2010		$100,000.00	$100,000.00	Street Sweeping Operations	$0.00	Yes
ML07046	City of Culver City Transportation De	5/2/2008	5/1/2014		$25,000.00	$25,000.00	One H.D. Nat. Gas Vehicle	$0.00	Yes
ML07047	City of Cathedral City	6/16/2008	9/15/2014	3/15/2015	$225,000.00	$225,000.00	Two H.D. Nat. Gas Vehicles/New CNG Fueli	$0.00	Yes
ML07048	City of Cathedral City	9/19/2008	10/18/2010		$100,000.00	$84,972.45	Street Sweeping Operations	$15,027.55	Yes
MS07001	A-Z Bus Sales, Inc.	12/28/2006	12/31/2007	2/29/2008	$1,920,000.00	$1,380,000.00	CNG School Bus Buydown	$540,000.00	Yes
MS07002	BusWest	1/19/2007	12/31/2007	3/31/2008	$840,000.00	$840,000.00	CNG School Bus Buydown	$0.00	Yes
MS07003	Westport Fuel Systems, Inc.	11/2/2007	12/31/2011	6/30/2013	$1,500,000.00	$1,499,990.00	Advanced Nat. Gas Engine Incentive Progra	$10.00	Yes
MS07005	S-W Compressors	3/17/2008	3/16/2010		$60,000.00	$7,500.00	Mountain CNG School Bus Demo Program-	$52,500.00	Yes
MS07006	Coachella Valley Association of Gov	2/28/2008	10/27/2008		$400,000.00	$400,000.00	Coachella Valley PM10 Reduction Street Sw	$0.00	Yes
MS07007	Los Angeles World Airports	5/2/2008	11/1/2014		$420,000.00	$420,000.00	Purchase CNG 21 Transit Buses	$0.00	Yes
MS07011	L A Service Authority for Freeway E	3/12/2010	5/31/2011	9/30/2011	$700,000.00	$700,000.00	"511" Commuter Services Campaign	$0.00	Yes
MS07012	City of Los Angeles, General Service	6/13/2008	6/12/2009	6/12/2010	$50,000.00	$50,000.00	Maintenance Facility Modifications	$0.00	Yes
MS07013	Rainbow Disposal Company, Inc.	1/25/2008	3/24/2014	9/24/2014	$350,000.00	$350,000.00	New High-Volume CNG Station	$0.00	Yes
MS07019	City of Cathedral City	1/9/2009	6/8/2010		$32,500.00	$32,500.00	Maintenance Facility Modifications	$0.00	Yes
MS07051	City of San Bernardino	8/12/2008	12/11/2014		$480,000.00	$480,000.00	15 Nat. Gas Refuse Trucks	$0.00	Yes
MS07052	City of Redlands	7/30/2008	11/29/2014		$160,000.00	$160,000.00	Five Nat. Gas Refuse Trucks	$0.00	Yes
MS07053	City of Claremont	7/31/2008	12/30/2014		$96,000.00	$96,000.00	Three Nat. Gas Refuse Trucks	$0.00	Yes
MS07055	City of Culver City Transportation De	7/8/2008	9/7/2014		$192,000.00	$192,000.00	Six Nat. Gas Refuse Trucks	$0.00	Yes
MS07056	City of Whittier	9/5/2008	3/4/2015		$32,000.00	$32,000.00	One Nat. Gas Refuse Trucks	$0.00	Yes
MS07058	The Better World Group	11/17/2007	11/16/2009	11/16/2011	$247,690.00	$201,946.21	MSRC Programmatic Outreach Services	$45,743.79	Yes
MS07059	County Sanitation Districts of L.A. C	9/5/2008	9/4/2010	7/14/2012	$231,500.00	$231,500.00	Off-Road Diesel Equipment Retrofit Program	$0.00	Yes
MS07060	Community Recycling & Resource R	3/7/2008	1/6/2010	7/6/2011	$177,460.00	$98,471.00	Off-Road Diesel Equipment Retrofit Program	$78,989.00	Yes
MS07061	City of Los Angeles, Department of	10/31/2008	8/30/2010	2/28/2013	$40,626.00	$40,626.00	Off-Road Diesel Equipment Retrofit Program	$0.00	Yes
MS07063	Shimmick Construction Company, In	4/26/2008	2/25/2010	8/25/2011	$80,800.00	$11,956.37	Off-Road Diesel Equipment Retrofit Program	$68,843.63	No
MS07064	Altfillisch Contractors, Inc.	9/19/2008	7/18/2010	1/18/2011	$160,000.00	$155,667.14	Off-Road Diesel Equipment Retrofit Program	$4,332.86	Yes
MS07068	Sukut Equipment Inc.	1/23/2009	11/22/2010	5/22/2012	$26,900.00	$26,900.00	Off-Road Diesel Equipment Retrofit Program	$0.00	Yes
MS07070	Griffith Company	4/30/2008	2/28/2010	8/28/2012	$168,434.00	$125,504.00	Off-Road Diesel Equipment Retrofit Program	$42,930.00	Yes

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
MS07071	Tiger 4 Equipment Leasing	9/19/2008	7/18/2010	1/18/2013	$210,937.00	$108,808.97	Off-Road Diesel Equipment Retrofit Program	$102,128.03	Yes
MS07072	City of Culver City Transportation De	4/4/2008	2/3/2010	8/3/2011	$72,865.00	$72,865.00	Off-Road Diesel Equipment Retrofit Program	$0.00	Yes
MS07075	Dan Copp Crushing	9/17/2008	7/16/2010	1/16/2012	$73,600.00	$40,200.00	Off-Road Diesel Equipment Retrofit Program	$33,400.00	No
MS07076	Reed Thomas Company, Inc.	8/15/2008	6/14/2010	3/14/2012	$339,073.00	$100,540.00	Off-Road Diesel Equipment Retrofit Program	$238,533.00	No
MS07079	Riverside County Transportation Co	1/30/2009	7/29/2013	12/31/2011	$20,000.00	$15,165.45	BikeMetro Website Migration	$4,834.55	Yes
MS07091	BusWest	10/16/2009	3/15/2010		$33,660.00	$33,660.00	Provide Lease for 2 CNG School Buses	$0.00	Yes
MS07092	Riverside County Transportation Co	9/1/2010	10/31/2011		$350,000.00	$350,000.00	"511" Commuter Services Campaign	$0.00	Yes
Total: 45									
Closed/Incomplete Contracts									
ML07045	City of Inglewood	2/6/2009	4/5/2015		$75,000.00	$25,000.00	3 H.D. Nat. Gas Vehicles	$50,000.00	No
MS07004	BusWest	7/2/2007	7/1/2009		$90,928.00	$68,196.00	Provide Lease for 2 CNG School Buses	$22,732.00	No
MS07066	Skanska USA Civil West California D	6/28/2008	4/27/2010	10/27/2010	$111,700.00	$36,128.19	Off-Road Diesel Equipment Retrofit Program	$75,571.81	No
MS07073	PEED Equipment Co.	10/31/2008	8/30/2010		$11,600.00	$0.00	Off-Road Diesel Equipment Retrofit Program	$11,600.00	No
Total: 4									
Open/Complete Contracts									
ML07023	City of Riverside	6/20/2008	10/19/2014	7/19/2016	$462,500.00	$461,476.42	CNG Station Expansion/Purch. 14 H.D. Vehi	$1,023.58	No
ML07024	City of Garden Grove	3/7/2008	9/6/2014	7/6/2016	$75,000.00	$75,000.00	Three H.D. CNG Vehicles	$0.00	Yes
ML07030	County of San Bernardino Public Wo	7/11/2008	9/10/2015		$200,000.00	$200,000.00	8 Natural Gas H.D. Vehicles	$0.00	Yes
ML07037	City of Los Angeles, General Service	10/8/2008	10/7/2015		$255,222.00	$255,222.00	Upgrade LNG/LCNG Station/East Valley Yar	$0.00	Yes
ML07043	City of Redondo Beach	9/28/2008	7/27/2014	10/27/2016	$125,000.00	$125,000.00	Five H.D. CNG Transit Vehicles	$0.00	Yes
MS07008	City of Los Angeles, Department of T	9/18/2009	5/17/2020	9/17/2017	$1,900,000.00	$1,900,000.00	Purchase 95 Transit Buses	$0.00	Yes
MS07009	Orange County Transportation Autho	5/14/2008	4/13/2016		$800,000.00	$800,000.00	Purchase 40 Transit Buses	$0.00	Yes
MS07020	Avery Petroleum	5/20/2009	7/19/2015		$250,000.00	$250,000.00	New CNG Station	$0.00	Yes
MS07022	CSULA Hydrogen Station and Resea	10/30/2009	12/29/2015	10/29/2019	$250,000.00	$250,000.00	New Hydrogen Fueling Station	$0.00	Yes
MS07049	Palm Springs Disposal Services	10/23/2008	11/22/2014	9/22/2016	$96,000.00	$96,000.00	Three Nat. Gas Refuse Trucks	$0.00	Yes
MS07054	Republic Services, Inc.	3/7/2008	9/6/2014	9/6/2016	$1,280,000.00	$1,280,000.00	40 Nat. Gas Refuse Trucks	$0.00	Yes
MS07057	CR&R, Inc.	7/31/2008	8/30/2014	6/30/2015	$896,000.00	$896,000.00	28 Nat. Gas Refuse Trucks	$0.00	No
MS07077	USA Waste of California, Inc.	5/1/2009	12/31/2014		$160,000.00	$160,000.00	Five Nat. Gas Refuse Trucks (Santa Ana)	$0.00	Yes
MS07078	USA Waste of California, Inc.	5/1/2009	12/31/2014	12/31/2015	$256,000.00	$256,000.00	Eight Nat. Gas Refuse Trucks (Dewey's)	$0.00	Yes
Total: 14									

FY 2007-2008 Contracts

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
Open Contracts									
ML08028	City of Santa Monica	9/11/2009	9/10/2016	5/10/2019	$600,000.00	$0.00	24 CNG Heavy-Duty Vehicles	$600,000.00	No
ML08030	City of Azusa	5/14/2010	3/13/2016		$25,000.00	$0.00	1 CNG Heavy-Duty Vehicle	$25,000.00	No
ML08040	City of Riverside	9/11/2009	9/10/2016	3/10/2019	$455,500.00	$28,124.80	16 CNG Vehicles, Expand CNG Station & M	$427,375.20	No
ML08043	City of Desert Hot Springs	9/25/2009	3/24/2016		$25,000.00	$0.00	1 CNG Heavy-Duty Vehicle	$25,000.00	No
MS08007	United Parcel Service West Region	12/10/2008	10/9/2014	4/9/2019	$300,000.00	$0.00	10 H.D. Nat. Gas Vehicles	$300,000.00	No
MS08013	United Parcel Service West Region	12/10/2008	10/9/2014	3/9/2019	$480,000.00	$216,000.00	12 H.D. Nat. Gas Yard Tractors	$264,000.00	No
MS08058	Clean Energy Fuels Corp.	11/26/2009	3/25/2016	3/25/2017	$400,000.00	$320,000.00	New CNG Station - Ontario Airport	$80,000.00	No
MS08068	Regents of the University of Californi	11/5/2010	11/4/2017	11/4/2019	$400,000.00	$0.00	Hydrogen Station	$400,000.00	No
Total: 8									
Declined/Cancelled Contracts									
ML08032	City of Irvine	5/1/2009	8/31/2010		$9,000.00	$0.00	36 Vehicles (Diagnostic)	$9,000.00	No
ML08041	City of Los Angeles, Dept of Transpo	8/6/2010	7/5/2011	12/5/2011	$8,800.00	$0.00	73 Vehicles (Diagnostic)	$8,800.00	No
ML08049	City of Cerritos	3/20/2009	1/19/2015	2/19/2017	$25,000.00	$0.00	1 CNG Heavy-Duty Vehicle	$25,000.00	No
ML08051	City of Colton				$75,000.00	$0.00	3 CNG Heavy-Duty Vehicles	$75,000.00	No
MS08002	Orange County Transportation Autho				$1,500,000.00	$0.00	Big Rig Freeway Service Patrol	$1,500,000.00	No
MS08008	Diversified Truck Rental & Leasing				$300,000.00	$0.00	10 H.D. Nat. Gas Vehicles	$300,000.00	No
MS08010	Orange County Transportation Autho				$10,000.00	$0.00	20 H.D. Nat. Gas Vehicles	$10,000.00	No
MS08011	Green Fleet Systems, LLC				$10,000.00	$0.00	30 H.D. Nat. Gas Vehicles	$10,000.00	No
MS08052	Burrtec Waste Industries, Inc.	12/24/2008	11/23/2014	11/23/2015	$100,000.00	$0.00	New CNG Station - Fontana	$100,000.00	No
MS08054	Clean Energy Fuels Corp.				$400,000.00	$0.00	New LNG Station - Fontana	$400,000.00	No
MS08055	Clean Energy Fuels Corp.	11/26/2009	3/25/2016	3/25/2017	$400,000.00	$0.00	New LNG Station - Long Beach-Pier S	$400,000.00	No
MS08059	Burrtec Waste Industries, Inc.	12/24/2008	11/23/2014		$100,000.00	$0.00	New CNG Station - San Bernardino	$100,000.00	No
MS08060	Burrtec Waste Industries, Inc.	12/24/2008	11/23/2014		$100,000.00	$0.00	New CNG Station - Azusa	$100,000.00	No
MS08062	Go Natural Gas	9/25/2009	1/24/2016	1/24/2017	$400,000.00	$0.00	New CNG Station - Rialto	$400,000.00	No
MS08074	Fontana Unified School District	11/14/2008	12/13/2014		$200,000.00	$0.00	Expansion of Existing CNG station	$200,000.00	No
MS08077	Hythane Company, LLC				$144,000.00	$0.00	Upgrade Station to Hythane	$144,000.00	No
Total: 16									
Closed Contracts									
ML08023	City of Villa Park	11/7/2008	10/6/2012		$6,500.00	$5,102.50	Upgrade of Existing Refueling Facility	$1,397.50	Yes
ML08027	Los Angeles County Department of	7/20/2009	1/19/2011	1/19/2012	$6,901.00	$5,124.00	34 Vehicles (Diagnostic)	$1,777.00	No
ML08029	City of Gardena	3/19/2009	1/18/2015		$25,000.00	$25,000.00	1 Propane Heavy-Duty Vehicle	$0.00	Yes
ML08031	City of Claremont	3/27/2009	3/26/2013	3/26/2015	$97,500.00	$97,500.00	Upgrade of Existing CNG Station, Purchase	$0.00	Yes
ML08033	County of San Bernardino Public Wo	4/3/2009	2/2/2010		$14,875.00	$14,875.00	70 Vehicles (Diagnostic)	$0.00	Yes
ML08034	County of San Bernardino Public Wo	3/27/2009	7/26/2015		$150,000.00	$150,000.00	8 CNG Heavy-Duty Vehicles	$0.00	Yes

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
ML08035	City of La Verne	3/6/2009	11/5/2009		$11,925.00	$11,925.00	53 Vehicles (Diagnostic)	$0.00	Yes
ML08036	City of South Pasadena	5/12/2009	7/11/2013		$169,421.00	$169,421.00	New CNG Station	$0.00	Yes
ML08037	City of Glendale	5/20/2009	5/19/2015		$325,000.00	$325,000.00	13 CNG Heavy-Duty Vehicles	$0.00	Yes
ML08039	City of Rancho Palos Verdes	6/5/2009	8/4/2015		$50,000.00	$50,000.00	2 LPG Transit Buses	$0.00	Yes
ML08044	City of Chino	3/19/2009	3/18/2015		$25,000.00	$25,000.00	1 CNG Heavy-Duty Vehicle	$0.00	Yes
ML08045	City of Santa Clarita	2/20/2009	6/19/2010		$3,213.00	$3,150.00	14 Vehicles (Diagnostic)	$63.00	Yes
ML08046	City of Paramount	2/20/2009	2/19/2015		$25,000.00	$25,000.00	1 CNG Heavy-Duty Vehicle	$0.00	Yes
ML08047	City of Culver City Transportation De	5/12/2009	8/11/2015		$150,000.00	$150,000.00	6 CNG Heavy-Duty Vehicles	$0.00	Yes
ML08048	City of Santa Clarita	2/20/2009	6/19/2015		$25,000.00	$25,000.00	1 CNG Heavy-Duty Vehicle	$0.00	Yes
ML08080	City of Irvine	5/1/2009	5/31/2015		$50,000.00	$0.00	Two Heavy-Duty Nat. Gas Vehicles	$50,000.00	No
MS08001	Los Angeles County MTA	12/10/2010	6/9/2014		$1,500,000.00	$1,499,999.66	Big Rig Freeway Service Patrol	$0.34	Yes
MS08003	A-Z Bus Sales, Inc.	5/2/2008	12/31/2008	2/28/2009	$1,480,000.00	$1,400,000.00	Alternative Fuel School Bus Incentive Progr	$80,000.00	Yes
MS08004	BusWest	5/2/2008	12/31/2008		$1,440,000.00	$1,440,000.00	Alternative Fuel School Bus Incentive Progr	$0.00	Yes
MS08009	Los Angeles World Airports	12/24/2008	12/23/2014		$870,000.00	$870,000.00	29 H.D. Nat. Gas Vehicles	$0.00	Yes
MS08015	Yosemite Waters	5/12/2009	5/11/2015		$180,000.00	$117,813.60	11 H.D. Propane Vehicles	$62,186.40	Yes
MS08016	TransVironmental Solutions, Inc.	1/23/2009	12/31/2010	9/30/2011	$227,198.00	$80,351.34	Rideshare 2 School Program	$146,846.66	Yes
MS08022	SunLine Transit Agency	12/18/2008	3/17/2015		$311,625.00	$311,625.00	15 CNG Buses	$0.00	Yes
MS08056	Clean Energy Fuels Corp.	11/26/2009	2/25/2015		$400,000.00	$400,000.00	New LNG Station - POLB-Anah. & I	$0.00	Yes
MS08057	Orange County Transportation Autho	5/14/2009	7/13/2015		$400,000.00	$400,000.00	New CNG Station - Garden Grove	$0.00	Yes
MS08061	Clean Energy Fuels Corp.	12/4/2009	3/3/2015		$400,000.00	$400,000.00	New CNG Station - L.A.-La Cienega	$0.00	Yes
MS08064	Hemet Unified School District	1/9/2009	3/8/2015		$75,000.00	$75,000.00	Expansion of Existing Infrastructure	$0.00	Yes
MS08065	Pupil Transportation Cooperative	11/20/2008	7/19/2014		$10,500.00	$10,500.00	Existing CNG Station Modifications	$0.00	Yes
MS08070	Clean Energy Fuels Corp.	11/26/2009	2/25/2015		$400,000.00	$400,000.00	New CNG Station - Paramount	$0.00	Yes
MS08071	ABC Unified School District	1/16/2009	1/15/2015		$63,000.00	$63,000.00	New CNG Station	$0.00	Yes
MS08072	Clean Energy Fuels Corp.	12/4/2009	3/3/2015		$400,000.00	$354,243.38	New CNG Station - Burbank	$45,756.62	Yes
MS08073	Clean Energy Fuels Corp.	11/26/2009	2/25/2015		$400,000.00	$400,000.00	New CNG Station - Norwalk	$0.00	Yes
MS08075	Disneyland Resort	12/10/2008	2/1/2015		$200,000.00	$200,000.00	Expansion of Existing CNG Infrastructure	$0.00	Yes
MS09002	A-Z Bus Sales, Inc.	11/7/2008	12/31/2009	12/31/2010	$2,520,000.00	$2,460,000.00	Alternative Fuel School Bus Incentive Progr	$60,000.00	No
MS09004	A-Z Bus Sales, Inc.	1/30/2009	3/31/2009		$156,000.00	$156,000.00	Alternative Fuel School Bus Incentive Progr	$0.00	Yes
MS09047	BusWest	7/9/2010	12/31/2010	4/30/2011	$480,000.00	$480,000.00	Alternative Fuel School Bus Incentive Progr	$0.00	Yes
Total: 36									
Closed/Incomplete Contracts									
ML08025	Los Angeles County Department of	10/30/2009	3/29/2011		$75,000.00	$0.00	150 Vehicles (Diagnostic)	$75,000.00	No
MS08079	ABC Unified School District	1/16/2009	12/15/2009	12/15/2010	$50,000.00	$0.00	Maintenance Facility Modifications	$50,000.00	No
Total: 2									
Open/Complete Contracts									
ML08024	City of Anaheim	7/9/2010	7/8/2017	1/8/2018	$425,000.00	$425,000.00	9 LPG Buses and 8 CNG Buses	$0.00	No

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
ML08026	Los Angeles County Department of	7/20/2009	7/19/2016		$250,000.00	$250,000.00	10 LPG Heavy-Duty Vehicles	$0.00	Yes
ML08038	Los Angeles Department of Water a	7/16/2010	7/15/2017		$1,050,000.00	$1,050,000.00	42 CNG Heavy-Duty Vehicles	$0.00	Yes
ML08042	City of Ontario, Housing & Municipal	5/1/2009	1/31/2016		$175,000.00	$175,000.00	7 CNG Heavy-Duty Vehicles	$0.00	Yes
ML08050	City of Laguna Beach Public Works	8/12/2009	4/11/2016	10/11/2016	$75,000.00	$75,000.00	3 LPG Trolleys	$0.00	Yes
MS08005	Burrtec Waste Industries, Inc.	10/23/2008	11/22/2014	10/22/2015	$450,000.00	$450,000.00	15 H.D. Nat. Gas Vehicles - Azusa	$0.00	Yes
MS08006	Burrtec Waste Industries, Inc.	10/23/2008	11/22/2014	10/22/2015	$450,000.00	$450,000.00	15 H.D. Nat. Gas Vehicles - Saugus	$0.00	Yes
MS08012	California Cartage Company, LLC	12/21/2009	10/20/2015	4/20/2016	$480,000.00	$480,000.00	12 H.D. Nat. Gas Yard Tractors	$0.00	Yes
MS08014	City of San Bernardino	12/5/2008	6/4/2015		$390,000.00	$360,000.00	13 H.D. Nat. Gas Vehicles	$30,000.00	Yes
MS08017	Omnitrans	12/13/2008	12/12/2015	12/12/2016	$900,000.00	$900,000.00	30 CNG Buses	$0.00	Yes
MS08018	Los Angeles County Department of	8/7/2009	10/6/2016	4/6/2018	$60,000.00	$60,000.00	2 CNG Vehicles	$0.00	Yes
MS08019	Enterprise Rent-A-Car Company of L	2/12/2010	7/11/2016		$300,000.00	$300,000.00	10 CNG Vehicles	$0.00	Yes
MS08020	Ware Disposal Company, Inc.	11/25/2008	2/24/2016		$900,000.00	$900,000.00	30 CNG Vehicles	$0.00	Yes
MS08021	CalMet Services, Inc.	1/9/2009	1/8/2016	7/8/2016	$900,000.00	$900,000.00	30 CNG Vehicles	$0.00	Yes
MS08053	City of Los Angeles, Bureau of Sanit	2/18/2009	12/17/2015		$400,000.00	$400,000.00	New LNG/CNG Station	$0.00	Yes
MS08063	Go Natural Gas	9/25/2009	1/24/2016	1/24/2017	$400,000.00	$400,000.00	New CNG Station - Moreno Valley	$0.00	Yes
MS08066	Clean Energy Fuels Corp.	11/26/2009	2/25/2015		$400,000.00	$400,000.00	New CNG Station - Palm Spring Airport	$0.00	Yes
MS08067	Trillium CNG	3/19/2009	6/18/2015	6/18/2016	$311,600.00	$254,330.00	New CNG Station	$57,270.00	Yes
MS08069	Perris Union High School District	6/5/2009	8/4/2015	8/4/2016	$225,000.00	$225,000.00	New CNG Station	$0.00	Yes
MS08076	Azusa Unified School District	10/17/2008	11/16/2014	1/31/2017	$172,500.00	$172,500.00	New CNG station and maint. Fac. Modificati	$0.00	Yes
MS08078	SunLine Transit Agency	12/10/2008	6/9/2015	2/9/2016	$189,000.00	$189,000.00	CNG Station Upgrade	$0.00	Yes

Total: 21

FY 2008-2009 Contracts

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
Open Contracts									
ML09010	City of Palm Springs	1/8/2010	2/7/2016		$25,000.00	$0.00	1 Nat. Gas Heavy-Duty Vehicle	$25,000.00	No
ML09032	Los Angeles World Airports	4/8/2011	4/7/2018		$175,000.00	$0.00	7 Nat. Gas Heavy-Duty Vehicles	$175,000.00	No
ML09033	City of Beverly Hills	3/4/2011	5/3/2017	5/3/2018	$550,000.00	$100,000.00	10 Nat. Gas Heavy-Duty Vehicles & CNG St	$450,000.00	No
ML09036	City of Long Beach Fleet Services B	5/7/2010	5/6/2017	5/6/2020	$875,000.00	$525,000.00	Purchase 35 LNG Refuse Trucks	$350,000.00	No
ML09047	Los Angeles County Department of	8/13/2014	8/12/2015	11/12/2015	$400,000.00	$0.00	Maintenance Facility Modifications	$400,000.00	No
Total: 5									
Declined/Cancelled Contracts									
ML09017	County of San Bernardino Public Wo	1/28/2010	7/27/2016		$200,000.00	$0.00	8 Nat. Gas Heavy-Duty Vehicles	$200,000.00	No
ML09018	Los Angeles Department of Water a	7/16/2010	9/15/2012		$850,000.00	$0.00	Retrofit 85 Off-Road Vehicles w/DECS	$850,000.00	No
ML09019	City of San Juan Capistrano Public	12/4/2009	11/3/2010		$10,125.00	$0.00	Remote Vehicle Diagnostics/45 Vehicles	$10,125.00	No
ML09022	Los Angeles County Department of				$8,250.00	$0.00	Remote Vehicle Diagnostics/15 Vehicles	$8,250.00	No
ML09025	Los Angeles County Department of	10/15/2010	12/14/2012	6/14/2013	$50,000.00	$0.00	Remote Vehicle Diagnostics/85 Vehicles	$50,000.00	No
ML09028	Riverside County Waste Manageme				$140,000.00	$0.00	Retrofit 7 Off-Road Vehicles w/DECS	$140,000.00	No
ML09039	City of Inglewood				$310,000.00	$0.00	Purchase 12 H.D. CNG Vehicles and Remot	$310,000.00	No
ML09040	City of Cathedral City				$83,125.00	$0.00	Purchase 3 H.D. CNG Vehicles and Remote	$83,125.00	No
ML09044	City of San Dimas				$425,000.00	$0.00	Install CNG Station and Purchase 1 CNG S	$425,000.00	No
ML09045	City of Orange				$125,000.00	$0.00	Purchase 5 CNG Sweepers	$125,000.00	No
MS09003	FuelMaker Corporation				$296,000.00	$0.00	Home Refueling Apparatus Incentives	$296,000.00	No
Total: 11									
Closed Contracts									
ML09007	City of Rancho Cucamonga	2/26/2010	4/25/2012		$117,500.00	$62,452.57	Maintenance Facility Modification	$55,047.43	Yes
ML09013	City of Riverside Public Works	9/10/2010	12/9/2011	7/31/2013	$144,470.00	$128,116.75	Traffic Signal Synchr./Moreno Valley	$16,353.25	Yes
ML09014	City of Riverside Public Works	9/10/2010	12/9/2011	7/31/2013	$113,030.00	$108,495.94	Traffic Signal Synchr./Corona	$4,534.06	Yes
ML09015	City of Riverside Public Works	9/10/2010	12/9/2011	7/31/2013	$80,060.00	$79,778.52	Traffic Signal Synchr./Co. of Riverside	$281.48	Yes
ML09016	County of San Bernardino Public Wo	1/28/2010	3/27/2014		$50,000.00	$50,000.00	Install New CNG Station	$0.00	Yes
ML09020	County of San Bernardino	8/16/2010	2/15/2012		$49,770.00	$49,770.00	Remote Vehicle Diagnostics/252 Vehicles	$0.00	Yes
ML09021	City of Palm Desert	7/9/2010	3/8/2012		$39,450.00	$38,248.87	Traffic Signal Synchr./Rancho Mirage	$1,201.13	Yes
ML09024	Los Angeles County Department of	10/15/2010	12/14/2012	6/14/2013	$400,000.00	$0.00	Maintenance Facility Modifications	$400,000.00	No
ML09027	Los Angeles County Department of	7/23/2010	3/22/2012	6/22/2012	$150,000.00	$150,000.00	Freeway Detector Map Interface	$0.00	Yes
ML09030	City of Los Angeles GSD/Fleet Servi	6/18/2010	6/17/2011		$22,310.00	$22,310.00	Remote Vehicle Diagnostics/107 Vehicles	$0.00	No
ML09034	City of La Palma	11/25/2009	6/24/2015		$25,000.00	$25,000.00	1 LPG Heavy-Duty Vehicle	$0.00	Yes
MS09001	Administrative Services Co-Op/Long	3/5/2009	6/30/2012	12/31/2013	$225,000.00	$150,000.00	15 CNG Taxicabs	$75,000.00	Yes
MS09005	Gas Equipment Systems, Inc.	6/19/2009	10/18/2010		$71,000.00	$71,000.00	Provide Temp. Fueling for Mountain Area C	$0.00	Yes
Total: 13									

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
Open/Complete Contracts									
ML09008	City of Culver City Transportation De	1/19/2010	7/18/2016	7/18/2017	$175,000.00	$175,000.00	8 Nat. Gas Heavy-Duty Vehicles	$0.00	No
ML09009	City of South Pasadena	11/5/2010	12/4/2016	3/4/2019	$125,930.00	$125,930.00	CNG Station Expansion	$0.00	No
ML09011	City of San Bernardino	2/19/2010	5/18/2016		$250,000.00	$250,000.00	10 Nat. Gas Heavy-Duty Vehicles	$0.00	Yes
ML09012	City of Gardena	3/12/2010	11/11/2015		$25,000.00	$25,000.00	1 Nat. Gas Heavy-Duty Vehicle	$0.00	Yes
ML09023	Los Angeles County Department of	12/10/2010	12/9/2017		$50,000.00	$50,000.00	2 Heavy-Duty Alternative Fuel Transit Vehic	$0.00	No
ML09026	Los Angeles County Department of	10/15/2010	10/14/2017	4/14/2019	$150,000.00	$80,411.18	3 Off-Road Vehicles Repowers	$69,588.82	No
ML09029	City of Whittier	11/6/2009	4/5/2016		$25,000.00	$25,000.00	1 Nat. Gas Heavy-Duty Vehicle	$0.00	Yes
ML09031	City of Los Angeles, Department of	10/29/2010	10/28/2017		$825,000.00	$825,000.00	33 Nat. Gas Heavy-Duty Vehicles	$0.00	Yes
ML09035	City of Fullerton	6/17/2010	6/16/2017	12/16/2018	$450,000.00	$450,000.00	2 Heavy-Duty CNG Vehicles & Install CNG	$0.00	Yes
ML09037	City of Redondo Beach	6/18/2010	6/17/2016		$50,000.00	$50,000.00	Purchase Two CNG Sweepers	$0.00	Yes
ML09038	City of Chino	9/27/2010	5/26/2017		$250,000.00	$250,000.00	Upgrade Existing CNG Station	$0.00	Yes
ML09041	City of Los Angeles, Bureau of Sanit	10/1/2010	9/30/2017		$875,000.00	$875,000.00	Purchase 35 H.D. Nat. Gas Vehicles	$0.00	Yes
ML09042	Los Angeles Department of Water a	12/10/2010	12/9/2017		$1,400,000.00	$1,400,000.00	Purchase 56 Dump Trucks	$0.00	Yes
ML09043	City of Covina	10/8/2010	4/7/2017	10/7/2018	$179,591.00	$179,591.00	Upgrade Existing CNG Station	$0.00	Yes
ML09046	City of Newport Beach	5/20/2010	5/19/2016		$162,500.00	$162,500.00	Upgrade Existing CNG Station, Maintenance	$0.00	Yes

Total: 15

FY 2009-2010 Contracts

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
Open Contracts									
MS10015	County of Los Angeles Department o	3/14/2014	5/13/2016		$37,955.00	$37,955.00	Purchase 2 H.D. CNG Vehicles	$0.00	No
Total: 1									
Declined/Cancelled Contracts									
MS10003	City of Sierra Madre	5/11/2012	3/10/2018		$13,555.00	$0.00	Purchase 1 H.D. CNG Vehicle	$13,555.00	No
MS10005	Domestic Linen Supply Company, In	10/8/2010	7/7/2016		$47,444.00	$0.00	Purchase 5 Gas-Electric Hybrid Vehicles	$47,444.00	No
MS10013	City of San Bernardino				$68,834.00	$0.00	Purchase 9 H.D. LNG Vehicles	$68,834.00	No
MS10014	Serv-Wel Disposal				$18,977.00	$0.00	Purchase 2 H.D. CNG Vehicles	$18,977.00	No
MS10018	Shaw Transport Inc.				$81,332.00	$0.00	Purchase 6 H.D. LNG Vehicles	$81,332.00	No
MS10022	Los Angeles World Airports				$123,353.00	$0.00	Purchase 13 H.D. CNG Vehicles	$123,353.00	No
MS10023	Dix Leasing				$105,000.00	$0.00	Purchase 3 H.D. LNG Vehicles	$105,000.00	No
Total: 7									
Closed Contracts									
MS10001	Los Angeles County MTA	3/19/2010	2/28/2011	4/28/2011	$300,000.00	$196,790.61	Clean Fuel Transit Bus Service to Dodger St	$103,209.39	Yes
MS10002	Coachella Valley Association of Gov	6/18/2010	2/17/2011		$400,000.00	$400,000.00	Coachella Valley PM10 Reduction Street Sw	$0.00	Yes
MS10025	Elham Shirazi	2/18/2011	10/17/2012	2/17/2014	$199,449.00	$188,413.05	Telework Demonstration Program	$11,035.95	No
Total: 3									
Open/Complete Contracts									
MS10004	Linde LLC	3/2/2012	6/1/2018		$56,932.00	$56,931.00	Purchase 6 H.D. CNG Vehicles	$1.00	Yes
MS10006	Nationwide Environmental Services	11/19/2010	4/18/2017	9/18/2019	$94,887.00	$94,887.00	Purchase Three Street Sweepers	$0.00	Yes
MS10007	Enterprise Rent-A-Car Company of L	7/15/2011	10/14/2017		$18,976.00	$18,976.00	Purchase 2 H.D. CNG Vehicles	$0.00	No
MS10008	Republic Services, Inc.	12/10/2010	5/9/2017		$123,354.00	$123,354.00	Purchase 4 CNG Refuse Collection Vehicles	$0.00	Yes
MS10009	Ware Disposal Company, Inc.	10/29/2010	3/28/2017		$123,353.00	$123,352.00	Purchase 4 CNG Refuse Trucks	$1.00	No
MS10010	New Bern Transport Corporation	10/29/2010	3/28/2017		$113,864.00	$113,864.00	Repower 4 Heavy-Duty Vehicles	$0.00	Yes
MS10011	Foothill Transit Agency	3/9/2012	2/8/2018		$113,865.00	$113,865.00	Purchase 12 H.D. CNG Vehicles	$0.00	Yes
MS10012	Foothill Transit Agency	3/9/2012	3/8/2019		$85,392.00	$85,392.00	Purchase 9 H.D. Electric Vehicles	$0.00	Yes
MS10016	Rio Hondo Community College	11/5/2010	5/4/2017		$16,077.00	$16,077.00	Purchase 1 CNG Shuttle Bus	$0.00	Yes
MS10017	Ryder System Inc.	12/30/2011	6/29/2018	12/29/2018	$651,377.00	$651,377.00	Purchase 19 H.D. Natural Gas Vehicles	$0.00	Yes
MS10019	EDCO Disposal Corporation	11/19/2010	2/18/2017		$379,549.00	$379,283.81	Purchase 11 H.D. CNG Refuse Trucks	$265.19	Yes
MS10020	American Reclamation, Inc.	5/6/2011	2/5/2018		$18,977.00	$18,977.00	Purchase 1 H.D. CNG Vehicle	$0.00	Yes
MS10021	City of Glendora	10/29/2010	11/28/2016		$9,489.00	$9,489.00	Purchase 1 H.D. CNG Vehicle	$0.00	Yes
MS10024	Frito-Lay North America	7/29/2011	9/28/2017		$47,444.00	$47,444.00	Purchase 5 Electric Vehicles	$0.00	Yes
Total: 14									

FY 2010-2011 Contracts

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
Open Contracts									
ML11020	City of Indio	2/1/2013	3/31/2019	9/30/2019	$30,000.00	$0.00	Retrofit one H.D. Vehicles w/DECS, repower	$30,000.00	No
ML11023	City of Rancho Cucamonga	4/20/2012	12/19/2018	9/19/2020	$260,000.00	$60,000.00	Expand Existing CNG Station, 2 H.D. Vehicl	$200,000.00	No
ML11024	County of Los Angeles, Dept of Publi	12/5/2014	6/4/2022		$90,000.00	$0.00	Purchase 3 Nat. Gas H.D. Vehicles	$90,000.00	No
ML11027	City of Los Angeles, Dept. of Genera	5/4/2012	7/3/2015	1/3/2016	$300,000.00	$0.00	Maintenance Facility Modifications	$300,000.00	No
ML11029	City of Santa Ana	9/7/2012	3/6/2020		$262,500.00	$0.00	Expansion of Existing CNG Station, Install N	$262,500.00	No
ML11032	City of Gardena	3/2/2012	9/1/2018	10/1/2020	$102,500.00	$0.00	Modify Maint. Facility, Expand CNG station,	$102,500.00	No
ML11036	City of Riverside	1/27/2012	1/26/2019	3/26/2021	$670,000.00	$0.00	Install New CNG Station, Purchase 9 H.D. N	$670,000.00	No
ML11038	City of Santa Monica	5/18/2012	7/17/2018		$400,000.00	$0.00	Maintenance Facility Modifications	$400,000.00	No
ML11040	City of South Pasadena	5/4/2012	1/3/2019		$30,000.00	$0.00	Purchase 1 Nat. Gas H.D. Vehicle	$30,000.00	No
ML11041	City of Santa Ana	9/7/2012	11/6/2018	5/6/2020	$265,000.00	$34,651.86	Purchase 7 LPG H.D. Vehicles, Retrofit 6 H.	$230,348.14	No
ML11045	City of Newport Beach	2/3/2012	8/2/2018	8/2/2020	$30,000.00	$0.00	Purchase 1 Nat. Gas H.D. Vehicle	$30,000.00	No
MS11001	Mineral LLC	4/22/2011	4/30/2013	4/30/2015	$111,827.00	$103,136.83	Design, Develop, Host and Maintain MSRC	$8,690.17	No
MS11010	Border Valley Trading	8/26/2011	10/25/2017	4/25/2020	$150,000.00	$135,000.00	New LNG Station	$15,000.00	No
MS11016	CR&R Incorporated	4/12/2013	10/11/2019		$100,000.00	$100,000.00	New CNG Station - Perris	$0.00	No
MS11019	City of Corona	11/29/2012	4/28/2020		$225,000.00	$0.00	Expansion of Existing CNG Station	$225,000.00	No
MS11056	The Better World Group	12/30/2011	12/29/2013	12/29/2015	$206,836.00	$170,805.96	Programmatic Outreach Services	$36,030.04	No
MS11061	Eastern Municipal Water District	3/29/2012	5/28/2015		$11,659.00	$1,450.00	Retrofit One Off-Road Vehicle under Showc	$10,209.00	No
MS11062	Load Center	9/7/2012	1/6/2016	12/6/2016	$175,384.00	$169,883.00	Retrofit Six Off-Road Vehicles under Showc	$5,501.00	No
MS11065	Temecula Valley Unified School Distr	8/11/2012	1/10/2019		$50,000.00	$0.00	Expansion of Existing CNG Station	$50,000.00	No
MS11067	City of Redlands	5/24/2012	11/23/2018	11/23/2019	$85,000.00	$0.00	Expansion of Existing CNG Station	$85,000.00	No
MS11068	Ryder System Inc.	7/28/2012	10/27/2018		$175,000.00	$175,000.00	New Public Access L/CNG Station (Fontana	$0.00	No
MS11069	Ryder System Inc.	7/28/2012	8/27/2018		$175,000.00	$175,000.00	New Public Access L/CNG Station (Orange)	$0.00	No
MS11071	City of Torrance Transit Department	12/22/2012	1/21/2019	1/21/2020	$175,000.00	$166,250.00	New Limited Access CNG Station	$8,750.00	No
MS11076	SA Recycling, LLC	5/24/2012	9/23/2015		$424,801.00	$0.00	Retrofit of 13 Off-Road Diesel Vehicles with	$424,801.00	No
MS11081	Metropolitan Stevedore Company	9/7/2012	1/6/2016		$45,416.00	$0.00	Install DECS on Two Off-Road Vehicles	$45,416.00	No
MS11085	City of Long Beach Fleet Services B	8/23/2013	12/22/2016		$159,012.00	$0.00	Retrofit Seven H.D. Off-Road Vehicles Unde	$159,012.00	No
MS11086	DCL America Inc.	6/7/2013	10/6/2016		$500,000.00	$175,538.00	Retrofit Eight H.D. Off-Road Vehicles Under	$324,462.00	No
MS11091	California Cartage Company, LLC	4/5/2013	8/4/2016	2/4/2018	$55,000.00	$0.00	Retrofit Two H.D. Off-Road Vehicles Under	$55,000.00	No
MS11092	Griffith Company	2/15/2013	6/14/2016	12/14/2017	$390,521.00	$0.00	Retrofit 17 H.D. Off-Road Vehicles Under Sh	$390,521.00	No
Total: 29									
Pending Execution Contracts									
MS11073	Los Angeles Unified School District				$175,000.00	$0.00	Expansion of Existing CNG Station	$175,000.00	No
Total: 1									
Declined/Cancelled Contracts									

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
MS11013	Go Natural Gas, Inc.				$150,000.00	$0.00	New CNG Station - Huntington Beach	$150,000.00	No
MS11014	Go Natural Gas, Inc.				$150,000.00	$0.00	New CNG Station - Santa Ana	$150,000.00	No
MS11015	Go Natural Gas, Inc.				$150,000.00	$0.00	New CNG Station - Inglewood	$150,000.00	No
MS11046	Luis Castro				$40,000.00	$0.00	Repower One Heavy-Duty Vehicle	$40,000.00	No
MS11047	Ivan Borjas				$40,000.00	$0.00	Repower One Heavy-Duty Vehicle	$40,000.00	No
MS11048	Phase II Transportation				$1,080,000.00	$0.00	Repower 27 Heavy-Duty Vehicles	$1,080,000.00	No
MS11049	Ruben Caceras				$40,000.00	$0.00	Repower One Heavy-Duty Vehicle	$40,000.00	No
MS11050	Carlos Arrue				$40,000.00	$0.00	Repower One Heavy-Duty Vehicle	$40,000.00	No
MS11051	Francisco Vargas				$40,000.00	$0.00	Repower One Heavy-Duty Vehicle	$40,000.00	No
MS11053	Jose Ivan Soltero				$40,000.00	$0.00	Repower One Heavy-Duty Vehicle	$40,000.00	No
MS11054	Albino Meza				$40,000.00	$0.00	Repower One Heavy-Duty Vehicle	$40,000.00	No
MS11059	Go Natural Gas				$150,000.00	$0.00	New Public Access CNG Station - Paramou	$150,000.00	No
MS11063	Standard Concrete Products				$310,825.00	$0.00	Retrofit Two Off-Road Vehicles under Show	$310,825.00	No
MS11070	American Honda Motor Company				$100,000.00	$0.00	Expansion of Existing CNG Station	$100,000.00	No
MS11072	Trillium USA Company DBA Californi				$150,000.00	$0.00	New Public Access CNG Station	$150,000.00	No
MS11077	DCL America Inc.				$263,107.00	$0.00	Retrofit of 13 Off-Road Diesel Vehicles with	$263,107.00	No
MS11083	Cattrac Construction, Inc.				$500,000.00	$0.00	Install DECS on Eight Off-Road Vehicles	$500,000.00	No
MS11084	Ivanhoe Energy Services and Develo				$66,750.00	$0.00	Retrofit One H.D. Off-Road Vehicle Under S	$66,750.00	No
MS11088	Diesel Emission Technologies				$32,750.00	$0.00	Retrofit Three H.D. Off-Road Vehicles Under	$32,750.00	No
MS11089	Diesel Emission Technologies				$9,750.00	$0.00	Retrofit One H.D. Off-Road Vehicle Under S	$9,750.00	No
MS11090	Diesel Emission Technologies				$14,750.00	$0.00	Retrofit One H.D. Off-Road Vehicle Under S	$14,750.00	No
Total: 21									
Closed Contracts									
ML11007	Coachella Valley Association of Gov	7/29/2011	7/28/2012		$250,000.00	$249,999.96	Regional PM10 Street Sweeping Program	$0.04	Yes
ML11035	City of La Quinta	11/18/2011	11/17/2012		$25,368.00	$25,368.00	Retrofit 3 On-Road Vehicles w/DECS	$0.00	Yes
MS11002	A-Z Bus Sales, Inc.	7/15/2011	12/31/2011	6/30/2013	$1,705,000.00	$1,705,000.00	Alternative Fuel School Bus Incentive Progr	$0.00	Yes
MS11003	BusWest	7/26/2011	12/31/2011	12/31/2012	$1,305,000.00	$1,305,000.00	Alternative Fuel School Bus Incentive Progr	$0.00	Yes
MS11004	Los Angeles County MTA	9/9/2011	2/29/2012		$450,000.00	$299,743.34	Clean Fuel Transit Service to Dodger Stadiu	$150,256.66	Yes
MS11006	Orange County Transportation Autho	10/7/2011	2/29/2012	8/31/2012	$268,207.00	$160,713.00	Metrolink Service to Angel Stadium	$107,494.00	Yes
MS11018	Orange County Transportation Autho	10/14/2011	1/31/2012		$211,360.00	$211,360.00	Express Bus Service to Orange County Fair	$0.00	Yes
MS11052	Krisda Inc	9/27/2012	6/26/2013		$120,000.00	$120,000.00	Repower Three Heavy-Duty Vehicles	$0.00	Yes
MS11057	Riverside County Transportation Co	7/28/2012	3/27/2013		$100,000.00	$89,159.40	Develop and Implement 511 "Smart Phone"	$10,840.60	Yes
MS11058	L A Service Authority for Freeway E	5/31/2013	4/30/2014		$123,395.00	$123,395.00	Implement 511 "Smart Phone" Application	$0.00	No
MS11074	SunLine Transit Agency	5/11/2012	7/31/2012		$41,849.00	$22,391.00	Transit Service for Coachella Valley Festival	$19,458.00	Yes
MS11080	Southern California Regional Rail Au	4/6/2012	7/31/2012		$26,000.00	$26,000.00	Metrolink Service to Auto Club Speedway	$0.00	Yes
Total: 12									
Closed/Incomplete Contracts									

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
MS11064	City of Hawthorne	7/28/2012	8/27/2018	8/27/2019	$175,000.00	$0.00	New Limited Access CNG Station	$175,000.00	No
MS11082	Baumot North America, LLC	8/2/2012	12/1/2015		$65,958.00	$4,350.00	Install DECS on Four Off-Road Vehicles	$61,608.00	Yes
Total: 2									
Open/Complete Contracts									
ML11021	City of Whittier	1/27/2012	9/26/2018	6/26/2019	$210,000.00	$210,000.00	Purchase 7 Nat. Gas H.D. Vehicles	$0.00	No
ML11022	City of Anaheim	3/16/2012	7/15/2018		$150,000.00	$150,000.00	Purchase of 5 H.D. Vehicles	$0.00	No
ML11025	County of Los Angeles Department o	3/14/2014	9/13/2021		$150,000.00	$150,000.00	Purchase 5 Nat. Gas H.D. Vehicles	$0.00	Yes
ML11026	City of Redlands	3/2/2012	10/1/2018		$90,000.00	$90,000.00	Purchase 3 Nat. Gas H.D. Vehicles	$0.00	Yes
ML11028	City of Glendale	1/13/2012	5/12/2018		$300,000.00	$300,000.00	Purchase 10 H.D. CNG Vehicles	$0.00	Yes
ML11030	City of Fullerton	2/3/2012	3/2/2018		$109,200.00	$109,200.00	Purchase 2 Nat. Gas H.D. Vehicles, Retrofit	$0.00	Yes
ML11031	City of Culver City Transportation De	12/2/2011	12/1/2018		$300,000.00	$300,000.00	Purchase 10 H.D. Nat. Gas Vehicles	$0.00	Yes
ML11033	City of Los Angeles, Bureau of Sanit	3/16/2012	1/15/2019		$1,080,000.00	$1,080,000.00	Purchase 36 LNG H.D. Vehicles	$0.00	Yes
ML11034	City of Los Angeles, Department of	5/4/2012	1/3/2019		$630,000.00	$630,000.00	Purchase 21 H.D. CNG Vehicles	$0.00	No
ML11037	City of Anaheim	12/22/2012	12/21/2019		$300,000.00	$300,000.00	Purchase 12 Nat. Gas H.D. Vehicles	$0.00	Yes
ML11039	City of Ontario, Housing & Municipal	1/27/2012	9/26/2018		$180,000.00	$180,000.00	Purchase 6 Nat. Gas H.D. Vehicles	$0.00	Yes
ML11042	City of Chino	2/17/2012	4/16/2018		$30,000.00	$30,000.00	Purchase 1 Nat. Gas H.D. Vehicle, Repower	$0.00	No
ML11043	City of Hemet Public Works	2/3/2012	2/2/2019		$60,000.00	$60,000.00	Purchase 2 H.D. Nat. Gas Vehicles	$0.00	No
ML11044	City of Ontario, Housing & Municipal	1/27/2012	6/26/2019		$400,000.00	$400,000.00	Expand Existing CNG Station	$0.00	Yes
MS11008	USA Waste of California, Inc.	10/24/2013	4/23/2020		$125,000.00	$125,000.00	Expansion of Existing LCNG Station	$0.00	Yes
MS11009	USA Waste of California, Inc.	10/24/2013	4/23/2020		$125,000.00	$125,000.00	Expansion of Existing LCNG Station	$0.00	Yes
MS11011	EDCO Disposal Corporation	12/30/2011	4/29/2019		$100,000.00	$100,000.00	New CNG Station - Signal Hill	$0.00	Yes
MS11012	EDCO Disposal Corporation	12/30/2011	4/29/2019		$100,000.00	$100,000.00	New CNG Station - Buena Park	$0.00	Yes
MS11017	CR&R, Inc.	3/2/2012	2/1/2018		$100,000.00	$100,000.00	Expansion of existing station - Garden Grov	$0.00	Yes
MS11055	KEC Engineering	2/3/2012	8/2/2018	8/2/2019	$200,000.00	$200,000.00	Repower 5 H.D. Off-Road Vehicles	$0.00	Yes
MS11060	Rowland Unified School District	8/17/2012	1/16/2019	1/16/2020	$175,000.00	$175,000.00	New Limited Access CNG Station	$0.00	Yes
MS11066	Torrance Unified School District	11/19/2012	9/18/2018		$42,296.00	$42,296.00	Expansion of Existing CNG Station	$0.00	Yes
MS11079	Bear Valley Unified School District	2/5/2013	10/4/2019		$175,000.00	$175,000.00	New Limited Access CNG Station	$0.00	Yes
MS11087	Cemex Construction Material Pacific,	10/16/2012	2/15/2016		$448,766.00	$448,760.80	Retrofit 13 H.D. Off-Road Vehicles Under Sh	$5.20	Yes
Total: 24									

FY 2011-2012 Contracts

Open Contracts

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
ML12013	City of Pasadena	10/19/2012	3/18/2015	9/18/2015	$200,000.00	$0.00	Electric Vehicle Charging Infrastructure	$200,000.00	No
ML12014	City of Santa Ana	11/8/2013	8/7/2020		$384,000.00	$4,709.00	9 H.D. Nat. Gas & LPG Trucks, EV Charging	$379,291.00	No
ML12015	City of Fullerton	4/25/2013	11/24/2020		$40,000.00	$10,000.00	HD CNG Vehicle, Expand CNG Station	$30,000.00	No
ML12016	City of Cathedral City	1/4/2013	10/3/2019		$60,000.00	$0.00	CNG Vehicle & Electric Vehicle Infrastructur	$60,000.00	No
ML12017	City of Los Angeles, Bureau of Sanit	6/26/2013	5/25/2020	11/25/2021	$950,000.00	$0.00	32 H.D. Nat. Gas Vehicles	$950,000.00	No
ML12018	City of West Covina	10/18/2013	10/17/2020		$300,000.00	$0.00	Expansion of Existing CNG Station	$300,000.00	No
ML12019	City of Palm Springs	9/6/2013	7/5/2015		$38,000.00	$16,837.00	EV Charging Infrastructure	$21,163.00	No
ML12041	City of Anaheim Public Utilities Depa	4/4/2014	11/3/2015		$68,977.00	$0.00	EV Charging Infrastructure	$68,977.00	No
ML12043	City of Hemet	6/24/2013	9/23/2019		$60,000.00	$0.00	Two Heavy-Duty Nat. Gas Vehicles	$60,000.00	No
ML12045	City of Baldwin Park DPW	2/14/2014	12/13/2020		$400,000.00	$0.00	Install New CNG Station	$400,000.00	No
ML12046	City of Irvine	8/11/2013	3/10/2021		$30,000.00	$0.00	One Heavy-Duty Nat. Gas Vehicle	$30,000.00	No
ML12048	City of La Palma	1/4/2013	11/3/2018		$20,000.00	$0.00	Two Medium-Duty LPG Vehicles	$20,000.00	No
ML12049	City of Rialto Public Works	7/14/2014	9/13/2015		$30,432.00	$0.00	EV Charging Infrastructure	$30,432.00	No
ML12051	City of Bellflower	2/7/2014	2/6/2016		$270,000.00	$0.00	EV Charging Infrastructure	$270,000.00	No
ML12057	City of Coachella	8/28/2013	8/27/2019		$57,456.00	$0.00	Purchase One Nat. Gas H.D. Vehicle/Street	$57,456.00	No
MS12001	Los Angeles County MTA	7/1/2012	4/30/2013		$300,000.00	$0.00	Clean Fuel Transit Service to Dodger Stadiu	$300,000.00	No
MS12004	USA Waste of California, Inc.	10/24/2013	11/23/2019		$175,000.00	$0.00	Construct New Limited-Access CNG Station	$175,000.00	No
MS12008	Bonita Unified School District	7/12/2013	12/11/2019		$175,000.00	$0.00	Construct New Limited-Acess CNG Station	$175,000.00	No
MS12009	Sysco Food Services of Los Angeles	1/7/2014	4/6/2020		$150,000.00	$0.00	Construct New Public-Access CNG Station	$150,000.00	No
MS12011	Southern California Gas Company	6/14/2013	6/13/2019	6/13/2020	$150,000.00	$0.00	Construct New Public-Access CNG Station -	$150,000.00	No
MS12024	Southern California Gas Company	6/13/2013	12/12/2019		$150,000.00	$0.00	Construct New Public-Access CNG Station -	$150,000.00	No
MS12027	C.V. Ice Company, Inc.	5/17/2013	11/16/2019		$75,000.00	$0.00	Purchase 3 Medium-Heavy Duty Vehicles	$75,000.00	No
MS12031	Final Assembly, Inc.	11/2/2012	11/1/2018		$100,000.00	$29,201.40	Purchase 4 Medium-Heavy Duty Vehicles	$70,798.60	No
MS12033	Mike Diamond/Phace Management	12/22/2012	12/21/2018	6/21/2021	$500,000.00	$21,735.00	Purchase 20 Medium-Heavy Duty Vehicles	$478,265.00	No
MS12034	Ware Disposal Company, Inc.	11/2/2012	11/1/2018	11/1/2020	$133,070.00	$74,763.00	Purchase 8 Medium-Heavy Duty Vehicles	$58,307.00	No
MS12060	City of Santa Monica	4/4/2014	8/3/2017		$500,000.00	$25,000.00	Transit-Oriented Bicycle Sharing Program	$475,000.00	No
MS12067	Leatherwood Construction, Inc.	11/8/2013	3/7/2017		$122,719.00	$0.00	Retrofit Six Vehicles w/DECS - Showcase III	$122,719.00	No
MS12073	FirstCNG, LLC	7/27/2013	12/26/2019		$150,000.00	$135,000.00	Construct New CNG Station	$15,000.00	No
MS12075	CR&R Incorporated	7/27/2013	1/26/2021		$100,000.00	$0.00	Expansion of Existing CNG Infrastructure	$100,000.00	No
MS12077	City of Coachella	6/14/2013	6/13/2020		$225,000.00	$0.00	Construct New CNG Station	$225,000.00	No
MS12078	Penske Truck Leasing Co., L.P.	1/7/2014	1/6/2016		$75,000.00	$0.00	Maintenance Facility Modifications - Vernon	$75,000.00	No
MS12079	Penske Truck Leasing Co., L.P.	1/7/2014	1/6/2016		$75,000.00	$0.00	Maintenance Facility Modifications - Boyle H	$75,000.00	No
MS12080	City of Pasadena	11/8/2013	8/7/2020	8/7/2021	$225,000.00	$0.00	Expansion of Existing CNG Infrastructure	$225,000.00	No
MS12081	Penske Truck Leasing Co., L.P.	1/7/2014	1/6/2016		$75,000.00	$0.00	Maintenance Facility Modifications - Santa A	$75,000.00	No

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
MS12083	Brea Olinda Unified School District	7/30/2015	2/29/2024		$59,454.00	$0.00	Install New CNG Infrastructure	$59,454.00	No
MS12084	Airport Mobil Inc.	12/6/2013	5/5/2020		$150,000.00	$0.00	Install New CNG Infrastructure	$150,000.00	No
MS12086	SuperShuttle International, Inc.	3/26/2013	3/25/2019		$225,000.00	$202,500.00	Purchase 23 Medium-Heavy Duty Vehicles	$22,500.00	No
MS12087	Los Angeles County MTA	8/29/2013	11/28/2015		$125,000.00	$125,000.00	Implement Rideshare Incentives Program	$0.00	Yes
MS12088	Orange County Transportation Autho	12/6/2013	3/5/2016		$125,000.00	$0.00	Implement Rideshare Incentives Program	$125,000.00	No
MS12089	Riverside County Transportation Co	10/18/2013	9/17/2015		$250,000.00	$69,754.70	Implement Rideshare Incentives Program	$180,245.30	No
MS12Hom	Mansfield Gas Equipment Systems				$296,000.00	$0.00	Home Refueling Apparatus Incentive Progra	$296,000.00	No
Total: 41									
Declined/Cancelled Contracts									
ML12038	City of Long Beach Public Works				$26,000.00	$0.00	Electric Vehicle Charging Infrastructure	$26,000.00	No
ML12040	City of Duarte Transit				$30,000.00	$0.00	One Heavy-Duty Nat. Gas Vehicle	$30,000.00	No
ML12044	County of San Bernardino Public Wo				$250,000.00	$0.00	Install New CNG Station	$250,000.00	No
ML12052	City of Whittier	3/14/2013	7/13/2019		$165,000.00	$0.00	Expansion of Existing CNG Station	$165,000.00	No
ML12053	City of Mission Viejo				$60,000.00	$0.00	EV Charging Infrastructure	$60,000.00	No
MS12007	WestAir Gases & Equipment				$100,000.00	$0.00	Construct New Limited-Acess CNG Station	$100,000.00	No
MS12030	Complete Landscape Care, Inc.				$150,000.00	$0.00	Purchase 6 Medium-Heavy Duty Vehicles	$150,000.00	No
MS12070	Valley Music Travel/CID Entertainme				$99,000.00	$0.00	Implement Shuttle Service to Coachella Mus	$99,000.00	No
Total: 8									
Closed Contracts									
ML12021	City of Rancho Cucamonga	9/14/2012	1/13/2020		$40,000.00	$40,000.00	Four Medium-Duty Nat. Gas Vehicles	$0.00	Yes
ML12023	County of Los Angeles Internal Servi	8/1/2013	2/28/2015		$250,000.00	$192,333.00	EV Charging Infrastructure	$57,667.00	Yes
ML12037	Coachella Valley Association of Gov	3/14/2013	3/13/2014		$250,000.00	$250,000.00	Street Sweeping Operations	$0.00	Yes
ML12050	City of Baldwin Park	4/25/2013	4/24/2014	10/24/2014	$402,400.00	$385,363.00	EV Charging Infrastructure	$17,037.00	No
ML12054	City of Palm Desert	9/30/2013	2/28/2015		$77,385.00	$77,385.00	EV Charging Infrastructure	$0.00	Yes
ML12056	City of Cathedral City	3/26/2013	5/25/2014		$25,000.00	$25,000.00	Regional Street Sweeping Program	$0.00	Yes
ML12066	City of Manhattan Beach	1/7/2014	4/6/2015		$5,900.00	$5,900.00	Electric Vehicle Charging Infrastructure	$0.00	Yes
MS12002	Orange County Transportation Autho	9/7/2012	4/30/2013		$342,340.00	$333,185.13	Express Bus Service to Orange County Fair	$9,154.87	Yes
MS12003	Orange County Transportation Autho	7/20/2012	2/28/2013		$234,669.00	$167,665.12	Implement Metrolink Service to Angel Stadiu	$67,003.88	Yes
MS12005	USA Waste of California, Inc.	10/19/2012	8/18/2013		$75,000.00	$75,000.00	Vehicle Maintenance Facility Modifications	$0.00	Yes
MS12006	Waste Management Collection & Re	10/19/2012	8/18/2013		$75,000.00	$75,000.00	Vehicle Maintenance Facility Modifications	$0.00	Yes
MS12012	Rim of the World Unified School Dist	12/20/2012	5/19/2014		$75,000.00	$75,000.00	Vehicle Maintenance Facility Modifications	$0.00	Yes
MS12059	Orange County Transportation Autho	2/28/2013	12/27/2014		$75,000.00	$75,000.00	Maintenance Facilities Modifications	$0.00	No
MS12062	Fraser Communications	12/7/2012	5/31/2014		$998,669.00	$989,218.49	Develop & Implement "Rideshare Thursday"	$9,450.51	Yes
MS12064	Anaheim Transportation Network	3/26/2013	12/31/2014		$127,296.00	$56,443.92	Implement Anaheim Circulator Service	$70,852.08	Yes
MS12065	Orange County Transportation Autho	7/27/2013	11/30/2013		$43,933.00	$14,832.93	Ducks Express Service to Honda Center	$29,100.07	Yes
MS12068	Southern California Regional Rail Au	3/1/2013	9/30/2013		$57,363.00	$47,587.10	Implement Metrolink Service to Autoclub Sp	$9,775.90	Yes
MS12069	City of Irvine	8/11/2013	2/28/2014		$45,000.00	$26,649.41	Implement Special Transit Service to Solar	$18,350.59	Yes

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
MS12076	City of Ontario, Housing & Municipal	3/8/2013	4/7/2015		$75,000.00	$75,000.00	Maintenance Facilities Modification	$0.00	Yes
MS12085	Bear Valley Unified School District	4/25/2013	6/24/2014		$75,000.00	$75,000.00	Maintenance Facility Modifications	$0.00	Yes
Total: 20									
Open/Complete Contracts									
ML12020	City of Los Angeles, Department of	9/27/2012	3/26/2019	3/26/2020	$450,000.00	$450,000.00	15 H.D. Nat. Gas Vehicles	$0.00	Yes
ML12022	City of La Puente	12/6/2013	6/5/2020		$110,000.00	$110,000.00	2 Medium-Duty and Three Heavy-Duty CNG	$0.00	Yes
ML12039	City of Redlands	2/8/2013	10/7/2019		$90,000.00	$90,000.00	Three Heavy-Duty Nat. Gas Vehicles	$0.00	No
ML12042	City of Chino Hills	1/18/2013	3/17/2017		$87,500.00	$87,500.00	Expansion of Existing CNG Station	$0.00	Yes
ML12047	City of Orange	2/1/2013	1/31/2019		$30,000.00	$30,000.00	One Heavy-Duty Nat. Gas Vehicle	$0.00	No
ML12055	City of Manhattan Beach	3/1/2013	12/31/2018		$10,000.00	$10,000.00	One Medium-Duty Nat. Gas Vehicle	$0.00	Yes
MS12010	Murrieta Valley Unified School Distric	4/5/2013	9/4/2019		$242,786.00	$242,786.00	Construct New Limited-Access CNG Station	$0.00	No
MS12025	Silverado Stages, Inc.	11/2/2012	7/1/2018		$150,000.00	$150,000.00	Purchase Six Medium-Heavy Duty Vehicles	$0.00	Yes
MS12026	U-Haul Company of California	3/14/2013	3/13/2019		$500,000.00	$353,048.26	Purchase 23 Medium-Heavy Duty Vehicles	$146,951.74	Yes
MS12028	Dy-Dee Service of Pasadena, Inc.	12/22/2012	1/21/2019		$45,000.00	$40,000.00	Purchase 2 Medium-Duty and 1 Medium-He	$5,000.00	Yes
MS12029	Community Action Partnership of Or	11/2/2012	11/1/2018		$25,000.00	$14,850.00	Purchase 1 Medium-Heavy Duty Vehicle	$10,150.00	Yes
MS12032	Fox Transportation	12/14/2012	12/13/2018		$500,000.00	$500,000.00	Purchase 20 Medium-Heavy Duty Vehicles	$0.00	Yes
MS12035	Disneyland Resort	1/4/2013	7/3/2019		$25,000.00	$18,900.00	Purchase 1 Medium-Heavy Duty Vehicle	$6,100.00	Yes
MS12036	Jim & Doug Carter's Automotive/VS	1/4/2013	11/3/2018		$50,000.00	$50,000.00	Purchase 2 Medium-Heavy Duty Vehicles	$0.00	Yes
MS12058	Krisda Inc	4/24/2013	1/23/2019		$25,000.00	$25,000.00	Repower One Heavy-Duty Off-Road Vehicle	$0.00	Yes
MS12061	Orange County Transportation Autho	3/14/2014	3/13/2017		$224,000.00	$114,240.00	Transit-Oriented Bicycle Sharing Program	$109,760.00	Yes
MS12063	Custom Alloy Light Metals, Inc.	8/16/2013	2/15/2020		$100,000.00	$100,000.00	Install New Limited Access CNG Station	$0.00	Yes
MS12071	Transit Systems Unlimited, Inc.	5/17/2013	12/16/2018		$21,250.00	$21,250.00	Expansion of Existing CNG Station	$0.00	Yes
MS12072	99 Cents Only Stores	4/5/2013	9/4/2019		$100,000.00	$100,000.00	Construct New CNG Station	$0.00	Yes
MS12074	Arcadia Unified School District	7/5/2013	9/4/2019		$175,000.00	$175,000.00	Expansion of Existing CNG Infrastructure	$0.00	No
MS12082	City of Los Angeles, Bureau of Sanit	11/20/2013	2/19/2021		$175,000.00	$175,000.00	Install New CNG Infrastructure	$0.00	Yes
Total: 21									

FY 2012-2014 Contracts

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
Open Contracts									
ML14012	City of Santa Ana	2/13/2015	10/12/2021		$244,000.00	$0.00	EV Charging and 7 H.D. LPG Vehicles	$244,000.00	No
ML14014	City of Torrance	9/5/2014	12/4/2019		$56,000.00	$0.00	EV Charging Infrastructure	$56,000.00	No
ML14016	City of Anaheim	4/3/2015	9/2/2021		$380,000.00	$0.00	Purchase 2 H.D. Vehicles, Expansion of Exi	$380,000.00	No
ML14018	City of Los Angeles, Department of	3/6/2015	9/5/2021		$810,000.00	$0.00	Purchase 27 H.D. Nat. Gas Vehicles	$810,000.00	No
ML14019	City of Corona Public Works	12/5/2014	6/4/2020		$178,263.00	$0.00	EV Charging, Bicycle Racks, Bicycle Locker	$178,263.00	No
ML14021	Riverside County Regional Park and	7/24/2014	12/23/2016		$250,000.00	$0.00	Bicycle Trail Improvements	$250,000.00	No
ML14028	City of Fullerton	9/5/2014	1/4/2022		$126,950.00	$0.00	Expansion of Exisiting CNG Infrastructure	$126,950.00	No
ML14029	City of Irvine	7/11/2014	6/10/2017		$90,500.00	$0.00	Bicycle Trail Improvements	$90,500.00	No
ML14030	County of Los Angeles Internal Servi	1/9/2015	3/8/2018		$425,000.00	$0.00	Bicycle Racks, Outreach & Education	$425,000.00	No
ML14031	Riverside County Waste Manageme	6/13/2014	12/12/2020		$90,000.00	$0.00	Purchase 3 H.D. CNG Vehicles	$90,000.00	No
ML14032	City of Rancho Cucamonga	1/9/2015	1/8/2022		$113,990.00	$18,110.88	Expansion of Existing CNG Infras., Bicycle L	$95,879.12	No
ML14033	City of Irvine	7/11/2014	2/10/2021		$60,000.00	$0.00	Purchase 2 H.D. CNG Vehicles	$60,000.00	No
ML14034	City of Lake Elsinore	9/5/2014	5/4/2021		$56,700.00	$0.00	EV Charging Stations	$56,700.00	No
ML14049	City of Moreno Valley	7/11/2014	3/10/2021		$105,000.00	$30,000.00	One HD Nat Gas Vehicle, EV Charging, Bicy	$75,000.00	No
ML14050	City of Yucaipa	7/11/2014	9/10/2015	7/1/2016	$84,795.00	$0.00	Installation of Bicycle Lanes	$84,795.00	No
ML14051	City of Brea	9/5/2014	1/4/2017		$450,000.00	$0.00	Installation of Bicycle Trail	$450,000.00	No
ML14054	City of Torrance	11/14/2014	4/13/2017		$350,000.00	$0.00	Upgrade Maintenance Facility	$350,000.00	No
ML14055	City of Highland	10/10/2014	3/9/2018		$500,000.00	$0.00	Bicycle Lanes and Outreach	$500,000.00	No
ML14056	City of Redlands	9/5/2014	5/4/2016	5/4/2017	$125,000.00	$0.00	Bicycle Lanes	$125,000.00	No
ML14062	City of San Fernando	3/27/2015	5/26/2021		$387,091.00	$0.00	Expand Existing CNG Fueling Station	$387,091.00	No
ML14064	City of Claremont	7/11/2014	7/10/2020	1/10/2021	$60,000.00	$0.00	Purchase Two Heavy-Duty Nat. Gas Vehicle	$60,000.00	No
ML14066	City of South Pasadena	9/12/2014	7/11/2016		$142,096.00	$0.00	Bicycle Trail Improvements	$142,096.00	No
ML14068	City of South Pasadena	9/12/2014	10/11/2015		$10,183.00	$0.00	Electric Vehicle Charging Infrastructure	$10,183.00	No
ML14071	City of Manhattan Beach	1/9/2015	11/8/2018		$22,485.00	$0.00	Electric Vehicle Charging Infrastructure	$22,485.00	No
ML14072	City of Cathedral City	8/13/2014	1/12/2021		$136,000.00	$0.00	Medium & H.D. Vehicles, EV Charging, Bike	$136,000.00	No
ML14093	County of Los Angeles Dept of Publi	8/14/2015	1/13/2019		$150,000.00	$0.00	San Gabriel BikeTrail Underpass Improvem	$150,000.00	No
MS14001	Los Angeles County MTA	3/6/2015	4/30/2015		$1,216,637.00	$0.00	Clean Fuel Transit Service to Dodger Stadiu	$1,216,637.00	No
MS14002	Orange County Transportation Autho	9/6/2013	4/30/2014		$576,833.00	$576,833.00	Clean Fuel Transit Service to Orange Count	$0.00	No
MS14004	Orange County Transportation Autho	9/24/2013	4/30/2014		$36,800.00	$35,485.23	Implement Express Bus Service to Solar De	$1,314.77	No
MS14005	Transit Systems Unlimited, Inc.	4/11/2014	2/28/2016		$515,200.00	$445,280.00	Provide Expanded Shuttle Service to Hollyw	$69,920.00	No
MS14007	Orange County Transportation Autho	6/6/2014	4/30/2015		$208,520.00	$189,622.94	Implement Special Metrolink Service to Ang	$18,897.06	No
MS14008	Orange County Transportation Autho	8/13/2014	5/31/2015		$601,187.00	$601,187.00	Implement Clean Fuel Bus Service to Orang	$0.00	No
MS14039	Waste Management Collection and	7/10/2015	4/9/2016		$75,000.00	$0.00	Vehicle Maint. Fac. Modifications - Irvine	$75,000.00	No
MS14040	Waste Management Collection and	7/10/2015	4/9/2016		$75,000.00	$0.00	Vehicle Maint. Fac. Modifications - Santa An	$75,000.00	No

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
MS14042	Grand Central Recycling & Transfer	6/6/2014	9/5/2021		$150,000.00	$0.00	Expansion of Existing CNG Station	$150,000.00	No
MS14045	TIMCO CNG Fund I, LLC	6/6/2014	12/5/2020		$150,000.00	$135,000.00	New Public-Access CNG Station in Inglewoo	$15,000.00	No
MS14046	Ontario CNG Station Inc.	5/15/2014	5/14/2020	5/14/2021	$150,000.00	$0.00	Expansion of Existing CNG Infrastructure	$150,000.00	No
MS14053	Upland Unified School District	1/9/2015	7/8/2021		$175,000.00	$0.00	Expansion of Existing CNG Infrastructure	$175,000.00	No
MS14057	Los Angeles County MTA	11/7/2014	10/6/2019		$1,250,000.00	$0.00	Implement Various Signal Synchronization P	$1,250,000.00	No
MS14058	Orange County Transportation Autho	11/7/2014	4/6/2016		$1,250,000.00	$0.00	Implement Various Signal Synchronization P	$1,250,000.00	No
MS14059	Riverside County Transportation Co	9/5/2014	3/4/2018		$939,625.00	$0.00	Implement Various Signal Synchronization P	$939,625.00	No
MS14072	San Bernardino Associated Govern	3/27/2015	3/26/2018		$1,250,000.00	$0.00	Implement Various Signal Synchronization P	$1,250,000.00	No
MS14073	Anaheim Transportation Network	1/9/2015	4/30/2017		$221,312.00	$118,207.06	Anaheim Resort Circulator Service	$103,104.94	No
MS14074	Midway City Sanitary District	1/9/2015	3/8/2021		$250,000.00	$0.00	Limited-Access CNG Station & Facility Modif	$250,000.00	No
MS14076	Rialto Unified School District	6/17/2015	2/16/2022		$225,000.00	$0.00	New Public Access CNG Station	$225,000.00	No
MS14077	County Sanitation Districts of L.A. C	3/6/2015	5/5/2021		$175,000.00	$0.00	New Limited Access CNG Station	$175,000.00	No
MS14080	CR&R Incorporated	6/1/2015	8/31/2021		$249,954.00	$0.00	Expansion of Existing CNG Infrastructure/M	$249,954.00	No
MS14081	CR&R Incorporated	6/1/2015	5/30/2021		$175,000.00	$0.00	Expansion of Existing CNG Infrastructure/M	$175,000.00	No
MS14083	Hacienda La Puente Unified School	7/10/2015	3/9/2022		$175,000.00	$0.00	New Limited Access CNG Station	$175,000.00	No
MS14084	US Air Conditioning Distributors	5/7/2015	9/6/2021		$100,000.00	$0.00	Expansion of Existing CNG Infrastructure	$100,000.00	No
MS14087	Orange County Transportation Autho	8/14/2015	4/30/2016		$239,645.00	$0.00	Implement Special Metrolink Service to Ang	$239,645.00	No
MS14088	Southern California Regional Rail Au	5/7/2015	9/30/2015		$79,660.00	$0.00	Special Metrolink Service to Autoclub Speed	$79,660.00	No
MS14090	City of Monterey Park	5/7/2015	5/6/2021		$225,000.00	$0.00	Expansion of Existing CNG Infrastructure	$225,000.00	No
Total: 53									
Pending Execution Contracts									
ML14013	City of Los Angeles, Bureau of Sanit				$3,840,000.00	$0.00	Purchase 128 H.D. Nat. Gas Vehicles	$3,840,000.00	No
ML14022	County of Los Angeles Department o				$300,000.00	$0.00	Purchase 10 H.D. Nat. Gas Vehicles	$300,000.00	No
ML14023	County of Los Angeles Department o				$230,000.00	$0.00	Maintenance Fac. Modifications-Westcheste	$230,000.00	No
ML14024	County of Los Angeles Department o				$230,000.00	$0.00	Maintenance Fac. Modifications-Baldwin Par	$230,000.00	No
ML14025	County of Los Angeles Dept of Publi				$300,000.00	$0.00	Construct New CNG Station in Malibu	$300,000.00	No
ML14026	County of Los Angeles Dept of Publi				$300,000.00	$0.00	Construct New CNG Station in Castaic	$300,000.00	No
ML14027	County of Los Angeles Dept of Publi				$500,000.00	$0.00	Construct New CNG Station in Downey	$500,000.00	No
ML14060	County of Los Angeles Internal Servi				$104,400.00	$0.00	Electric Vehicle Charging Infrastructure	$104,400.00	No
ML14061	City of La Habra				$60,000.00	$0.00	Purchase Two Heavy-Duty Nat. Gas Vehicle	$60,000.00	No
ML14067	City of Duarte Transit				$60,000.00	$0.00	Purchase Two Heavy-Duty Nat. Gas Vehicle	$60,000.00	No
ML14069	City of Beaumont				$200,000.00	$0.00	Construct New CNG Infrastructure	$200,000.00	No
ML14070	City of Rancho Cucamonga				$365,245.00	$0.00	Bicycle Trail Improvements	$365,245.00	No
MS14035	Penske Truck Leasing Co., L.P.				$75,000.00	$0.00	Vehicle Maint. Fac. Modifications - Sun Valle	$75,000.00	No
MS14036	Penske Truck Leasing Co., L.P.				$75,000.00	$0.00	Vehicle Maint. Fac. Modifications - La Mirad	$75,000.00	No
MS14037	Penske Truck Leasing Co., L.P.				$75,000.00	$0.00	Vehicle Maint. Fac. Modifications - Carson	$75,000.00	No
MS14038	Penske Truck Leasing Co., L.P.				$75,000.00	$0.00	Vehicle Maint. Fac. Modifications - Fontana	$75,000.00	No

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
MS14041	USA Waste of California, Inc.				$175,000.00	$0.00	Limited-Access CNG Station, Vehicle Maint.	$175,000.00	No
MS14075	Fullerton Joint Union High School Di				$300,000.00	$0.00	Expansion of Existing CNG Infrastructure/M	$300,000.00	No
MS14078	American Honda Motor Co., Inc.				$150,000.00	$0.00	New Public Access CNG Station	$150,000.00	No
MS14079	Waste Resources, Inc.				$100,000.00	$0.00	New Limited Access CNG Station	$100,000.00	No
MS14082	Grand Central Recycling & Transfer				$150,000.00	$0.00	Expansion of Existing CNG Infrastructure	$150,000.00	No
MS14085	Prologis, L.P.				$100,000.00	$0.00	New Limited Access CNG Station	$100,000.00	No
MS14086	San Gabriel Valley Towing I				$150,000.00	$0.00	New Public Access CNG Station	$150,000.00	No
MS14091	Serv-Wel Disposal				$100,000.00	$0.00	New Limited-Access CNG Infrastructure	$100,000.00	No
MS14092	West Covina Unified School District				$124,000.00	$0.00	Expansion of Existing CNG Infrastructure	$124,000.00	No
Total: 25									
Declined/Cancelled Contracts									
ML14063	City of Hawthorne				$32,000.00	$0.00	Expansion of Existng CNG Infrastructure	$32,000.00	No
MS14043	City of Anaheim				$175,000.00	$0.00	Expansion of Existing CNG Station	$175,000.00	No
Total: 2									
Closed Contracts									
ML14010	City of Cathedral City	8/13/2014	10/12/2015		$25,000.00	$25,000.00	Street Sweeping Operations	$0.00	Yes
ML14011	City of Palm Springs	6/13/2014	1/12/2016		$79,000.00	$78,627.00	Bicycle Racks, Bicycle Outreach & Educatio	$373.00	Yes
ML14015	Coachella Valley Association of Gov	6/6/2014	9/5/2015		$250,000.00	$250,000.00	Street Sweeping Operations	$0.00	Yes
ML14020	County of Los Angeles Dept of Publi	8/13/2014	1/12/2018		$150,000.00	$0.00	San Gabriel BikeTrail Underpass Improvem	$150,000.00	No
ML14065	City of Orange	9/5/2014	8/4/2015		$10,000.00	$10,000.00	Electric Vehicle Charging Infrastructure	$0.00	Yes
MS14003	Orange County Transportation Autho	8/1/2013	4/30/2014	10/30/2014	$194,235.00	$184,523.00	Implement Metrolink Service to Angel Stadiu	$9,712.00	Yes
MS14009	A-Z Bus Sales, Inc.	1/17/2014	12/31/2014	3/31/2015	$388,000.00	$388,000.00	Alternative Fuel School Bus Incentive Progr	$0.00	No
MS14047	Southern California Regional Rail Au	3/7/2014	9/30/2014		$49,203.00	$32,067.04	Special Metrolink Service to Autoclub Speed	$17,135.96	Yes
MS14048	BusWest	3/14/2014	12/31/2014	5/31/2015	$940,850.00	$847,850.00	Alternative Fuel School Bus Incentive Progr	$93,000.00	Yes
Total: 9									
Open/Complete Contracts									
MS14044	TIMCO CNG Fund I, LLC	5/2/2014	11/1/2020		$150,000.00	$150,000.00	New Public-Access CNG Station in Santa A	$0.00	Yes
MS14052	Arcadia Unified School District	6/13/2014	10/12/2020		$78,000.00	$78,000.00	Expansion of an Existing CNG Fueling Statio	$0.00	Yes
Total: 2									

FY 2014-2016 Contracts

Cont.#	Contractor	Start Date	Original End Date	Amended End Date	Contract Value	Remitted	Project Description	Award Balance	Billing Complete?
Open Contracts									
MS14089	Top Shelf Consulting, LLC	2/5/2015	8/4/2016		$200,000.00	$120,034.00	Enhanced Fleet Modernization Program	$79,966.00	No
Total: 1									
Pending Execution Contracts									
MS16001	Los Angeles County MTA				$1,350,000.00	$0.00	Clean Fuel Transit Service to Dodger Stadiu	$1,350,000.00	No
MS16002	Orange County Transportation Autho				$722,266.00	$0.00	Clean Fuel Transit Service to Orange Count	$722,266.00	No
MS16003	Special Olympics World Games Los				$380,536.00	$0.00	Low-Emission Transportation Service for Sp	$380,536.00	No
MS16004	Mineral LLC				$25,890.00	$0.00	Design, Develop, Host and Maintain MSRC	$25,890.00	No
Total: 4									

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 31

REPORT: California Air Resources Board Monthly Meeting

SYNOPSIS: The California Air Resources Board met on September 24 – 25, 2015, in Sacramento. The following is a summary of this meeting.

RECOMMENDED ACTION:
Receive and File.

Judith Mitchell, Member
SCAQMD Governing Board

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The Air Resources Board's (ARB or Board) September meeting was held on September 24 and 25, 2015 in Sacramento at the California Environmental Protection Agency Headquarters Building. Key items presented are summarized below.

Discussion Items

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1. **Public Hearing to Consider the Proposed Regulation on the Commercialization of Alternative Diesel Fuels (ADFs)**

The Board adopted a regulation governing the introduction of ADFs into the commercial market. The ADF regulation works with the Low Carbon Fuel Standard (LCFS) to enhance the development and penetration of low carbon ADFs. This regulation will help California achieve the LCFS 2020 goal as well as the State's 2030 50 percent renewable energy goal. The proposed regulation was first presented to the Board at its February 2015 public hearing. At the February meeting, the Board directed staff to release a 15-day change packet and respond to public comments. In response to public comments, the regulation includes a limited producer/importer exemption and clarifies the reporting and recordkeeping requirements. The Board also approved the combined environmental analysis to meet the California Environmental Quality Act for both ADF and LCFS.

SCAQMD Staff Comments/Testimony: Mr. Henry Hogo thanked staff for working closely with the SCAQMD staff in addressing concerns regarding the potential increase in NOx emissions from the use of certain biodiesel fuels. The SCAQMD staff supported the proposed regulation and requested the Board's adoption of the regulation.

2. **Public Hearing to Consider the Proposed Re-adoption of the Low Carbon Fuel Standard**

The Board re-adopted the LCFS, including updates and revisions to the regulation now in effect. The proposed re-adoption and amendments were initially presented to the Board at its February 2015 public hearing. Following Board direction to work with stakeholders, ARB staff held an additional workshop, released three 15-day change packages, responded to over 2600 pages of comments, and completed a scientific peer review. This hearing also addressed the State's Court of Appeals direction regarding adherence with the California Environmental Quality Act and Administration Procedure Act. The re-adoption of the LCFS provides greater clarity and certainty in the regulation, simplifies credits, establishes a cap on credit prices, finalizes carbon intensity models and restates the 2020 goal of reducing the carbon intensity of the transportation fuel pool by 10 percent.

SCAQMD Staff Comments/Testimony: Mr. Henry Hogo thanked staff for working with the SCAQMD staff in the development of revisions to the Low Carbon Fuel Standard (LCFS). Mr. Hogo indicated that there are several fuel pathways that provide not only greenhouse gas emission benefits, but also have the potential to reduce criteria pollutant emissions. SCAQMD staff will continue to work with CARB as the LCFS is implemented. The SCAQMD staff supported the proposed regulation and requested the Board's re-adoption of the regulation.

3. **Public Meeting to Consider Proposition 1B Program Funding Awards to Reduce Emissions from Freight Transportation**

The Board approved grant awards to fund local agency projects to reduce freight-related emissions in California's four priority trade corridors. The awards, totaling approximately $287 million from Year 5 and unspent funds, are eligible to local agency projects as defined by the Program Guidelines. The Board also directed the Executive Officer to reallocate approximately $46 million of recaptured funds from previously awarded local and State agency projects for Year 5 eligible projects. The funding priorities are for zero and near-zero emission advanced technologies, improvement of small truck fleets, and penetration of Tier 4 locomotives.

SCAQMD Staff Comments/Testimony: Mr. Henry Hogo thanked staff for working with SCAQMD staff on the funding allocations. The Proposition 1B has been a very successful program in the South Coast Air Basin. He indicated that the SCAQMD has an open solicitation for heavy-duty truck projects and looks forward to working with CARB in implementing the program. Mr. Hogo indicated that since this is the last round of funding, new funding opportunities need to be identified for future projects. Mr. Hogo requested the Board's approval of the proposed funding awards.

4. **Public Hearing to Consider the Cap-and-Trade Auction Proceeds Funding Guidelines for Agencies that Administer California Climate Investments**

The Board approved the Funding Guidelines for agencies administering California Climate Investments from the Greenhouse Gas Reduction Fund. These Guidelines address program administration to further the purposes of Assembly Bill 32. Specifically, they give direction to agencies for the preparation of Expenditure Records, for project tracking/reporting, to quantify greenhouse gas reductions and co-benefits, and to meet Senate Bill 535 requirements to maximize benefits to disadvantaged communities. The Board further specified guidance on public transparency, outreach, and technical assistance with applications for the funds. In addition, with these Guidelines, the Board sought to maximize benefits to disadvantaged communities by emphasizing that the projects need to be direct, meaningful and assured, and should not result in physical or economic displacement of a low-income residence or business.

5. **Public Hearing to Consider Technical Status and Proposed Revisions to On-Board Diagnostic System Requirements (OBD II) and Associated Enforcement Provisions for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines.**

The Board approved amendments to the OBD II regulation that update requirements to account for Low Emission Vehicle III emission standards and address implementation in light of the Advanced Clean Car program's emission controls. The amendments will also align the program with U.S. EPA's Tier 3 requirements for certification and in-use programs, and will standardize the data collected to support other ARB programs, such as Smog-Check. The data will also include GHG emissions. The Board also adopted updates to the associated OBD II enforcement regulation to align it with the OBD II amendments.

SCAQMD Staff Comments/Testimony: Mr. Henry Hogo commented that on-board diagnostics (OBD) is an important tool for emissions compliance and enforcement. In addition, OBD is an important tool to help understand real world emissions as new emissions inventories are developed for attainment demonstration. Mr. Hogo concluded

with SCAQMD staff's full support of the proposed revisions and urged the Board's adoption of the proposed revisions as proposed by staff.

Consent Items

1. **Public Meeting to Consider Appointments of New Members to the Environmental Justice Advisory Committee**

The Board appointed Colin Bailey, Sekita Grant, Eleanor Torres, and Katie Valenzuela Garcia to serve on the Environmental Justice Advisory Committee (EJAC). The Board further approved the addition of another position to the EJAC to be appointed from the San Diego Area.

Attachment
CARB September 24-25, 2015 Meeting Agenda

California Environmental Protection Agency

Air Resources Board

PUBLIC MEETING AGENDA

Thursday, September 24, 2015 and Friday, September 25, 2015 (Sacramento, CA)

Webcast

LOCATION:
California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium, 2nd Floor
1001 I Street
Sacramento, California 95812

This facility is accessible by public transit. For transit information, call (916) 321-BUSS, website: http://www.sacrt.com
(This facility is accessible to persons with disabilities.)

TO SUBMIT WRITTEN COMMENTS ON AN AGENDA ITEM IN ADVANCE OF THE MEETING GO TO: http://www.arb.ca.gov/lispub/comm/bclist.php

Thursday
September 24, 2015
9:00 a.m.

DISCUSSION ITEMS:

Note: The following agenda items may be heard in a different order at the Board meeting.

Agenda Item #

15-7-1: Public Hearing to Consider the Proposed Regulation on the Commercialization of Alternative Diesel Fuels

The Board will consider a proposed regulation governing the introduction of alternative diesel fuels into the California commercial market, including special provisions for biodiesel. The proposed regulation was first presented to the Board at its February 2015 public hearing, at which the Board directed staff to make modifications to the proposal. The Board will also consider the combined environmental analysis prepared under the California Environmental Quality Act for this proposal and the proposed re-adoption of the Low Carbon Fuel Standard (Item 15-7-2) and the written responses to environmental comments. The Board will close the public hearing on this item at the conclusion of public comment on September 24th and continue the meeting on September 25th to deliberate and vote on the proposal.

More Information *Staff Presentation*

15-7-2: Public Hearing to Consider the Proposed Re-adoption of the Low Carbon Fuel Standard

The Board will consider the proposed re-adoption of the Low Carbon Fuel Standard, which includes updates and revisions to the regulation now in effect. The proposed regulation was first presented to the Board at its February 2015 public hearing, at which the Board directed staff to make modifcations to the proposal. The Board will also consider the combined environmental analysis prepared under the California Environmental Quality Act for this proposal and the proposed Regulation on the Commercialization of Alternative Diesel Fuels (Item 15-7-1) and the written responses to environmental comments. The Board will close the public hearing on this item at the conclusion of public comment on September 24th and continue the meeting on September 25th to deliberate and vote on the proposal.

More Information *Staff Presentation*

15-7-4: Public Meeting to Consider Proposition 1B Program Funding Awards to Reduce Emissions from Freight Transportation

The Board will consider approving grant awards for local agency projects to reduce freight-related emissions in California's four priority trade corridors.

More Information *Staff Presentation*

15-7-3: Public Hearing to Consider the Cap-and-Trade Auction Proceeds Funding Guidelines for Agencies that Administer California Climate Investments

The Board will consider the draft Funding Guidelines for agencies administering investments from the Greenhouse Gas Reduction Fund. These Guidelines will address program administration to further the purposes of Assembly Bill 32, preparation of Expenditure Records, quantification of greenhouse gas reductions and co-benefits, meeting Senate Bill 535 requirements to maximize benefits for disadvantaged communities, and project tracking/reporting.

More Information *Staff Presentation*

Friday
September 25, 2015
8:30 a.m.

CONSENT CALENDAR:

The item on the consent calendar will be presented to the Board immediately after the start of this second day of the public meeting, unless removed from the consent calendar either upon a Board member's request or if someone in the audience wishes to speak on it.

Consent Item #

15-7-5: Public Meeting to Consider Appointments of New Members to the Environmental Justice Advisory Committee

The Board will consider the appointment of new members from Inland Empire, San Diego, and Sacramento to fill Environmental Justice Advisory Committee (EJAC) vacancies from former members that left their positions. Under Assembly Bill 32 (Global Warming Solutions Act of 2006), the Air Resources Board (ARB) originally convened the EJAC in 2007 to advise it on developing the Initial Scoping Plan and reconvened the EJAC in 2013 to advise it on the First Scoping Plan Update. The EJAC will advise ARB on developing the Scoping Plan to meet Governor Brown's new interim statewide target to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030.

More Information *Proposed Resolution*

DISCUSSION ITEMS:

Note: These agenda items may be heard in a different order at the Board meeting.

Agenda Item #

15-7-8: Public Hearing to Consider Technical Status and Proposed Revisions to On-Board Diagnostic System Requirements and Associated Enforcement Provisions for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD II)

The Board will consider approving for adoption amendments to the OBD II regulations that update requirements to account for Low Emission Vehicle III applications and monitoring

requirements for gasoline and diesel vehicles, and clarify and improve the regulation. The Board will also consider approving for adoption updates to the associated OBD II enforcement regulation to align it with the proposed amendments to the OBD II regulations and a minor amendment to the definition of "emissions-related part" in title 13, CCR section 1900.

More Information *Staff Presentation*

15-7-1: Consideration of the Proposed Regulation on the Commercialization of Alternative Diesel Fuels (Continued from September 24th)

Staff will present to the Board responses to comments received during the September 24th public hearing on this item and on the combined environmental analysis for the Proposed Regulation on the Commercialization of Alternative Diesel Fuels and the Proposed Re-adoption of the Low Carbon Fuel Standard. The Board will consider adopting the proposed regulation, certifying of the environmental analysis, and approving responses to environmental comments.

More Information

15-7-2: Consideration of the Proposed Re-adoption of the Low Carbon Fuel Standard (Continued from September 24th)

Staff will present to the Board responses to comments received during the September 24th public hearing on this item. The Board will consider re-adopting the Low Carbon Fuel Standard.

More Information

CLOSED SESSION

The Board will hold a closed session, as authorized by Government Code section 11126(e), to confer with, and receive advice from, its legal counsel regarding these pending or potential litigation, and as authorized by Government Code section 11126(a):

American Fuels and Petrochemical Manufacturers, et al. v. Jane O'Keeffe, et al., U.S. District Court (D. Ore. Portland), Case No. 3:15-CV-00467.

Sarah Farley v. California Air Resources Board, Superior Court of California (Sacramento County), Case No. 34-2015-80002044.

POET, LLC, et al. v. Corey, et al., Superior Court of California (Fresno County), Case No. 09CECG04850; plaintiffs' appeal, California Court of Appeal, Fifth District, Case No. F064045; California Supreme Court, Case No. S213394. [remanded to trial court].

Rocky Mountain Farmers Union, et al. v. Corey, U.S. District Court (E.D. Cal. Fresno), Case No. 1:09−CV−02234−LJO−DLB; ARB interlocutory appeal, U.S. Court of Appeals, Ninth Circuit, Case No. 09-CV-02234 [remanded to trial court].

American Fuels and Petrochemical Manufacturers, et al. v. Corey, et al., U.S. District Court (E.D. Cal. Fresno), Case No. 1:10-CV-00163-AWI-GSA; ARB's interlocutory appeal, U.S. Court of Appeals, Ninth Circuit, Case No. 10-CV-00163 [remanded to trial court].

California Dump Truck Owners Association v. Nichols, U.S. District Court (E.D. Cal. Sacramento), Case No. 2:11-CV-00384-MCE-GGH; plaintiffs' appeal, U.S. Court of Appeals, Ninth Circuit, Case No. 13-15175.

Engine Manufacturers Association v. California Air Resources Board, Sacramento Superior Court, Case No. 34-2010-00082774; ARB's successful appeal, California Court of Appeal, Third District, Case No. C071891 [remanded to the trial court].

Truck and Engine Manufacturers Association v. California Air Resources Board, Sacramento Superior Court, Case No. 34-2013-00150733.

Alliance of Automobile Manufacturers v. California Air Resources Board; Sacramento Superior Court, Case No. 34-2013-00152974.

California Chamber of Commerce et al. v. California Air Resources Board, Sacramento Superior Court, Case No. 34-2012-80001313; plaintiffs' appeal, California Court of Appeal, Third District, Case No. C075930.

Morning Star Packing Company, et al. v. California Air Resources Board, et al., Sacramento Superior Court, Case No. 34-2013-800001464; plaintiffs' appeal, California Court of Appeal, Third District, Case No. C075954.

Delta Construction Company, et al. v. United States Environmental Protection Agency, U.S. Court of Appeals, District of Columbia Circuit, Case No. 11-1428.

Alliance for California Business v. Nichols et al., Glenn County Superior Court, Case No. 13CV01232.

Dalton Trucking, Inc. v. United States Environmental Protection Agency, U.S. Court of Appeals, District of Columbia Circuit, Case No. 13-1283.

Owner-Operator Independent Drivers Association Inc. et al. v. Richard W. Corey et al., U.S. District Court, (E.D. Cal. Fresno) Case No. 1:13-CV-01998-LJO-SAB (transferred by court to E.D.Cal. Sacramento, Case No. 2:14-CV-00186-MCE-AC).

Jack Cody dba Cody Transport v. California Air Resources Board, et al. (*Sacramento Superior Court, Case No. 34-2015-80002116.*

CO-AL Transport v. California Environmental Protection Agency et al., (*United States Court of Appeals, Ninth Circuit, Case No. 15-70839).*

John R. Lawson Rock & Oil, Inc. et al. v. California Air Resources Board et al., Fresno County Superior Court, Case No. 14-CECG01494.

Transportation Solutions Defense and Education Fund v. California Air Resources Board, Fresno County Superior Court, Case No. 14CECG01788 (plaintiff's transfer to Sacramento Superior).

California Air Resources Board v. BP West Coast Products LLC, Contra Costa County Superior Court, Case No. C12-00567.

Sacramento Metropolitan Air Quality Management District v. Hardesty Sand & Gravel, et al. (Sacramento County Superior Court, Case No. 34-2011-00101272).

OPPORTUNITY FOR MEMBERS OF THE BOARD TO COMMENT ON MATTERS OF INTEREST

Board members may identify matters they would like to have noticed for consideration at future meetings and comment on topics of interest; no formal action on these topics will be taken without further notice.

OPEN SESSION TO PROVIDE AN OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE BOARD ON SUBJECT MATTERS WITHIN THE JURISDICTION OF THE BOARD

Although no formal Board action may be taken, the Board is allowing an opportunity to interested members of the public to address the Board on items of interest that are within the Board's jurisdiction,

but that do not specifically appear on the agenda. Each person will be allowed a maximum of three minutes to ensure that everyone has a chance to speak.

TO ELECTRONICALLY SUBMIT WRITTEN COMMENTS ON AN AGENDA ITEM IN ADVANCE OF THE MEETING GO TO:

http://www.arb.ca.gov/lispub/comm/bclist.php

(Note: not all agenda items are available for electronic submittals of written comments.)

IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE CLERK OF THE BOARD:
1001 I Street, 23rd Floor, Sacramento, California 95814
(916) 322-5594
ARB Homepage: www.arb.ca.gov

SPECIAL ACCOMMODATION REQUEST

Consistent with California Government Code Section 7296.2, special accommodation or language needs may be provided for any of the following:

- An interpreter to be available at the hearing;
- Documents made available in an alternate format or another language;
- A disability-related reasonable accommodation.

To request these special accommodations or language needs, please contact the Clerk of the Board at (916) 322-5594 or by facsimile at (916) 322-3928 as soon as possible, but no later than 7 business days before the scheduled Board hearing. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Consecuente con la sección 7296.2 del Código de Gobierno de California, una acomodación especial o necesidades lingüísticas pueden ser suministradas para cualquiera de los siguientes:

- Un intérprete que esté disponible en la audiencia
- Documentos disponibles en un formato alterno u otro idioma
- Una acomodación razonable relacionados con una incapacidad

Para solicitar estas comodidades especiales o necesidades de otro idioma, por favor llame a la oficina del Consejo al (916) 322-5594 o envié un fax a (916) 322-3928 lo más pronto posible, pero no menos de 7 días de trabajo antes del día programado para la audiencia del Consejo. TTY/TDD/Personas que necesiten este servicio pueden marcar el 711 para el Servicio de Retransmisión de Mensajes de California.

SMOKING IS NOT PERMITTED AT MEETINGS OF THE CALIFORNIA AIR RESOURCES BOARD

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 32

PROPOSAL: 2016 Air Quality Management Plan White Papers

SYNOPSIS: Eight of ten 2016 AQMP white papers were released for final public review at the September 2015 Board meeting. An opportunity for public comments is being provided today. In addition, the draft final Energy Outlook White Paper is being released today for a final public review, and the Board will receive public comments at the November 6, 2015 Board Meeting.

COMMITTEE: Committee reviews as per topic, various dates

RECOMMENDED ACTION:
Receive and file.

Barry R. Wallerstein, D.Env.
Executive Officer

PF:AFM:MK

Background

At the April 10, 2014 AQMP Advisory Group meeting, the SCAQMD introduced the concept of developing a series of white papers to provide for better integration of major planning issues regarding air quality, climate, energy, transportation, and business needs during the development of the 2016 AQMP. The White Papers covered the following key topics:

- Blueprint for Clean Air
- VOC Controls
- Particulate Matter (PM) Controls
- Passenger Transportation
- Goods Movement
- Off-Road Equipment
- Residential and Commercial Energy Use
- Energy Outlook
- Industrial Facility Modernization
- A Business Case for Clean Air Strategies

White Paper Overview

Blueprint for Clean Air
The Blueprint for Clean Air is a preface white paper that provides general background information about the 2016 AQMP, air quality standards, key challenges, and a synopsis of each of the other White Papers.

VOC Controls
The VOC Controls white paper describes the role that VOCs play in the ozone and PM2.5 attainment strategy. The contributions of intermediate-volatility and semi-volatile organic compounds are also explored. A wide range of ozone reduction strategies are evaluated and a tiered approach to reducing VOC emissions is proposed.

Particulate Matter (PM) Controls
The PM Controls White Paper continues the evaluation of potential control approaches for the emission reductions from commercial cooking, residential and open burning, fugitive dust, and ammonia sources. Modeling assists in demonstrating the benefits from implementing strategies targeting directly emitted PM2.5 sources as well as precursor gas emission sources.

Passenger Transportation
The Passenger Transportation white paper describes a number of potential scenarios for reducing emissions from the passenger transportation sector to support attainment of federal ozone and particulate matter standards. Such emission reductions could be achieved through use of operational efficiency measures such as intelligent transportation systems, mode choice, active transportation, technological emission controls, or alternative fuel vehicles. The paper does not propose specific rules or other control measures, but provides information to assist in crafting control measures as part of the 2016 AQMP development process.

Goods Movement
The Goods Movement white paper describes a number of potential scenarios for reducing emissions from the goods movement sector to support attainment of federal ozone and particulate matter standards. Such emission reductions could be achieved through greater deployment of zero- and near-zero emission technologies and quantification of co-benefits associated with operational efficiencies being implemented in goods movement industry. The paper does not propose specific rules or other control measures, but provides information to assist in crafting control measures as part of the 2016 AQMP development process.

Off-Road Equipment
The Off-Road Equipment white paper provides a set of emission reduction scenarios to illustrate the need for additional emission reductions within this sector to support attainment of the state and federal ozone and particulate matter standards. The emission reduction scenarios highlight emission source categories where emission reductions could potentially be achieved more readily compared to other emission source categories in this sector. The scenarios do not reflect any control strategies or suggest any control approach. As such, the paper does not propose specific rules or other control measures, but provides information to assist in crafting control measures as part of the 2016 AQMP development process. The paper discusses the potential for achieving additional emission reductions through greater deployment of cleaner equipment that has emission levels below the emission standards established in existing state and federal regulations, advanced emission controls technologies, use of alternative and renewable fuels, and the use of operational efficiency measures.

Residential and Commercial Energy Use
The Residential and Commercial Energy Use white paper examines energy efficiency, load shifting, and renewable energy sources. The paper reviews the impacts past policies and regulations implemented in California and the Basin have had on reducing the energy needs in the residential and commercial sectors. The white paper also reviews the large potential for further energy reductions within existing buildings in the Basin and reviews the emissions benefits that might result from increasing residential and commercial building energy efficiency 50% and implementing 50% renewable power generation by 2030.

Energy Outlook
The Energy Outlook white paper reviews the Basin's energy uses (e.g. renewables, liquid fuels) and the associated emissions resulting from energy use. The paper also reviews the past and current policies impacting energy use within California and the Basin followed by a detailed discussion on the current issues impacting the different energy sectors. The potential emission reduction resulting from new energy policies and technologies within the energy sector as a result of increases in efficiency, renewable power generation, and reduced liquid fuel use are reviewed in relation to meeting the future ozone attainment goals.

Industrial Facility Modernization
The Industrial Facility Modernization white paper will identify potential hurdles that may be preventing an owner to replace older, higher-emitting equipment and incentives that can better encourage a business owner to replace an older piece of equipment sooner, as well as encourage ultra clean facilities to site in the Basin and incentivize technologies that are needed to meet attainment goals.

A Business Case for Clean Air Strategies
A Business Case for Clean Air Strategies white paper develops planning concepts that can be used to evaluate potential AQMP control strategies which can support a business case for deployment of needed technologies and efficiency measures, in order to achieve upcoming air quality standards. A control strategy that supports a business case will reduce emissions and also improve energy efficiency, reduce fuel or maintenance costs, create new job opportunities, or have other cost savings and economic benefits.

Working Groups and Public Participation
The AQMP Advisory Group members were encouraged to participate in working groups that will address the specific policy topics or invited a technical expert to participate in lieu of their attendance. The Working Groups for the respective papers met at various times from July 2014 to September 2015 during the development of each of the white papers. The meeting dates, times, agenda, presentations and any available material was provided online at http://www.aqmd.gov/home/about/groups-committees/aqmp-advisory-group/2016-aqmp-white-papers for public access. Table 1 outlines the working group meeting dates that took place as well as when noticing occurred and material was released.

TABLE 1
White Paper Working Group Meetings and Noticing Dates

White Paper Topic	Working Group #	Meeting Dates	Meeting Noticing Dates	Material Release Date
Blueprint for Clean Air	17	June 24, 2014	June 6, 2014	June 24 (Presentation)
		Aug. 13, 2014	July 25, 2014	July 2 (WP Outline) July 25 (WP Outline Comments)
		April 15, 2015	April 2, 2015	April 2 (Draft WP)
VOC Controls	19	June 25, 2014	June 19, 2014 (*Reminder June 20)*	June 25 (Presentations)
		Aug.19, 2014	July 17, 2014 (*Reminder August 6 & 19*)	July 31 (Presentations) – *re-sent August 6th*
		Oct.15, 2014	Sept 24, 2014 *(Reminder Oct 15)*	Sept 25 (WP Outline)
		April 14, 2015	April 2, 2015 *(Reminder April 14)*	April 2 (Draft WP)
PM Controls[1]	20	July 18, 2014	June 18, 2014	July 18 (Scope of WP)
		Sept. 24, 2014	Aug 27, 2014 *(Reminders Sept 18 & 24)*	Sept 18 (WP Outline)
		April 16, 2015	April 2, 2015 *(Reminder April 16)*	April 2 (Draft WP) April 16 (Presentations) June 5 (Revised Draft WP)
Passenger Transportation	34	July 8, 2014	June 16, 2014	July 2 (Presentations)
		Aug. 5, 2014	July 18, 2014	August 5 (Presentations)
		Sept. 4, 2014	August 12, 2014	Sept. 2 (Presentations)
		Feb. 4, 2015	January 23, 2015	Jan. 30 (Presentations) Feb.3 (CARB Info)
		July 1, 2015	June 23, 2015	June 5 (Draft WP) June 30 (Presentations)
Goods Movement	49	July 8, 2014	June 16, 2014	July 2 (Presentations)
		Aug. 5, 2014	July 18, 2014	August 5 (Presentations)
		Sept. 4, 2014	August 12, 2014	Sept. 2 (Presentations)
		Feb. 4, 2015	January 23, 2015	Jan. 30 (Presentations) Feb.3 (CARB Info)
		July 1, 2015	June 23, 2015	June 5 (Draft WP) June 30 (Presentations)
Off-Road Equipment	21	Feb. 24, 2015	Feb. 18, 2015	Feb 20 (Presentations)
		April 1, 2015	March 26, 2015	March 31(Presentations)
		April 29, 2015	April 21, 2015	April 29 (Outside Presentations)
		June 26, 2015	June 19, 2015	June 5 (Draft WP) June 24 (Presentations)

[1] Provided opportunity for written comments but none were received.

TABLE 1 (Concluded)
White Paper Working Group Meetings and Noticing Dates

White Paper Topic	Working Group #	Meeting Dates	Meeting Noticing Dates	Material Release Date
Residential and Commercial Energy Use	29	June 26, 2014	June 12, 2014	June 26 (Presentations)
		Sept. 10, 2014	Aug 27, 2014 *(Reminder Sept 10)*	Sept 9 (Presentations, WP Outline)
		June 25, 2015	June 10, 2015 (*Reminder June 18*)	June 10 (Draft WP) June 25 (Presentation)
Energy Outlook	37	July 23, 2014	June 12, 2014	July 22 (Presentation)
		April 15, 2015	April 3, 2015	April 15 (Outside Presentations)
		Sept. 15, 2015	August 27, 2015 (*Reminders Sept 9 & 11& 15*)	Sept. 11 (Draft WP) Sept. 15 (Presentation)
Industrial Facility Modernization	28	Aug. 13, 2014	July 23, 2014 (*Reminders July 25 & 30*)	Aug 13 (Presentation) Sept 24 (WP Outline)
		Sept. 23, 2015	Aug 25, 2015 *(Reminder Sept 9, 11 & 15)*	TBD (Draft WP)
A Business Case for Clean Air Strategies	33	June 26, 2014	June 20, 2014	June 20 (Agenda)
		Aug. 13, 2014	July 31, 2014	Aug.7 (Agenda) Aug.12 (Presentations)
		Sept. 30, 2014	Aug. 28, 2014	Sept. 29 (Agenda & WP Outline)
		Oct. 31, 2014	Oct. 9, 2014	Oct. 23 (Agenda)
		March 11, 2015	Feb. 20, 2015	March 4 (Agenda)
		June 23, 2015	June 16, 2015 *(Reminder June 19)*	June 16 (Agenda) June 19 (Draft WP) June 23 (Presentation)

Attachments*

1. Revised Draft Final Blueprint for Clean Air White Paper
2. Revised Draft Final PM Controls White Paper
3. Revised Draft Final VOC Controls White Paper
4. Revised Draft Final Passenger Transportation White Paper
5. Revised Draft Final Goods Movement White Paper
6. Revised Draft Final Off-Road Equipment White Paper
7. Revised Draft Final Residential/Commercial Energy Use White Paper
8. Revised Draft Final A Business Case for Clean Air Strategies White Paper
9. Draft Final Energy Outlook White Paper

*These White Papers are also available online at http://www.aqmd.gov/home/about/groups-committees/aqmp-advisory-group/2016-aqmp-white-papers

SOUTH COAST
AIR QUALITY
MANAGEMENT DISTRICT

Blueprint for Clean Air

2016 AQMP WHITE PAPER

OCTOBER 2015

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT GOVERNING BOARD

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Introduction

The South Coast Air Quality Management District (SCAQMD) is preparing the 2016 Air Quality Management Plan (AQMP) to demonstrate how the region will reduce air pollution emissions to meet federal health-based standards for ground-level ozone and fine particulates (PM2.5). As part of this process, SCAQMD staff in conjunction with stakeholders' input has prepared a series of 10 white papers on key topics to provide a policy framework and better integration of major planning issues regarding air quality, climate, energy, transportation, and business needs. The Blueprint for Clean Air provides background information regarding the 2016 AQMP as well as introductory discussions relevant to the other white papers.

Setting the Scene

Southern California is unique in many ways. The South Coast Air Basin (Basin) is bounded by the Pacific Ocean on the southwest and surrounded by mountains to the north and east. The warm sunny weather associated with persistent high-pressure systems is conducive to the formation of ozone and PM2.5. The pollution levels are exacerbated by frequent low inversion heights and stagnant air conditions. There are also natural, and increasingly, international man-made pollution that contribute to background ozone levels entering the Basin. All these factors act to trap pollutants in the Basin near ground level where people breathe.

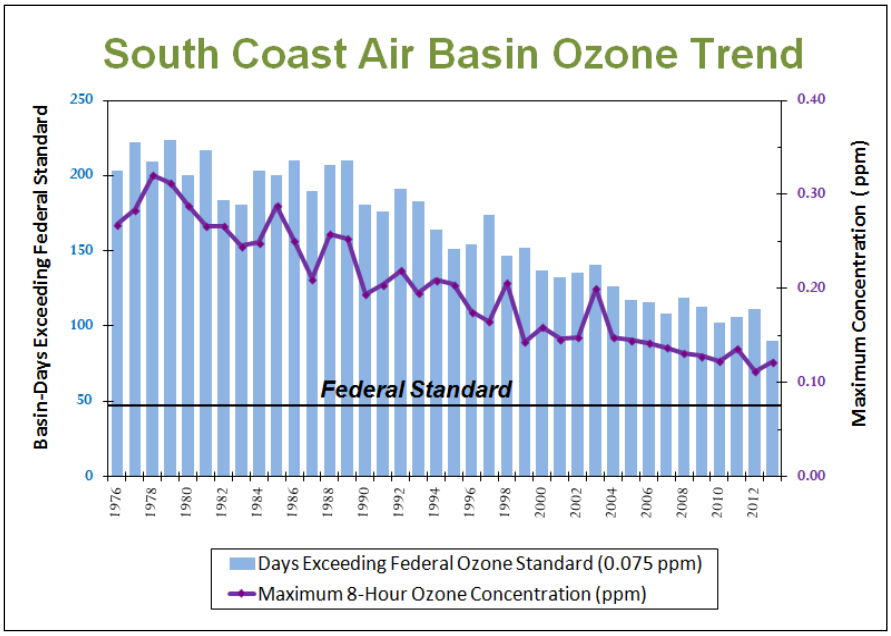
This region contributes significantly to the state-wide and national economy. For example, 40% of all containerized cargo that enters the country comes through the twin ports of Los Angeles and Long Beach. The two San Pedro Bay Ports anticipate cargo volumes will grow to 43 million containers annually by 2035, more than tripling today's levels[1]. As a result, the goods movement sector is an integral part of the Basin's economy. However, goods movement – the transportation of goods by ship, railroad, truck and aircraft – is a major source of regional oxides of nitrogen (NOx) and thus contributes significantly to ozone and PM2.5 levels. The 2012 AQMP emissions inventory for goods movement from port-related sources such as heavy-duty trucks, freight locomotives, cargo- handling equipment, commercial harbor craft, and commercial ocean-going vessels was estimated to be 51 tons per day of NOx for the year 2014.[2]

> The San Pedro Bay Ports anticipate cargo volumes to grow to 43 million containers annually by 2035: more than tripling from today's levels[1].

The Basin's air is much cleaner today than it was 20 years ago. Air pollution has improved despite significant long-term growth of the population, the regional economy, and vehicle miles traveled. The number of days exceeding standards has greatly declined, the area of the Basin experiencing exceedances has diminished, and the percentage of the population exposed to exceedances has decreased. This progress is due to decades of programs and regulations at the local, state and federal levels designed to significantly reduce

[1] SCAG, Regional Transportation Plan 2012-2035, Goods Movement Appendix, pg. 7, April 2012.
[2] Final 2012 Air Quality Management Plan, Appendix IV-A, pp IV-A-39, December 2012.

emissions. However, significant challenges remain and much more must be done to meet the current ozone standard of 75 parts per billion (ppb) by 2032, and the previous ozone standard of 80 ppb by 2024. Given, the approximately 17 million people in our region, the over 11 million vehicles serving them and the nation, the presence of the goods movement and other industries, and the natural factors described above result in the Basin still having some of the worst air quality in the nation. The region fails to meet federal health-based standards for ground-level ozone on more than 90 days each year.



Health Benefits of Clean Air

Air pollution has serious health repercussions. Exposure to fine particulate pollution and ozone causes myriad health impacts, particularly to the respiratory and cardiovascular systems. Exposure to fine particulates and ozone aggravates asthma attacks and can amplify other lung ailments such as emphysema and chronic obstructive pulmonary disease. A broad body of scientific research has also linked PM2.5 exposure to cardiovascular diseases.[3] According to the most recent calculations from the California Air Resources Board (CARB), exposure to current levels of PM2.5 is responsible for an estimated 4,300 cardiopulmonary-related deaths per year in the South Coast Air Basin.[4] Improving our air quality will save lives. In addition, University of

[3] U.S. EPA. Integrated Science Assessment for Particulate Matter (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-08/139F, 2009; See: http://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=216546.

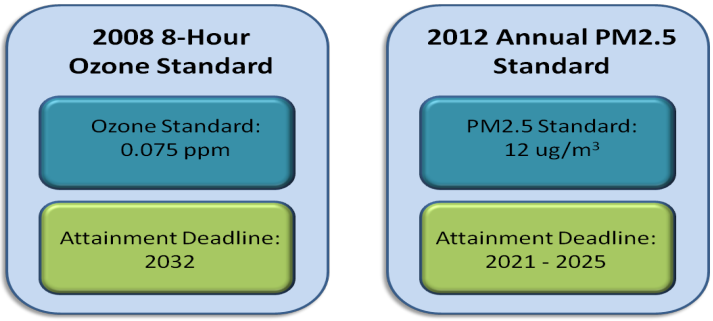
[4] "Estimated cardiopulmonary mortality by air basin associated with PM2.5 exposure." California Air Resources Board, Health and Exposure Branch. February 3, 2015.

Southern California (USC) scientists responsible for the landmark Children's Health Study found that lung growth improved as air pollution declined for children aged 11 to 15 in five communities in the Basin.[5]

Ongoing medical research continues to indicate that the health effects of air pollution have been previously underestimated. As a result, the U.S. Environmental Protection Agency (U.S. EPA) has lowered air quality standards for the PM2.5 standard and is planning to do the same this year for the ozone air quality standard. The U.S. EPA has proposed to lower the ozone standard to a level between 65-70 ppb, which would need to be met by 2037.

The 2016 AQMP

The 2016 AQMP will represent a regional blueprint for achieving the federal air quality standards and thus, healthful air. It will focus on demonstrating attainment of the NAAQS for 8-hour ozone levels (0.075 parts per million or ppm, set in 2008) and the annual PM2.5 standard (12 $\mu g/m^3$ set in 2012). It will also update previous plans for additional ozone and PM2.5 NAAQS that have not yet been met. In general, the AQMP is updated every three to four years. However, the air quality planning process for the AQMP is continuous and each iteration is an update of the previous plan.



2008 8-hour Ozone Standard

On March 12, 2008, U.S. EPA revised its national ambient air quality standards for ground-level ozone to a level of 0.075 ppm from the previous standard of 0.08 ppm, set in 1997. Under U.S. EPA's implementation rule released in May 2012, the Basin was classified as Extreme non-attainment and as such, the U.S. EPA required that all areas with an Extreme classification meet the 2008 ozone standard by 2032 (emissions reductions in place by 2031 for purposes of demonstrating attainment).

2012 Annual PM2.5 Standard

In 2012, U.S. EPA revised the NAAQS for the annual PM2.5 standard from 15.0 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The PM2.5 standard is attained when the 3-year average of the annual arithmetic means does not exceed 12.0 $\mu g/m^3$. States would have until 2021 to meet the new 2012 PM2.5 standard as moderate non-attainment areas, and if necessary, up to 4 additional years if the area is classified as serious non-attainment.

[5] "Association of Improved Air Quality with Lung Development in Children," W.J. Gauderman et al, New England Journal of Medicine, Vol. 372, No. 10, March 5, 2015.

Additional Analysis Needed for 2016 AQMP

The 2016 AQMP will also provide updates to the attainment demonstrations of the federal NAAQS for 24-hour PM2.5 (35 μg/m^3), 1-hour ozone (0.12 ppm), and 8-hour ozone (0.08 ppm) standards. In addition to federal standards, there are state ambient air quality standards that the 2016 AQMP will address as well. The state annual standards are 0.09 ppm and 0.07 ppm for 1-hour ozone and 8-hour ozone, respectively. Progress has been made over the years such that the 1-hour ozone concentrations has decreased by about 50 percent since 1990, and by about 30 percent for the 8-hour standard. However, continued progress is needed, and the 2016 AQMP will seek further reductions necessary to meet the California Clean Air Act (CCAA) requirements.

Nonattainment areas such as the Basin also still have some continuing obligations under the 1997 federal 8-hour ozone standard and 1979 1-hour ozone standard. In order to show continued progress towards meeting the 1997 8-hour ozone standard by 2024, the 2016 AQMP will also include additional analysis on the adoption, implementation, and effectiveness of control measures committed to in the approved 8-hour and 1-hour ozone State Implementation Plans (SIPs). As a result, additional analysis will be included in the 2016 AQMP in order to demonstrate continued progress towards meeting the reduction goals by 2022 and 2023 for the 1979 and 1997 ozone standards.

What Will It Take to Achieve the Standards?

In order to realize the emission reductions by the federally mandated deadlines over the next two decades, the SCAQMD, CARB and the U.S. EPA will need to take a detailed look at what is technically and financially feasible as pollution reduction efforts progress. Continuing the Basin's progress toward clean air is a challenging task that combines science, engineering, technology, and public policy while allowing for growth and a healthy economy. Air quality agencies work to understand the complex interactions between emissions, control strategies, resulting air quality, and business impacts and use this information to pursue the most cost-effective set of strategies to improve air quality, while coordinating with other key public policy objectives including transportation, energy and climate goals. The plan is going to require steep emissions reductions to meet these health-based standards. These reductions come on top of decades of successful air pollution controls for both stationary and area sources as well as mobile sources.

Preliminary 2016 AQMP analysis indicates that this air basin will require approximately a 65 percent further reduction in nitrogen oxide (NOx) emissions – above and beyond all currently adopted measures – to meet the 8-hour ozone standards. These reductions will require widespread deployment of existing clean air technology and further commercialization of advanced technologies. Achieving clean air will require help from all stakeholders including businesses, manufacturers, public agencies and the general public.

The 2016 AQMP will include emission control strategies for all categories of emission sources: stationary sources, area sources, and mobile sources. The majority of NOx emission reductions must come from mobile sources, which are generally divided into two main categories: on-road mobile sources, which typically include automobiles, trucks, buses, and other vehicles that operate on public roadways; and off-road mobile sources which include aircraft, ships, trains, and construction equipment that operate off public roadways. The authority

to regulate these different emission sources is primarily divided between the California Air Resources Board (CARB) and the U.S. EPA. The SCAQMD does, however, have some limited authority to regulate mobile sources.

General Approach for the 2016 AQMP Control Strategies

The 2016 AQMP will use a variety of implementation approaches such as accelerated deployment of available cleaner technologies, best management practices, incentive programs, as well as development and implementation of zero- and near-zero technologies and control methods. Further demonstration and commercialization projects will be crucial to help deploy near-zero and zero emission technologies. Another key element to plan implementation will be private and public funding to help further the development and deployment of advanced technologies. Many of the same technologies will address both air quality and climate needs, such as those that increase energy efficiency or use renewable fuels. In developing the 2016 control strategies, the SCAQMD staff will consider the following general approach and conceptual framework:

1. **Eliminate Reliance on the "Black Box" to the Maximum Extent Feasible**
   Section 182(e)(5) of the federal Clean Air Act (CAA), authorizes regions classified as extreme nonattainment for ozone to rely on advanced technology measures to meet federal air quality standards; these measures have come to be known as the "Black Box." The 2016 AQMP approach will attempt to eliminate reliance on the "black box" and develop a more definitive pathway to attainment based on specific advanced technology control measures which have quantifiable emission reductions and associated costs. This approach is aided by the fact that the majority of zero and near-zero technologies which will be relied upon for control measure development have already been developed. It will be a matter of accelerating commercialization and deployment of these technologies using existing and new funding and incentive programs.

2. **Fair-Share Emission Reduction Strategy**
   Develop a strategy with fair-share emission reduction commitments at federal, state, and local levels, which includes new federal engine emission standards as well as additional authority provided to the State of California in order to enact additional controls on sources (e.g., locomotives, aircraft, ships) traditionally under the jurisdiction of the federal government.

3. **Incentivize Early Deployment of Zero and Near-Zero Technologies**
   Implement strategies that incentivize early deployment of zero and near-zero technologies, which also include investments in technologies that meet multiple objectives - air quality, climate, toxics, and energy efficiency. The 2016 AQMP will strongly rely on a transition to zero- and near-zero emission technologies in the mobile source sector including automobiles, transit buses, medium- and heavy-duty trucks, and off-road applications to meet the air quality standards. The plan will focus on existing commercialized technologies and energy sources and newer technologies that are nearing commercialization based on demonstration programs and limited test markets, including their supporting infrastructure. To accomplish this, the SCAQMD staff will continue to support technology demonstration and deployment projects for both mobile and stationary sources.

4. **Develop Efficient and Cost-Effective Strategies**

Select the most efficient and cost-effective path to achieve multi-pollutant and multi-deadline targets. For example, technologies needed for the state's air quality climate goals in GHG emission reductions[6] such as the deployment of zero and near-zero-technologies, as well as increasing the penetration of renewable energy resources and higher energy efficiencies, are "efficient strategies" as they are also needed to attain the air quality goals in the 2016 AQMP. Stationary source measures will include a wide array of advanced low-NOx technologies, low-volatile organic compound (VOC) coatings and processes, and clean energy alternatives, such as fuel cells, solar power, and other renewable energy systems.

5. **Prioritize Win-Win Strategies**

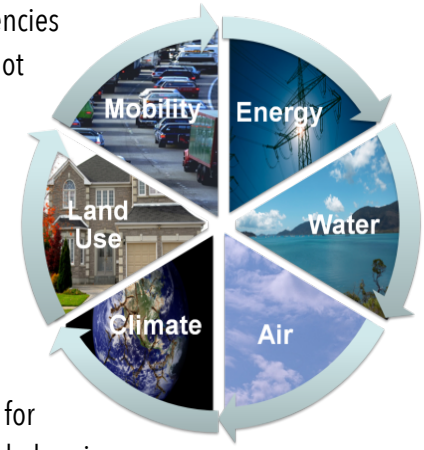
As shown in the past, air quality standards can be achieved while maintaining a healthy economy. The 2016 AQMP will prioritize non-regulatory, innovative and "win-win" approaches for emission reductions. In designing the control strategy needed to achieve the ozone and PM2.5 air quality standards, there will be special consideration and prioritization of strategies that contribute to the economic vitality of the region and the needs of the public and businesses.

[6] The State's air quality climate goals which require a 30% reduction in GHGs by 2020 to 1990 levels, and the Governor's new executive order mandating a 40% reduction below 1990 levels by 2030.

What Happens if the 2016 AQMP Is Not Approved?

Failure to have an approved plan to meet these health-based standards within the required timeframes would result in sanctions from the federal government. These include: (1) new major stationary sources in the nonattainment area must obtain offsetting emissions reductions at a significantly increased 2-to-1 ratio; (2) restrictions on the state's use of federal highway funds for projects in the nonattainment area; and (3) the U.S. EPA is required to develop its own federal implementation plan (FIP) for the area to ensure improvement of air quality. This outcome not only leads to delayed air quality improvements with associated serious health impacts, but it also has the potential to significantly impact the local economy beyond the impacts of a thoughtful and approvable local plan that has been crafted with input from local stakeholders.

Need for Integrated Planning Process



The 2016 AQMP will need significant integration and coordination with other agencies in order to successfully meet the Basin's clean air goals. This integration should not only include the traditional collaboration between the SCAQMD, CARB, U.S. EPA and the Southern California Association of Governments (SCAG) but should also include at the state level the California Energy Commission (CEC), the California Public Utilities Commission, and the California State Transportation Agency including Caltrans. Regional and local governments, such as counties, cities, coalitions of governments, and regional transportation agencies, also should be a part of the integrated planning process. Such a process would be useful in proposing and implementing strategies that are consistent with the state's Vision for Clean Air and strategies and goals of the 2016 AQMP. In addition to an integrated planning process with other agencies, the 2016 AQMP development process will have to incorporate collaborative efforts by a wide range of non-government stakeholders. These efforts will focus on businesses, environmental and health organizations, community groups, and academia.

2016 AQMP White Papers

As a prelude to the 2016 AQMP, the following white papers were developed to begin the dialogue and frame key policy questions surrounding the development of the plan. These papers are intended to assist the public, stakeholders and the SCAQMD to understand key facts and policy issues related to the development of the 2016 AQMP. The White Papers are also intended to provide for better integration of major planning issues regarding air quality, climate, energy, transportation, and business needs. Below is a brief description of the white paper topics. For more information on each white paper, please visit the SCAQMD website at http://www.aqmd.gov.

Goods Movement

The Goods Movement White Paper will likely be the centerpiece of the 2016 AQMP. Advanced technologies will be needed to achieve clean air goals. This white paper will evaluate all goods movement sectors such as ships, locomotives, and trucks and will analyze a variety of advanced technologies such as hybrid-electric, advanced natural gas, fuel cells, and electric, as well as potential infrastructure

needs and commercialization schedules. This white paper will also create scenarios that will assume different future mixes of advanced technologies.

Passenger Transportation

The Passenger Transportation White Paper will examine advanced technologies and operational efficiency opportunities, as well as programs that can help accelerate fleet turnover. Advantages could be gleaned from the implementation of other programs such as SB375.

Energy Outlook

The Energy Outlook White Paper will be evaluating the energy implications of various types of advanced technologies – some of these advanced pollution control technologies for mobile sources will be based on traditional energy sources, while others will rely on alternative energy sources such as electricity or hydrogen. The Energy Outlook White Paper will describe the demand and supply of all energy sources for the Basin and explore how that might change under current and future programs to reduce GHG and pollutant emissions. In addition, this white paper will evaluate the existing and needed infrastructure for various energy sources. This white paper will also evaluate the cost of these energy sources – including cost of distribution of the energy source, cost impact or benefit to the end user, and infrastructure costs, if any.

Residential and Commercial Energy Use

Reducing, managing, and changing the way energy is used in the commercial and residential sectors can provide emission reductions, reduced energy costs, and can provide cross sector benefits such as reduced water consumption. The Residential and Commercial Energy Use White Paper will provide insight and analysis on energy usage while reviewing resulting emissions within the residential and commercial sectors.

Industrial Facility Modernization

The Industrial Facility Modernization White Paper will identify the barriers to and incentives for clean equipment technologies and modernization of industrial stationary sources.

VOC Controls

The VOC Controls White Paper will study the role VOCs play in the ozone and PM2.5 attainment strategy. The potential contribution of intermediate and semi-volatiles will be explored. The need for VOC reductions to achieve clean air goals will be re-examined, along with the requisite quantity and timing of VOC emissions reductions.

PM Controls

The PM Controls White Paper will continue to evaluate feasible control technologies for commercial cooking, fugitive dust, ammonia and SOx sources. Modeling results will assist in demonstrating the benefits from implementing strategies targeting sources of directly emitted PM2.5 as well as precursor emission sources. This white paper will address each of these elements, including source categories for potential control through traditional approaches as well as seasonal, episodic or geographically focused controls.

A Business Case for Clean Air Strategies

This white paper seeks to develop principles and concepts for control measures and related programs to be included in the 2016 AQMP that, to the extent possible, create a business case for deployment of needed technologies and efficiency measures towards attaining upcoming federal air quality standards. A business case could exist where a technology, fuel, or other strategy reduces emissions and also improves energy efficiency, reduces fuel or maintenance costs, creates new job opportunities, or has other economic benefits. In addition to seeking to minimize potentially adverse impacts, the SCAQMD staff, in developing the 2016 AQMP, will explore means to maximize emission control strategies that have a business case for implementation.

Off-Road Equipment

The Off-Road Equipment White Paper will examine advanced technology opportunities as well as programs to accelerate the transition to newer equipment. This category consists of a wide variety of emission sources including construction and mining equipment such as forklifts, cranes, and portable engines. The focus will be on advanced control technologies that go beyond current emission standards and what efforts will be needed to further reduce emissions from these sources.

Participation in the Clean Air Discussion

Public input is an integral part of the planning process and the SCAQMD staff relies on input from all stakeholders. There are a variety of ways to participate in the development of the 2016 AQMP. SCAQMD staff is working with an advisory group which represents over 50 stakeholders from the business community, environmental and community groups, academia, and other agencies. Members of the advisory group generally represent an organization and are approved by the SCAQMD's Governing Board Chairman. Each White Paper has an associated Working Group with members that include representatives from the advisory group as well as other technical experts. The public is invited to attend AQMP Advisory Group and White Paper Working Group meetings.

Reaching Further
The SCAQMD staff is looking for ways to conduct further outreach. If you have ideas on additional organizations to participate in the clean air discussion and/or to enhance our 2016 AQMP communication efforts, please let us know at aqmp@aqmd.gov.

You can follow the development of the 2016 AQMP on SCAQMD's website at www.aqmd.gov and on social media including Facebook and Twitter. The SCAQMD's website includes meeting dates and information about the AQMP Advisory Group, White Paper Working Groups, public workshops, and public hearings. The website also includes presentations and documents as they become publicly available. In addition, throughout the development of the 2016 AQMP, organizations can request a meeting with or a presentation by SCAQMD staff to receive an update on the 2016 AQMP. This provides the opportunity for SCAQMD staff to have a more inter-active and targeted dialogue with specific groups or organizations. If you are interested in participating in the clean air discussion and would like to be added to the mailing list, have questions or comments, or would like to schedule a meeting with SCAQMD staff to discuss the 2016 AQMP with your organization, please e-mail SCAQMD at aqmp@aqmd

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SOUTH COAST
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PM Controls

2016 AQMP WHITE PAPER

OCTOBER 2015

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LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
APCD	Air Pollution Control District
AQMP	Air Quality Management Plan
Basin	South Coast Air Basin
BC	Black Carbon
CAA	Clean Air Act
CARB	California Air Resources Board
CHC	Commercial Harbor Craft
CMAQ	Community Multi-scale Air Quality model
DPM	Diesel Particulate Matter
EC	Elemental Carbon
GHG	Greenhouse Gas
MATES	Multiple Air Toxics Exposure Study
NAAQS	National Ambient Air Quality Standards
NH_3	Ammonia
NOx	Nitrogen Oxides
OC	Organic Carbon
OGV	Ocean-Going Vessels
PM	Particulate Matter
PM2.5	Particulate Matter with a dynamic diameter less than or equal to 2.5 microns
PM_{10}	Particulate Matter with a dynamic diameter less than or equal to 10 microns
ppm	Parts Per Million
RACM	Reasonably Available Control Measure
RACT	Reasonably Available Control Technology
RECLAIM	REgional CLean Air Incentives Market
SCAQMD	South Coast Air Quality Management District
SIP	Standard Implementation Plan
SOA	Secondary Organic Aerosol
SOx	Sulfur Oxides
SVOC	Semi-Volatile Organic Compound
U.S. EPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
mg/m^3	Micrograms per cubic meter
μm	Micrometers

Preface

The purpose of this 2016 Air Quality Management Plan (AQMP) White Paper on Particulate Matter (PM White Paper) is to provide background technical information and present the policy challenges associated with attaining the National Ambient Air Quality Standards (NAAQS) for fine particulate matter (PM2.5), with a focus on the newly adopted federal annual PM2.5 standard of 12 micrograms per cubic meter ($\mu g/m^3$). Annual PM2.5 concentrations continue to decrease and the South Coast Air Basin (Basin) is projected to be near attainment of the new annual PM2.5 standard once the ozone attainment strategy is fully implemented. Several scientific and policy issues will be described, including the roles of directly emitted PM2.5 emissions and PM2.5 precursor gases, and the PM2.5 co-benefits from the ozone control program. Key to the policy discussion is the potential need for additional measures for PM2.5 given that the attainment strategy cannot rely on the "black box" advanced technology emissions reductions that have been used previously to demonstrate attainment of the ozone standard under federal Clean Air Act (CAA) Section 182(e)(5). Even though the NOx reductions for the ozone strategy will have significant PM2.5 benefits, only specific measures adopted at the time of the 2016 AQMP submittal can be credited towards the PM2.5 attainment demonstration. This PM White Paper will address these issues as well as the science behind PM2.5 formation, followed by potential PM2.5 control approaches that could be developed if additional emission reductions are needed for attainment with the PM2.5 standards. These concepts include control strategies and seasonal, episodic or geographically-focused controls.

1. INTRODUCTION

The Basin has experienced remarkable improvement in air quality since the 1970's as a direct result of a comprehensive, multi-year strategy of reducing air pollution from all sources. Yet the Basin is still not in attainment of current federal and state air quality standards and, in fact, still has the worst air quality in the nation for ozone. Currently, the Basin is not attaining federal ozone standards or the federal annual and 24-hour PM2.5 standards.

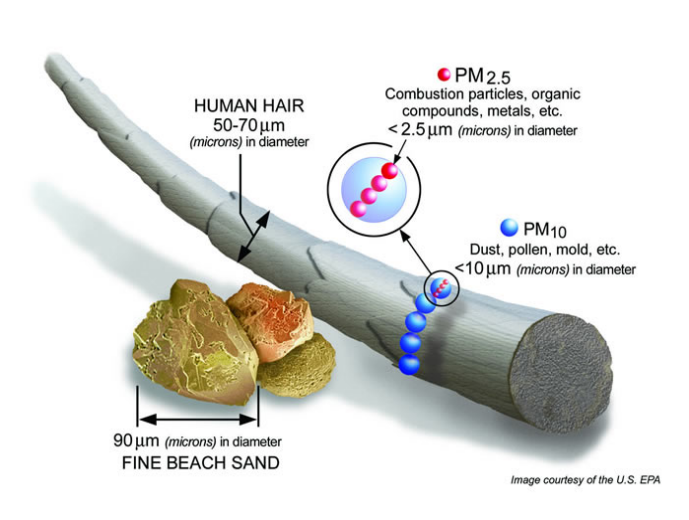
While the 2012 AQMP was designed to bring the Basin into attainment with the 24-hour PM2.5 standard of 35 mg/m^3 by 2015, with additional measures to address the 1997 8-hour ozone standard by 2023, the primary focus of the 2016 AQMP will be to demonstrate attainment of the 2008 ozone standard by 2032 and the annual PM2.5 standard by the 2021-2025 timeframe. Attaining the federal ozone standard will have the added benefit of emission reductions that will further improve PM2.5 levels.

The California State ambient air quality standard is identical to the federal standard for annual PM2.5 and there is no State 24-hour PM2.5 standard. The State has very stringent PM10 standards (annual PM10 of 20 mg/m^3 and 24-hour PM10 of 50 mg/m^3). While there is no effective attainment date for the State PM standards, the State standards must be achieved as soon as practicable to protect the public health and welfare of Southern Californians. Progress towards achieving the federal PM2.5 standards would be the most expeditious approach for attaining both the federal and State PM standards even though State PM10 standards are more stringent than the federal standard. However, a coarse particle control strategy would be very different and beyond the scope of this white paper. The State PM2.5 standard requires Reasonably Available Control Measures (RACM) that will be further evaluated for their feasibility and applicability in the Basin in the 2016 AQMP.

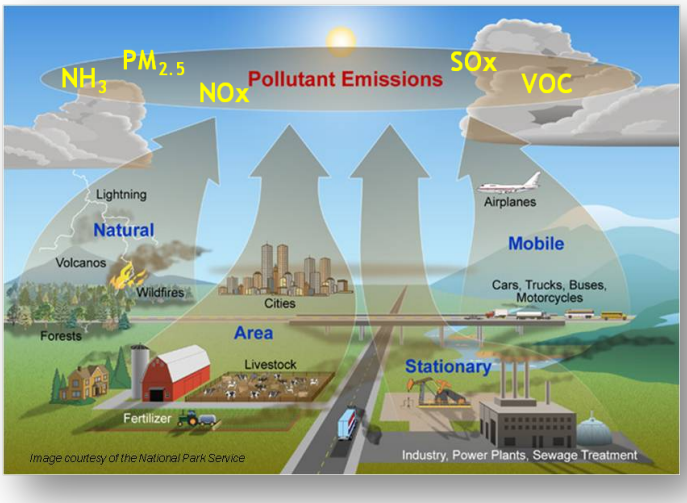
The purpose of this PM White Paper is to provide background technical information and present the policy challenges associated with attaining federal PM air quality standards. The focus will be primarily on the newly adopted federal annual PM2.5 standard of 12 mg/m^3, but some emission control measures that can be implemented sooner will help to ensure attainment of the 24-hour PM2.5 standard of 35 $\mu g/m^3$. This white paper will describe the scientific basis of PM2.5 formation including the major sources of directly emitted PM2.5 and PM2.5 precursor gases. The PM2.5 reduction co-benefits from ozone control programs and climate change strategies will also be described. Finally, potential strategies for further PM2.5 control will be considered, should additional controls be needed.

2. BACKGROUND

PM2.5 and Precursors

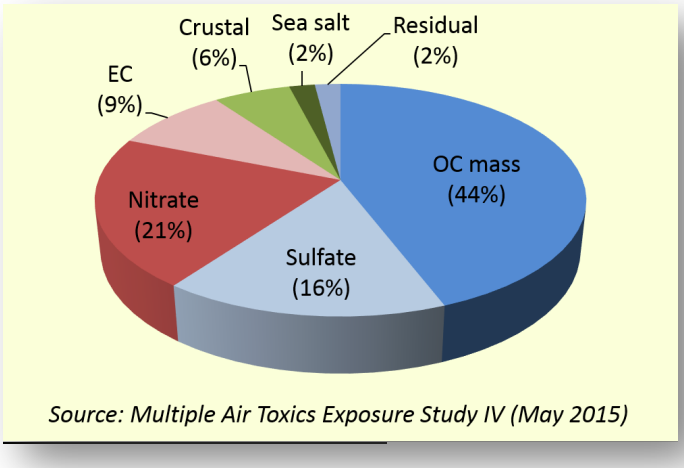


Particulate matter (PM), also known as particle pollution, is a complex mixture of microscopic solid and liquid particles suspended in air. Particles of concern are classified into two categories: inhalable coarse particles (PM10-2.5) and fine particles (PM2.5). Inhalable coarse particles are generally created by mechanical or natural processes, such as grinding, sanding, sea spray, windblown dust, and soil. Coarse particles have sizes larger than 2.5 micrometers (µm) and smaller than 10 µm in diameter. Fine particles, such as those found in smoke and haze, are 2.5 µm in diameter or smaller, and are generally formed by combustion processes or by chemical reactions that occur in the atmosphere. PM2.5 is of primary concern because, once inhaled, it can travel deeply into the respiratory tract, reaching the lungs. Scientific studies have linked increases in daily PM2.5 exposure with increased respiratory and cardiovascular hospital admissions, emergency department visits, and even deaths. Studies also suggest that long-term exposure to PM2.5 may be associated with increased rates of chronic bronchitis, reduced lung function and increased mortality from lung cancer and heart disease. People with breathing and heart problems, children, and the elderly may be particularly sensitive to PM2.5. Recently, an additional particle category known as ultrafine particles (often defined as particles less than 0.1 mm) has been studied and found to have distinct chemical and toxicological properties. However, given that there are no ambient standards for ultrafine particles, and that the purpose of this white paper is to address fine particle standards, issues related to ultrafine and coarse particles are beyond the scope of this discussion.



PM in the atmosphere can be categorized as either primary or secondary particles. Primary particles are directly emitted PM from sources such as construction sites, unpaved roads, sea salt, abrasion, fuel combustion, cooking, or fires. Secondary particles are formed in complex chemical reactions that occur in the atmosphere, often aided by sunlight (known as photochemical reactions). In these reactions, precursor gases, such as volatile organic compounds (VOCs), sulfur oxides (SOx), ammonia (NH_3), and nitrogen oxides (NOx), are transformed into solid or liquid products that contribute to ambient PM levels. NOx and SOx will combine with ammonia to form ammonium sulfate or ammonium nitrate salts, which are generally solids at ambient temperatures and can dissolve into water-containing particles. VOCs react with atmospheric oxidants, producing products with lower volatility that condense and form secondary organic aerosol (SOA), another component of PM. Many combustion processes emit both primary PM and precursor gases that ultimately form PM in the atmosphere. For example, in processes such as motor-vehicle gasoline combustion[1] and wood burning,[2] SOA produced by oxidation of the emitted VOCs can exceed the amount of emitted primary organic PM2.5.

"A large portion of $PM_{2.5}$ in the Basin is formed from precursor gases of anthropogenic origin."



Source: Multiple Air Toxics Exposure Study IV (May 2015)

Secondary particles make up the majority of ambient PM2.5 in the Basin. Basin-wide average ambient PM2.5 speciation profiles[3] measured during the recent Multiple Air Toxics Exposure Study (MATES) IV show that the Basin's PM2.5 mass was comprised of four major chemical components: organic carbon (OC), ammonium nitrate, ammonium sulfates,

[1] Gordon, T.D., et al. Secondary Organic Aerosol Formation Exceeds Primary Particulate Matter Emissions for Light-Duty Gasoline Vehicles, *Atmos. Chem. Phys.* 2014, 14, 4661-4678.

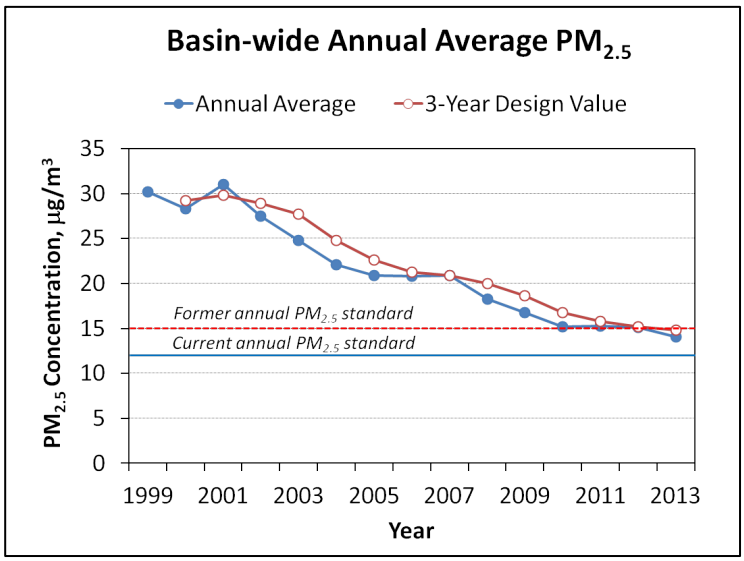
[2] Hennigan, C.J., et al. Chemical and physical transformations of organic aerosol from the photo-oxidation of open biomass burning emissions in an environmental chamber, *Atmos. Chem. Phys.* 2011, 11, 7669-7686.

[3] SCAQMD, Draft Multiple Air Toxics Exposure Study IV, October 3, 2014.

and elemental carbon (EC) with smaller fractions of crustal particles, sea salt, and other trace elements. Elemental carbon (EC), which is similar to the short-lived climate-forcing species Black Carbon (BC), is an important component of directly emitted PM2.5 from internal combustion engines, especially diesel engines. The OC mass portion includes both primary and secondary particle material.

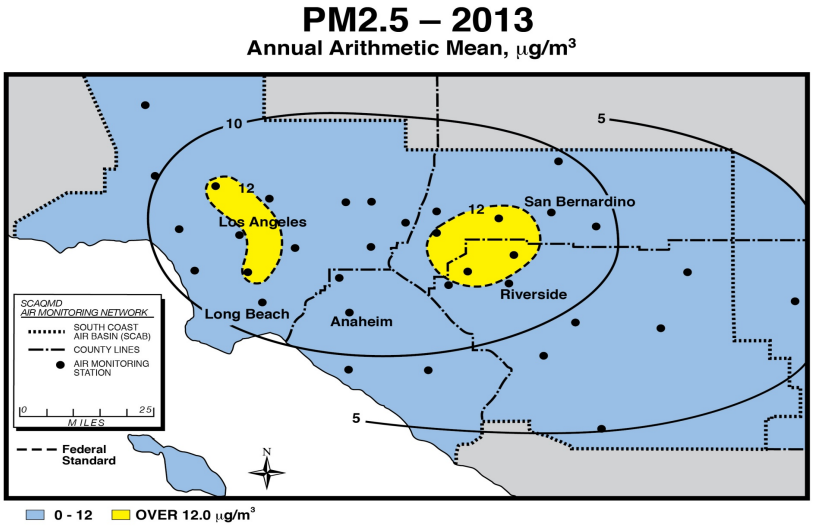
Trends in PM2.5 Levels

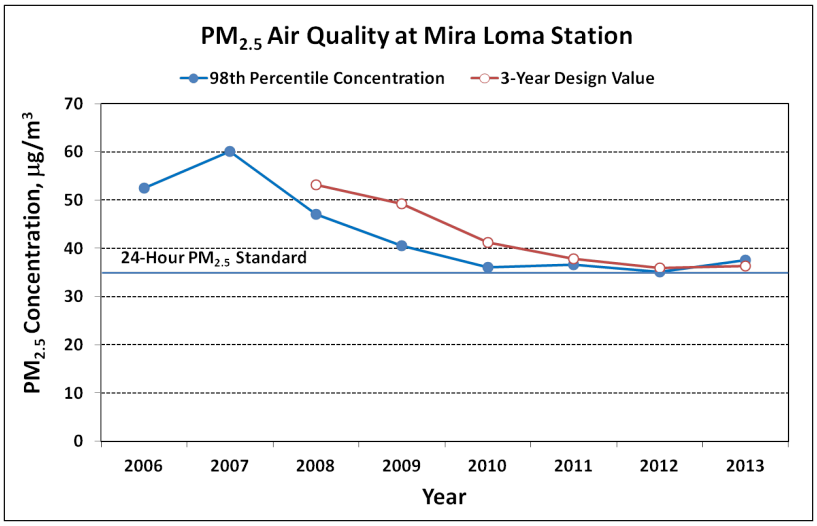
The levels of PM2.5 in the Basin have been continually improving since measurements and standards were initiated in the late 1990s. These improvements occurred over a period of significant growth in the Basin's population, vehicle miles traveled (VMT) and economic activity, and are directly attributable to the region's air quality control program.



Based on measurement data through 2013, no air monitoring station in the Basin violated the previous 1997 federal annual PM2.5 standard (15 mg/m^3 for three years), and in December of 2014, U.S. Environmental Protection Agency (U.S. EPA) proposed a clean data determination finding that the Basin has met the 1997 PM2.5 standards. This is based on the form of the federal standard, known as the *design value*, which is the 3-year average of the annual PM2.5 average, calculated by station.

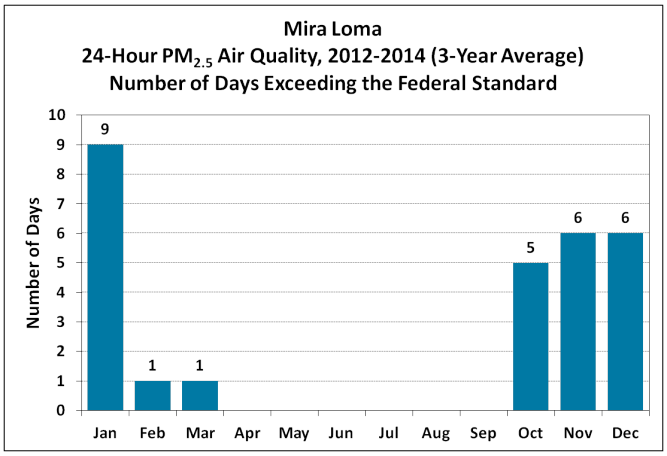
However, exceedances still occur above the new 2012 annual PM2.5 standard of 12 mg/m^3 in the San Bernardino and Riverside County metropolitan areas, with the highest levels in Mira Loma. Los Angeles County also exceeded the new PM2.5 standard in the Central Los Angeles and East San Fernando Valley areas in 2013. This new standard requires additional reductions of directly emitted PM2.5 and PM2.5 precursor gases in order to meet the annual PM2.5 standard by the 2021-2025 statutory timeframe.





Despite significant progress, the Basin remains in nonattainment for the current 24-hour PM2.5 federal standard of 35 mg/m^3. As of 2013, the 24-hour PM2.5 *design value* (in this case, the 3-year average of annual 98th percentile of the monitored 24-hour concentrations by station), exceeds the federal 24-hour PM2.5 standard at only one air monitoring station in Mira Loma in northwestern Riverside County. The 2012 AQMP projected attainment of the 24-hour PM2.5 standard by the end of 2014. However, preliminary monitoring data through June of 2014 indicates that attainment of this standard is not likely to be achieved, largely because of the unanticipated air quality impacts of the severe drought conditions in California. The lack of winter storms and associated rainfall leads to dryer and thus more emissive ground surfaces as well as reduced cleansing and dilution of atmospheric particles. The drought has not only affected PM2.5 levels in Southern California; many areas across the state have experienced this reversal in long-term downward trends of PM2.5 levels.

In addition, a recent court decision has compelled U.S. EPA to implement PM2.5 standards according to the federal CAA, Title 1, Part D, Subpart 4 (hereafter "Subpart 4") planning requirements specific to PM_{10}, rather than the general pollutant planning requirements (Subpart 1). Subpart 4 provides for attainment by 2015, with potential extensions. In February 2015, the South Coast Air Quality Management District (SCAQMD) Governing Board approved a Supplement to the 2012 AQMP 24-hour PM2.5 State Implementation Plan (SIP) for the Basin to comply with Subpart 4 and target attainment in 2015. The Governing Board also directed SCAQMD staff to bring forward early action measures for PM2.5 to ensure progress towards attainment under continuing drought conditions. The Supplement was subsequently approved by California Air Resources Board (CARB) and has been submitted to U.S. EPA for consideration. In Summer of 2015, given the most recent ambient PM2.5 data showing that 2015 attainment was not feasible, the SCAQMD Governing Board approved a request to U.S. EPA for a reclassification of the Basin to "serious" non-attainment area for 24-hour PM2.5 with an attainment date of 2019. The 2016 AQMP will also include a "serious" area plan for PM2.5.



While ozone concentrations peak in the summer months, PM levels can be high at any time of the year, but are typically higher in winter months. These higher winter values are specifically influenced by wintertime temperature inversions and stagnant conditions that reduce atmospheric dilution and trap emissions near ground level. Furthermore, sources such as wood burning have increased emissions during colder weather. Consistent with U.S. EPA guidance, seasonal, episodic, or geographical controls that focus on bringing the Mira Loma station into compliance can continue to be considered as a method to bring the Basin into attainment.

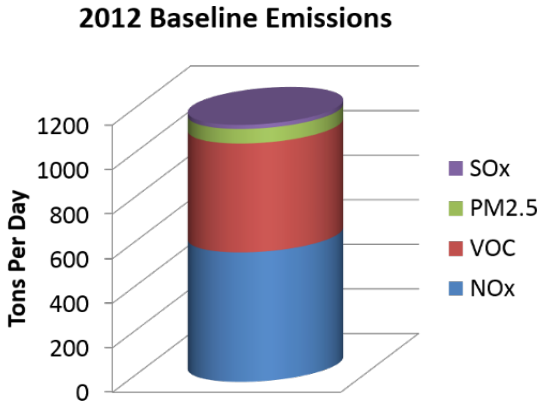
3. ASSESSING FUTURE CONTROL STRATEGIES

"Trucks are the No. 1 source of NOx emissions that form both ground-level ozone and $PM_{2.5}$ in the atmosphere."

Emission Sources of PM2.5

As mentioned above, most PM2.5 in the Basin is formed in the atmosphere, and thus a full picture of the sources of PM2.5 must also consider precursor gases. Based on the preliminary 2016 AQMP emissions inventory for 2012, there were 581 tons of NOx emissions per day, 488 tons of VOC emissions, 66 tons of directly emitted PM2.5 emissions, and 19 tons of SOx emissions. The top 10 emission sources of directly emitted PM2.5 and its precursor gases are contained in Appendix A.

On-road and off-road vehicles emit more than 85% of the total NOx emissions combined. Consumer products solvent evaporation was the single largest contributor to VOC emissions. Mobile (on- and off-road) sources collectively emit more than half of the total VOC emissions. Transportation source categories, including ships, commercial boats, aircraft trucks, and passenger cars account for more than 40% of the total SOx emissions. RECLAIM SOx sources emit more than one-third of the total SOx emissions. Service and commercial fuel combustion and residential fuel combustion are the next largest contributing SOx source categories.



Cooking is the largest emission source of directly emitted PM2.5, followed by residential fuel combustion and paved road dust. These top sources are largely uncontrolled sources of directly emitted PM2.5. The content of particles emitted from cooking, the majority of which comes from commercial under-fired charbroiling of meat, are almost all organic carbon,[4] and studies have shown that commercial meat-cooking contributes more than 20% of the PM2.5 organic carbon fraction in Los Angeles air.[5] Residential fuel

[4] McDonald, J.D., et al. Emissions from charbroiling and grilling of chicken and beef. *JAWMA*, 2003, 53, 185-194.

[5] Norbeck, J. *Standardized Test Kitchen and Screening Tools Evaluation for South Coast Air Quality Management District Proposed Rule 1138;* Prepared under Contract No. S-C95073 for the South Coast Air Quality

combustion is the second largest emission source of directly emitted PM2.5, mostly in the form of wood stove and fireplace wood burning.

Control Effectiveness

In the SCAQMD's 2012 AQMP, a detailed computer air quality model (CMAQ v4.7.1) was used to estimate the regional reductions of ambient PM2.5 concentrations that result from reductions in PM precursor emissions. On a ton-per-ton basis, primary PM2.5 and SOx emissions controls were found to be the most effective in reducing PM2.5 mass concentrations, compared to NOx emissions controls. VOC emissions reductions had the lowest effect on reducing annual PM2.5 mass concentration. As shown, this comparative effectiveness of emissions reductions is different for the 24-hour PM2.5 standard, and may also change with season and location in the Basin.

Comparative Effectiveness of Reductions To Achieve Federal PM2.5 Air Quality Standards

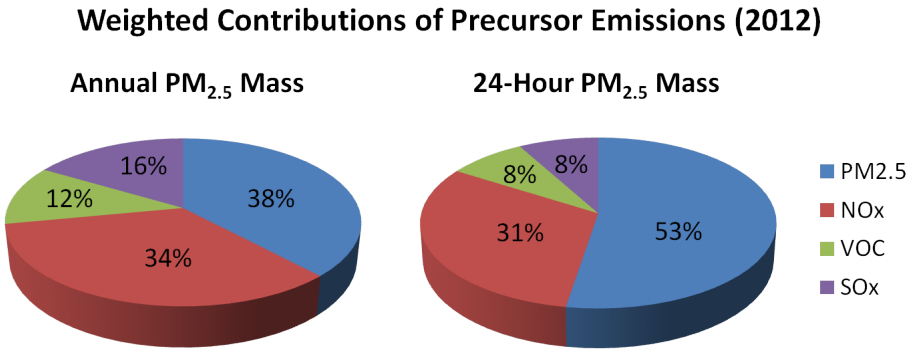
	NOx	SOx	VOCs	PM2.5
Annual PM2.5 Standard	1	15	0.4	10
24-hour PM2.5 Standard	1	8	0.3	15

However, the CMAQ model, while state-of-the-art, has been shown to significantly underestimate SOA formation from VOCs.[6] Future versions of CMAQ will strive to eliminate this underprediction as additional SOA formation processes are better understood and incorporated in the model.

Using 2012 emissions inventories weighted by the relative effectiveness factors, contributions of precursor emissions to achieving both annual and 24-hour PM2.5 standards were estimated. For example, while SOx has a higher relative effectiveness factor than NOx, total emissions of NOx are much greater than those of SOx. Therefore, as shown in the charts below, NOx and PM2.5 contribute more to PM2.5 levels than SOx or VOCs. Controls of NOx emissions will make a significant contribution to reducing annual PM2.5 mass concentrations, and thus meeting the federal annual PM2.5 standard.

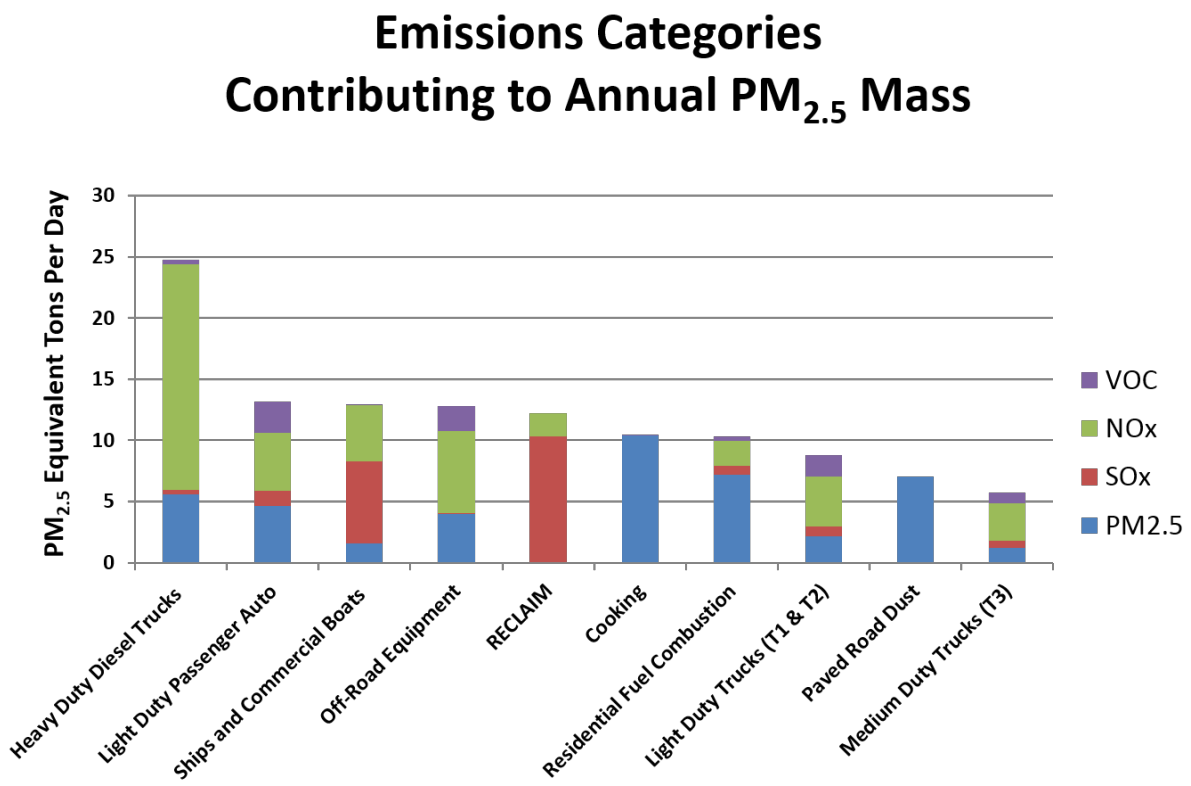
Management District, El Monte, CA, by CE-CERT: University of California, Riverside, CA, 1997.

[6] Carlton, A.G., et al. Model Representation of Secondary Organic Aerosol in CMAQ v4.7, *Environ. Sci. Technol.* 2010, 44, 8553-8560.



Attaining the ozone standards requires significant reductions in emissions of NOx well above and beyond those resulting from current rules, programs, and commercially available technologies. For previous AQMPs, most of these additional reductions relied on the development of new control techniques or improvement of existing control technologies, also known as "black box" measures, as authorized under Section 182(e)(5) of the federal CAA. These "black box" measures, if implemented successfully, will not only allow attainment of the ozone standards, but will also provide significant help in reaching PM2.5 standards. In fact, if NOx emissions reductions designed to meet the former ozone standard in 2023 are achieved, PM2.5 levels in the Basin are projected to be very near, if not meeting, the current 2012 federal annual PM2.5 standard of 12 mg/m^3 by that time. However, attainment of the PM2.5 standard may not rely on Section 182(e)(5) measures.

More detailed analysis of the emissions categories contributing to ambient PM2.5 mass, using the weighting factors for precursors described above, shows what emission sources could be prioritized for a focused and cost-effective PM control program. Area sources, such as commercial cooking, residential fuel combustion, and paved road dust are major contributors to ambient PM2.5, primarily through directly emitted PM2.5 emissions. Mobile sources, both on-road and off-road, are also significant sources of PM2.5, both through directly emitted PM2.5 emissions but also precursors such as NOx.



* Based on 2016 AQMP – Baseline Annual Average Inventory for 2012

4. RECOMMENDATIONS - PATH TO PM2.5 ATTAINMENT IN THE 2016 AQMP

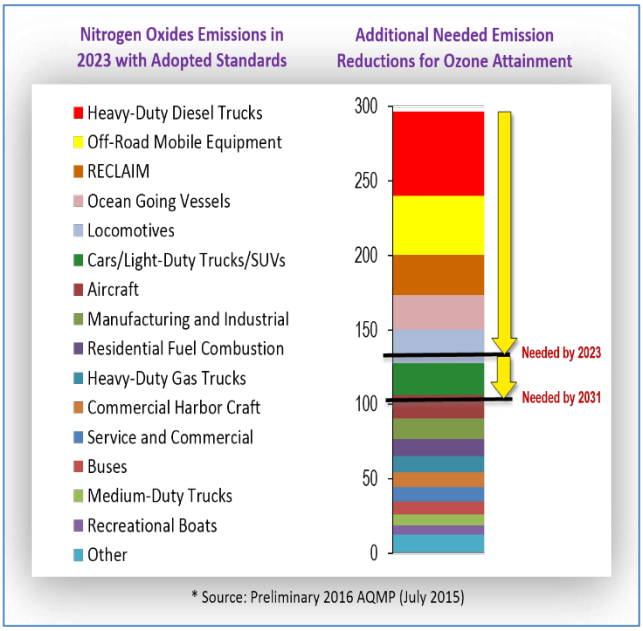
Control Strategy

Through the 2007 and 2012 AQMPs, it was demonstrated that the previous control strategies employed for the PM_{10} and 1-hour ozone SIPs also benefited PM2.5 and 8-hour ozone reductions. Taking the same multi-pollutant approach to assess strategies for the 2016 AQMP suggests that a NOx-heavy strategy is the most efficient approach for the reduction of fine particulate matter because NOx reductions are needed for the 1-hour and 1997 8-hour ozone standards within approximately the same timeframe for the federal annual PM2.5 attainment demonstration. The PM2.5 strategy can be further augmented with targeted and cost-effective directly emitted PM2.5 and SOx controls if needed, should NOx controls from other control programs be insufficient, not timely, or do not materialize.

Based on the above discussion, several attainment paths can be developed with varying degree of controls among directly emitted PM2.5 and PM precursors. Selecting the most efficient path for PM2.5 attainment takes into consideration many factors, such as the amount of total reductions needed, technology readiness, attainment deadlines, and the inter-relationship with other NAAQS pollutants such that the control strategy does not need to make drastic mid-term adjustments, thus minimizing potential control costs. The following

sections describe the staff recommendations for a prioritized approach in the development of a PM2.5 attainment strategy.

1) Co-Benefits from the Ozone NOx Strategy



Many of the most significant directly emitted PM2.5 and PM2.5 precursor emission sources are already well controlled, but additional reductions from implementation of adopted control measures from the 2007 and 2012 AQMPs may still not be adequate for attainment of the new federal annual PM2.5 standard. PM2.5 levels will be further reduced from the additional NOx emissions reductions needed for the ozone control strategy. Preliminary 2016 AQMP analysis shows that approximately another 150 tons per day of NOx reductions needed are to meet the 1997 8-hour ozone standard by 2024. This is within the timeframe of the 2012 annual PM2.5 standard attainment deadline of 2021-2025. Preliminary projections suggest that without any additional PM controls, but with the ozone NOx strategy alone, the Basin's annual PM2.5 design value would be very near the standard of 12 mg/m^3 in 2023.

Given the goal of developing the most efficient and cost-effective path to meeting all clean air standards, and given that these NOx reductions are needed for ozone attainment anyway, the most desirable path is to control NOx emissions, not only from point and area sources, but primarily from mobile sources that fall under state and federal jurisdiction. Significant reductions are needed from on-road vehicles, off-road engines, ships, and locomotives to achieve the necessary NOx reductions to meet the federal ozone standards. The 2016 AQMP will capture the anticipated NOx reductions from the ozone plan, as well as anticipated concurrent reductions of VOCs, SOx, and directly emitted PM2.5 from zero tailpipe emission technologies or efficiency measures that reduce vehicle trips/vehicle miles traveled.

2) Co-Benefits from Climate Change or Air Toxic Control Programs

SCAQMD staff recognizes, to the extent available under the U.S. EPA's PM2.5 implementation rule, that there are several near-term measures that are being pursued by CARB under the AB 32 Scoping Plan, including reductions in short-lived climate forcers such as BC. Comprised of microscopic particles emitted from incomplete combustion of biomass, wood, and fossil fuels, BC is a major contributor to global climate change and also a primary component of diesel particulate matter (DPM). Cutting BC emissions would immediately result in reduction of the rate of warming, as well as PM2.5 benefits. Identifying the most promising control measures or mitigation options to address BC emissions reductions in the areas of stationary and mobile

sources, residential wood combustion, and open biomass burning will provide climate change as well as PM2.5 benefits in the near term.

Air toxic control programs reducing DPM or toxic metals would also contribute to PM2.5 reductions. Despite significant decreases in air toxics exposure over the past couple of decades, the recent SCAQMD MATES IV results continue to show unacceptably high risk of exposure to DPM, representing two-thirds of the overall air toxic cancer risk. This result emphasizes that continuous efforts towards reducing DPM emissions are needed at local, state, and federal levels and via cooperation with the ports, airports, and other stakeholders. Alternative fueled vehicles with significant zero emission miles traveled, along with coordinated land use and transportation planning with the goal of reducing VMT, will contribute to reduction of DPM, GHG, as well as NOx emissions. Toxic metals emitted from industrial processes can cause risks to public health and the environment. SCAQMD staff will continue to develop and propose new rules or amend existing rules by strengthening requirements to reduce toxic metal emissions and exposure from various metal industry sources. These measures, although not developed for SIP purposes, will achieve concurrent reductions in directly emitted PM2.5 and can be quantified and credited toward needed SIP reductions.

3) Outreach and Incentive Programs

Other programs supporting PM control measure implementation are also important to ensure expected emission reductions are being realized. These programs include outreach and incentive programs. SCAQMD staff utilizes a variety of tools to raise public awareness and understanding of the significance and health effects of particle pollution and thus, the importance of PM controls to protect public health. Enhanced public outreach should continue to be pursued by various means, including targeted and focused communications campaigns, community workshops, educational brochures and videos, and other digital media formats.

Incentive funding for stationary sources can be pursued and best applied where controls are cost-effective, but not necessarily affordable by the affected sources, especially when controls are considered for smaller businesses. Such incentive funds can be used to subsidize low-emitting equipment purchases either by businesses or the public. Funding for such incentive programs can originate from state and federal grants, penalties/settlements, and other sources.

4) Additional Measures for PM2.5 Attainment

Since the federal CAA does not allow for reliance on future technologies (i.e., "black box," Section 182(e)(5) measures) in the PM2.5 attainment plan, portions of NOx controls that are part of the ozone attainment strategy may be not eligible for inclusion as SIP measures for PM2.5 purposes. For this reason, additional measures to ensure attainment will need to be evaluated and implemented if needed. Potential control concepts based on the Reasonably Available Control Technology (RACT) or RACM analysis for PM2.5 and its precursors as part of the 2016 AQMP will be evaluated for their feasibility and applicability for this air basin. Any additional measures

needed to meet the RACT/RACM requirements could be further developed for inclusion in the 2016 AQMP. Based on the PM2.5 formation potentials described above, if additional reductions are still needed for timely PM2.5 attainment demonstration, additional SOx and/or directly emitted PM2.5 measures should be a first priority. Examples of such measures can be found in Appendix B.

In developing the PM2.5 strategy, geographic, seasonal, and episodic controls should also be considered as they minimize compliance costs while targeting emissions reductions when and where they are needed. Examples of these measures are also contained in Appendix B. Such targeted measures will have even greater benefits for avoiding exceedances of the 24-hour PM2.5 standard given that the exceedances are episodic and occur almost exclusively in the colder months. As attainment deadlines for the 24-hour standard are imminent, PM2.5 measures arising from the 2016 AQMP development process that can help to ensure timely attainment of the 24-hour PM2.5 standard should be developed and adopted as early action measures, parallel to the 2016 AQMP development.

5. CONTINUING RESEARCH AND SCIENTIFIC STUDIES

Continuing research and scientific studies are needed to better quantify organic compounds and their contribution to PM2.5 formation. In the Basin, approximately 30-50% of the PM2.5 mass is composed of organic compounds. However, the organic component of PM2.5 in the Basin needs further study as certain semi-volatile organic compounds (SVOC) have not been historically inventoried, controlled or incorporated in regional air quality modeling. Continuing research and scientific studies are required to better quantify SVOC emissions and their contribution to PM2.5 formation.

The role of ammonia emissions will also be examined further in the 2016 AQMP modeling analysis. Some areas within the Basin may be saturated with ammonia now or in the future relative to SOx and NOx, and thus modest ammonia controls may have little effect. Other areas may show that ammonia controls are effective in reducing ambient PM2.5. Even if large ammonia reductions may have benefits, it may not be feasible given the nature of the sources.

SUMMARY

The 2016 AQMP modeling and attainment demonstration analysis will provide refinement to the concepts in this white paper, but it is clear that an integrated approach to multiple air quality challenges will minimize control costs while achieving multiple goals. A NOx-heavy control strategy will not only provide for attainment of the ozone standards, but also provide significant co-benefits for the reduction of fine particulate matter. Concurrent targeted, strategic, and timely reductions in directly emitted PM2.5 and precursors will ensure meeting the federal annual and 24-hour PM2.5 standards by the attainment deadlines.

APPENDIX A

TOP TEN EMISSION SOURCES BY POLLUTANT

Appendix A: Top Ten Emission Sources by Pollutant[1]

1. NOx

Emission Sources	2012 Emissions (Tons/Day)
Heavy Duty Diesel Trucks	184.1
Off-Road Equipment	67.0
Light Duty Passenger Auto (LDA)	46.8
Ships and Commercial Boats (OGV & CHC)	45.9
Light Duty Trucks (T1 & T2)	41.2
Medium Duty Trucks (T3)	30.2
Trains	21.3
Heavy Duty Gasoline Trucks	20.9
Residential Fuel Combustion	20.2
Heavy Duty Diesel Urban Buses (UB)	19.6

2. VOC

Emission Sources	2012 Emissions (Tons/Day)
Consumer Products	86.5
Light Duty Passenger Auto (LDA)	64.4
Off-Road Equipment	51.6
Light Duty Trucks (T1 & T2)	42.9
Petroleum Marketing	34.4
Recreational Boats	30.4
Medium Duty Trucks (T3)	21.2
Coatings and Related Process Solvents	18.9
Heavy Duty Gasoline Trucks	14.4
Architectural Coatings and Related Solvents	13.3

[1] Source: Preliminary 2016 AQMP, July 2015.

3. Directly Emitted PM2.5

Emission Sources	2012 Emissions (Tons/Day)
Cooking	10.4
Residential Fuel Combustion	7.2
Paved Roads Dust	7.1
Heavy Duty Diesel Trucks	5.6
Light Duty Passenger Auto (LDA)	4.6
Off-Road Equipment	4.0
Wood and Paper	2.3
Light Duty Trucks (T1 & T2)	2.2
Mineral Processes	2.1
Construction and Demolition	1.7

4. SOx

Emission Sources	2012 Emissions (Tons/Day)
RECLAIM	6.87
Ships and Commercial Boats (OGV & CHC)	4.46
Aircraft	1.42
Service and Commercial Fuel Combustion	1.15
Light Duty Passenger Auto (LDA)	0.85
Light Duty Trucks (T1 & T2)	0.51
Residential Fuel Combustion	0.49
Manufacturing and Industrial	0.45
Medium Duty Trucks (T3)	0.40
Petroleum Refining	0.36

APPENDIX B

OPPORTUNITIES FOR EMISSION REDUCTIONS TO ACHIEVE PM2.5 STANDARDS

Appendix B: Opportunities for Emission Reductions to Achieve PM2.5 Standards

This appendix describes control concepts toward achieving the federal PM2.5 standards if additional emission reductions are needed after implementation of other measures that achieve PM2.5 co-benefits and incentive programs as outlined in the PM White Paper. Examples of potential control concepts are discussed by sector. If additional reductions are needed for annual PM2.5 standard attainment, some or all of the concepts could be developed as a control measure that can be prioritized for implementation, including time and place controls, such as geographic, seasonal, or episodic controls, as well as incentive programs.

1. Cooking

The SCAQMD has implemented a very successful PM2.5 control program for chain-driven charbroilers (used at quick service restaurants), but PM2.5 emissions from under-fired charbroilers remain relatively uncontrolled, primarily due to the current high capital costs of equipment, and operation and maintenance (O&M) costs. Based on current emissions inventory, approximately 80% of PM2.5 emissions from restaurants are from under-fired charbroilers. SCAQMD is completing a study with University of California Riverside, in partnership with the U.S. EPA and other air agencies in PM2.5 nonattainment areas, to identify cost-effective and more affordable under-fired charbroiler controls. Types of devices being evaluated can be generally described as filter-based equipment, electrostatic precipitators (ESPs), catalysts, scrubbers, and other innovative technologies, some of which are nearing commercial availability. Study results are being evaluated and will be used to develop a detailed technical and economic (cost and affordability) feasibility analysis.

If needed for attainment, emission control programs for under-fired charbroilers could potentially be tiered and require high efficiency (and potentially more expensive) controls for larger restaurants and possibly less efficient, less expensive, yet more affordable equipment for smaller sources. Small business incentive programs could also be explored to help offset purchase and installation costs. For example, an incentive program could be explored to help offset the control device costs to restaurants from what could otherwise be less affordable controls for directly emitted PM2.5 reductions at small business restaurants. The net result could be an overall reduction of PM2.5 pollution at a lower overall cost. SCAQMD continues to work closely with staff from the Bay Area AQMD, San Joaquin Valley APCD, and U.S. EPA Region 9 on research and demonstration projects for these control technologies.

2. Residential and Open Burning

Additional PM2.5 reductions from biomass burning were identified by the SB 656 (Sher) report and control measures were developed and implemented in conjunction with the 2007 and 2012 AQMPs. SCAQMD Rule 445 (Wood-Burning Devices) was adopted in 2008 and subsequently amended in 2013. Rule 445 established a mandatory residential wood-burning curtailment program, beginning in 2011, during winter months (November through the end of February) known as the "Check Before You Burn" program. Amendments in

2013 lowered the curtailment threshold from 35 (federal 24-hour PM2.5 standard) to 30 $\mu g/m^3$ to address forecasting uncertainties and assure a level of protection to remain below the standard. Rule 445 specifies the types of devices that can be installed into new and existing developments, includes moisture content requirements for commercial firewood sellers, and establishes a winter wood burning curtailment program. SCAQMD Rule 444 (Open Burning) has been in place since the formation of the SCAQMD and has been amended many times, most recently in 2013. Rule 444 is applicable to agricultural and prescribed (e.g., forest service) open burning sources and includes requirements to minimize smoke emissions. The 2013 amendments to Rule 444 synchronized the wintertime residential wood-burning control program (Rule 445) with the open burning program such that open burning would not occur during a mandatory residential no-burn day.

A new initiative has been implemented to upgrade wood-burning devices in inland, high PM2.5 areas. Under this program, households in the greater area surrounding the cities of Riverside and San Bernardino can work with participating retailers to choose from a variety of cleaner hearth products, including gas logs, gas/electric inserts, and more efficient wood stoves (if no gas service) for installation. SCAQMD provides incentives to offset purchase and installation costs. The incentives offered have been increased substantially over past programs and even higher incentives (up to $1,600) are available for households that qualify under low-income guidelines. This program has been effective, but to achieve maximum emission reductions, higher incentives could be offered or the geographic area eligible to participate could be expanded. Experience has shown that education and outreach to targeted households is a key program component. Since the current eligible project area is relatively small, direct outreach to individual residences has been the most successful.

Potential additional emission reductions via Rule 445 related residential wood burning could involve further restrictions on the types of devices (e.g., U.S. EPA certified wood burning devices) allowed to be installed into existing developments, such as room additions, remodels, etc.

The highest PM2.5 levels usually occur during late fall and winter months, with the exception of high values reported near the Fourth of July (attributable to smoke from Independence Day firework displays). However, some high levels occur in early fall. If needed for attainment, further burn restrictions could be established for this fall time period by expanding the wintertime curtailment period to include October. The threshold used to forecast no-burn days under either the residential or the open burning programs could also be lowered. Both options could reduce emissions during peak PM periods or episodes.

As previously mentioned, Rule 445 prohibits wood burning in areas where high PM2.5 levels are forecast. If poor PM2.5 air quality is, however, forecast for an area that has documented an exceedance of the federal 24-hour PM2.5 standard, the no-burn day applies to the entire Basin. This is intended to seek the maximum amount of emission reductions feasible in an attempt to prevent the episodic exceedance. The 2016 AQMP will address the annual PM2.5 standard which is less sensitive to these episodes. Currently, the peak PM2.5 monitoring site, or "trigger area", to identify a Basin-wide curtailment day is in the Mira Loma area, part of

Source Receptor Area (SRA) 23 (Metropolitan Riverside County). As part of an enhanced control effort, the trigger area could be expanded to include other SRAs with elevated PM2.5 levels that have not documented exceedances of the federal 24-hour standard (annual 98th percentile concentration, averaged over 3 years). This would likely result in an increase in Basin-wide no-burn days and help to lower annual PM2.5 levels. Alternatively, if air quality modeling supported a truly targeted control program, there could be an increase in the number of no-burn days forecast solely for SRA 23 and immediate upwind areas.

Possible controls for Rule 444 related open burning sources could include mandatory use of chipping/grinding or mulching as alternatives to open burning.

3. Fugitive Dust

PM derived from mechanical disruption (e.g., agriculture, construction, etc.) is primarily in the coarse (PM10-2.5) size fraction; however, entrained road dust is still one of the major directly emitted PM2.5 sources due to the region's large number of roadways and high traffic volumes. In response, SCAQMD has adopted regulations to prevent material from being deposited on roadways and a program for efficient street sweeping equipment. For the street sweeping equipment, a testing protocol was developed and minimum pick-up efficiency and entrainment standards are in place (Rule 1186 – PM_{10} Emissions from Paved and Unpaved Roads, and Livestock Operations). Local jurisdictions must only procure equipment that meets applicable standards and a companion regulation (Rule 1186.1 – Less-Polluting Sweepers) also requires, in most cases, that street sweepers be powered by alternative fuels.

During the development of Rule 1186, SCAQMD staff learned that street sweeping frequencies vary greatly among jurisdictions, from weekly to monthly to, in some cases, not at all. If needed for attainment, minimum street sweeping frequencies could be explored as well as enhanced cleaning on roads with higher silt loadings.

4. Ammonia Control

1) Agricultural Dairies

Livestock waste is the third largest emission source of ammonia in the Basin and is regulated by both SCAQMD Rules 223 (Emission Reduction Permits for Large Confined Animal Facilities) and 1127 (Emission Reductions from Livestock Waste). Recent research found that fresh excreted manure in the animal housing areas is the major source of ammonia emissions and each cow produces approximately 60 kg of manure daily.[2] Prevailing winds push NOx and SOx emissions from industrial and transportation sources in the western Basin to inland areas and these gases mix with ammonia emissions from widespread sources, including approximately 100,000 head of dairy cattle and support stock in western Riverside and San Bernardino counties. Ammonium

[2] Final 2012 Air Quality Management Plan, Appendix IV-A, Control Measure BCM-04 – Further Ammonia Reductions from Livestock Waste, SCAQMD, February 2013.

nitrate is the most prevalent PM compound measured at the Mira Loma air monitoring station, the only station projected to exceed federal 24-hour standard for PM2.5.

If needed for attainment, seasonal or episodic approaches to control ammonia from dairy manure may be beneficial in reducing the secondarily formed air contaminants in the area. One possible approach would be to reduce ammonia emissions from fresh manure using an ammonia-reducing agent. Sodium bisulfate, when dissociated, reduces the pH and protonates ammonia, converting it to ammonium. The ammonium is then bound by sulfate to form ammonium sulfate, which is retained in the manure in its solid form. In California, sodium bisulfate has been used by dairies in northern and southern counties, including San Bernardino and Riverside counties, mainly to prevent cow lameness and nuisance flies. Theoretically, 100 pounds (lbs) of sodium bisulfate would bind 14 lbs of ammonia. This method of control was initially proposed in the 2012 AQMP for an assessment to evaluate the technical and economic feasibility of application, including episodic application.

If deemed feasible and necessary, seasonal or episodic ammonia controls may be considered, for example by applying sodium bisulfate to fresh manure during high PM2.5 months or for days only when higher concentrations occurred or are anticipated to occur based on the past analyses. However, costs associated with sodium bisulfate use can be high and the need to offset the costs through an incentive program would need to be considered.

2) Anaerobic Digestion

The SCAQMD Rule 1133 series establishes requirements for composting of organic waste such as animal manure, biosolids, greenwaste, and foodwaste. As ongoing efforts at the state level for organics diversion to meet AB 32 and landfill diversion goals, AB 341 (Chesbro) has created challenges relative to controlling VOC and ammonia emissions from increased composting of greenwaste, and increasingly from foodwaste. AB 341 was approved by the legislature in 2011 to further reduce GHG emissions by diversion of organic materials away from landfills. This legislation established a goal that 75% of solid waste be reduced, recycled, or composted by 2020. This has created a statewide challenge to develop mechanisms to accommodate the state mandate while not adversely affecting air quality. Inclusive of these challenges are local air quality rules and regulations associated with composting operations/methods, permitting, and off-road vehicle use. Local air districts are working with CARB and California Department of Resources Recycling and Recovery (CalRecycle) to address these issues.

According to the composting industry[3], the majority of the yard trimmings and tree prunings processed (i.e., chipped and ground) in the Basin are not composted but go through a much shorter pathogen reduction process. These organic materials are used as an alternative daily cover (ADC) or for other beneficial uses at landfills or as a ground cover on commercial or public lands. The majority of mobile, point, and area source

[3] Paul Ryan, Inland Empire Disposal Association, E-mail communication, November 13, 2014.

emissions from compostable materials handling through chipping and grinding are not sufficiently controlled to minimize potential emissions in the Basin. Conversely, composting is relatively well regulated through current air quality planning and rulemaking. Two legislative mandates, AB 1594 (Williams) and AB 1826 (Chesbro) approved in 2014 will help the state achieve diversion goals by 2020 through recycling of compostable organic waste materials. AB 1594 closes diversion credit for yard trimmings and prunings, including greenwaste, which is used as an ADC or for other beneficial uses at landfills. AB 1826 will drive the recycling of yard trimmings and food scraps by requiring commercial generators to sign up for composting or anaerobic digestion service for their organic waste. More organic materials are expected to be diverted in the future and consideration must be given to expansion of the organics processing industry and the emissions impact from those processes and associated equipment compared to the overall benefits of diversion.

Anaerobic digestion (AD) has been identified as a technically viable method of organic waste treatment in which organic waste is transformed to renewable biogas, mainly composed of methane (CH_4) and carbon dioxide (CO_2), in an oxygen-free environment. Digesters can minimize emissions of ammonia, VOC, and other odorous pollutants in well-managed operating conditions, which can contribute to reductions of PM2.5 formation. However, air quality permitting, off-road vehicle use, as well as high capital investment and O&M costs, may be a disincentive. CalRecycle is in the process of amending and creating new requirements for California Code of Regulations, Titles 14 and 27 to address these and other implementation issues. As part of this process in particular, a stand-alone set of in-vessel digestion regulations has been proposed to divert compostable organic materials from landfills to reduce GHG generation, while producing biofuels or bioenergy. Use of digesters may bring about air quality benefits (e.g., decreasing GHG, ammonia, and VOC emissions) and co-benefits of PM2.5 reduction in the Basin.

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2016 AQMP WHITE PAPER

OCTOBER 2015

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Table of Contents

Introduction

This white paper evaluates the need for additional volatile organic compound (VOC) controls to achieve more stringent annual fine particulate matter (PM2.5) and 8-hour ozone standards in the South Coast Air Basin (SoCAB). It assesses the role of VOCs in forming ozone and PM2.5 to inform policymakers of the most efficient and effective strategies to attain the federal standards that are the subject of the upcoming 2016 Air Quality Management Plan (AQMP).

The science behind the formation of ozone and particulate matter from VOCs is also summarized. A state-of-the-science numerical modeling system (WRF-CMAQ) is used to estimate the maximum allowable nitrogen oxides (NOx) and VOC emissions that will lead to regional ozone and PM2.5 concentrations that meet the federal standards. Given the results of this modeling, the implications of various NOx and VOC control strategies are analyzed.

What Are VOCs?

VOCs are chemicals containing carbon that readily evaporate. Some VOCs may be gases at room temperature. VOCs are widely used in modern society in fuels, solvents, coatings, cleaning supplies, building products, and many other materials. In addition to evaporation or direct emissions of organic gases, some VOCs are emitted as a byproduct of combustion processes, such as wood burning, power generation, or internal combustion engines. Thus, VOCs are emitted from mobile sources such as cars and trucks, and stationary sources such as refineries, chemical plants, and households. Since VOCs evaporate readily, in the absence of appropriate control measures, these compounds will ultimately end up in the atmosphere. Subsequent chemical reactions of VOCs in the atmosphere can form surface level ozone pollution and particulate matter.

Atmospheric scientists classify VOCs into several subcategories. The degree to which each specific VOC impacts the formation of ozone is a function of its unique chemical reactivity, its atmospheric concentration, and the atmospheric concentrations of other chemicals needed for these complex chemical reactions. VOCs that form ozone at extremely slow rates are considered minimally reactive and are often classified as "exempt" from current VOC rules and regulations. However, toxicity or other potential adverse environmental impacts from these VOCs should also be considered. The ability for a specific VOC to form particulate matter is dependent on how fast it reacts with other atmospheric compounds and the physical and chemical properties of the resulting products.

We can also classify VOCs and their chemical reaction products into three sub-categories dependent on how readily they evaporate and their ability to exist in the gas-phase. VOCs with high volatility evaporate quickly, but are less likely to contribute to particulate matter, because these compounds generally remain as gases once they evaporate. On the other hand, compounds with lower volatilities evaporate at a slower rate, but are more likely to contribute to particulate matter as they or their reaction products may condense (transition from gas to liquid or solid form) once they are in the atmosphere. Compounds that have a significant fraction of their mass in both the gas and particle-phase in the atmosphere are referred to semi-volatile organic compounds (SVOCs). Compounds that have most of their mass in the gas-phase, but can transition to the

particle phase under certain atmospheric conditions are classified as intermediate volatility organic compounds (IVOCs). While a direct comparison is difficult, low vapor pressure volatile organic compounds (LVP-VOCs), defined under the California Air Resources Board consumer products regulations, may fall into the SVOC category. In addition, atmospheric reactions can produce products with drastically different volatilities than the parent compounds.

The Role of VOCs in Ozone Formation

Ozone concentrations in the South Coast Air Basin

Atmospheric ozone is a powerful oxidant with significant adverse effects on human health and the environment. While ozone concentrations have declined significantly in the Basin over the past few decades, levels still exceed the current federal or state ozone standards. In addition, the recently proposed federal standard between 65 and 70 ppb will make future attainment even more challenging [1]. In recent years, the significant downward trend in Basin-wide ozone concentrations has begun to level off. FIGURE 1 details the yearly trend in ozone concentrations and the trend in the number of days that exceed the current federal standard.

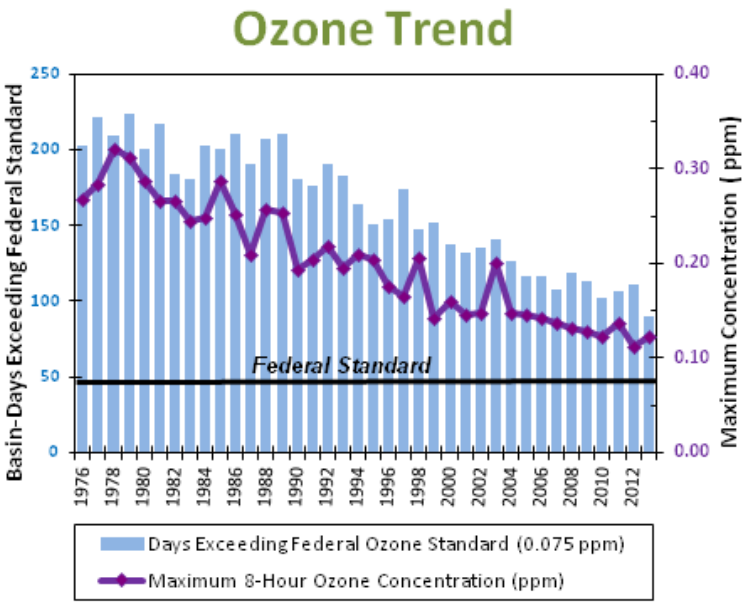

FIGURE 1

Basin-wide maximum 8-hour ozone concentrations and Basin-days exceeding the federal standard**.**

Certain air quality monitoring stations located in San Bernardino and Riverside counties exceed the current 75 ppb federal ozone standard over 60 days per year (FIGURE 2). Higher local ozone concentrations in these regions can be attributed to the significant upwind O_3, NOx, and VOC precursor emissions transported by the daily sea-breeze in the summer, local emissions, and the timing of the daily emissions and peak sunlight intensity.

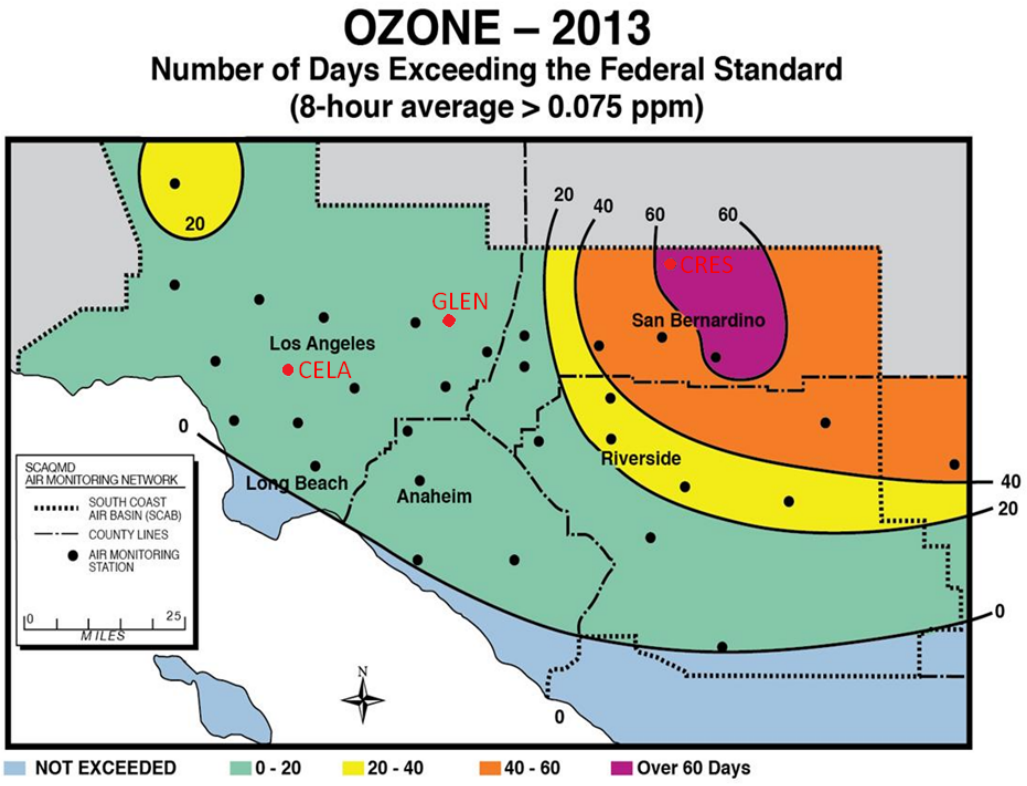

FIGURE 2

Spatial distribution of ozone exceedances in the SoCAB. Central Los Angeles (CELA), Glendora (GLEN), and Crestline (CRES) are highlighted.

How do VOCs form ozone?

Ozone (O_3) is not emitted directly into the atmosphere; near-surface ozone, in contrast to stratospheric ozone, is formed by the reaction of VOCs with NOx in the presence of sunlight. NOx is generated from combustion processes and is emitted in large quantities within the SoCAB. The chemical reactions that form ozone are highly complex and depend not only on NOx and VOC levels, but also on the ratio of VOC to NOx concentrations. NOx emissions can even reduce ozone concentrations in the immediate vicinity of an emission source, but will contribute to ozone formation downwind.

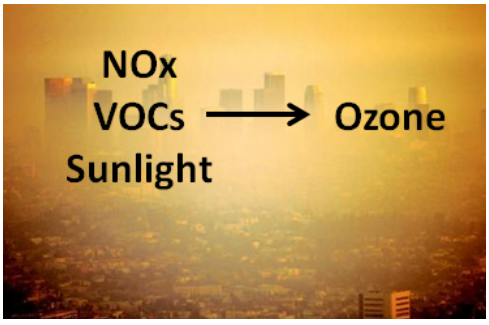

FIGURE 3

Recipe for ozone production

A decrease in ambient VOC concentrations generally leads to a decrease in ozone. However, because of the complex chemistry involved, a decrease in NOx concentrations may lead to a decrease or an increase in ambient ozone depending on the local VOC concentration. The local VOC concentration is a mixture of many distinct compounds, each with unique impacts on ozone formation. This complex dependence on NOx and VOC concentrations leads to interesting policy implications, which can be explored using comprehensive air quality models.

How Do VOCs Form Particulate Matter?

The SoCAB does not currently meet federal and state standards for PM2.5, particles with diameters less than 2.5 μm (FIGURE 4). These particles consist of a myriad of different chemical compounds in both solid and liquid form. While some PM2.5 is emitted directly from sources, the majority of ambient PM2.5 is formed from chemical reactions and processes in the atmosphere. These small particles are particularly dangerous due to their ability to penetrate deep into the lungs. Many studies have linked inhalation of PM2.5 to serious adverse respiratory and cardiovascular affects. In order to develop an effective control strategy, one must consider the composition and by extension, the sources of PM2.5 in the Basin. In the Basin, approximately 30-50% of the PM2.5 mass is composed of organic compounds. The remaining fraction consists of elemental carbon, metals, dust, and inorganic sulfate, nitrate, ammonium, and chloride compounds. The organic fraction, known as organic aerosol (OA), is composed of a complex mixture of organic chemicals that may continue to evolve as it ages in the atmosphere.

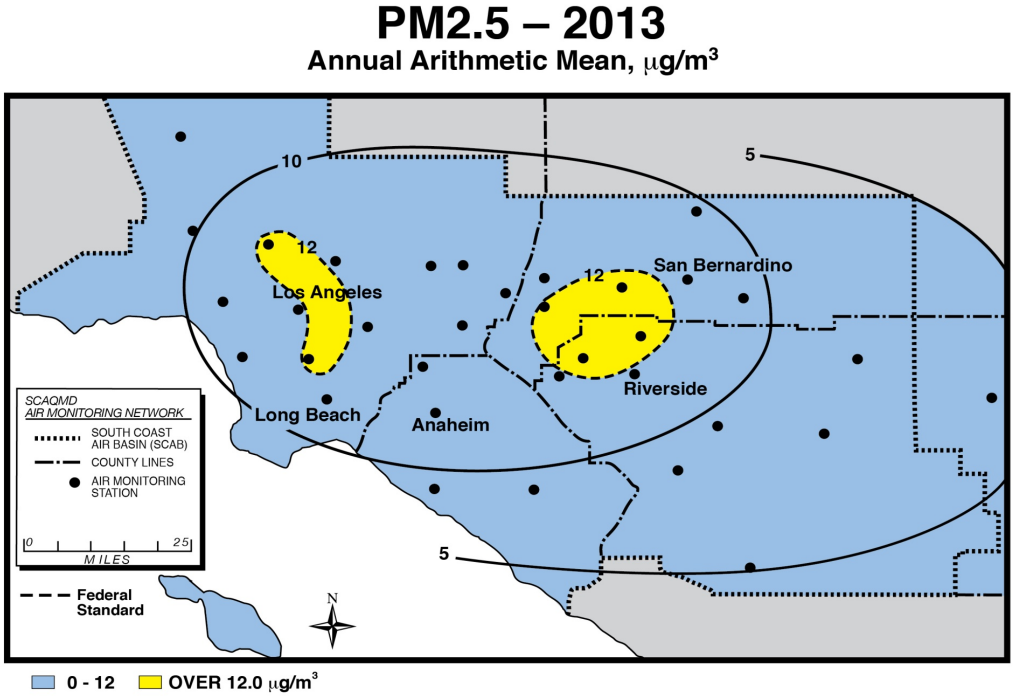

FIGURE 4

Spatial distribution of PM2.5 concentrations in the SoCAB

Different chemical reactions are responsible for the formation of ozone and OA from gaseous organic compounds. Since both ozone and PM2.5 formation are largely dominated by atmospheric reactions, we must consider the potential for a gaseous organic compound to contribute to both ozone and PM2.5 levels. Organic compounds with large ozone formation potentials may or may not contribute significantly to PM2.5 mass. Similarly, many gaseous organic compounds classified as VOCs, IVOCs, or SVOCs that contribute to OA may or may not play a role in the formation of ozone [2].

Ozone Control Modeling Analysis

The Community Multiscale Air Quality (CMAQ) model has been used to investigate the O_3 concentrations as a result of various levels of VOC and NOx emissions under different control strategies. The CMAQ model, which is the U.S. EPA recommended regulatory model, is considered the preeminent, state-of-the-science air quality model for analyzing air quality improvement strategies. Since ozone concentrations are a complex function of both NOx and VOCs concentrations, we use a three-dimensional plot to visualize this dependency. The Empirical Kinetics Modeling Approach (EKMA) ozone "isopleths" diagrams illustrate the outcomes of this complicated chemistry.

The ozone isopleth diagram in FIGURE 5 illustrates how 8-hour ozone concentrations in Crestline (the monitoring station currently with the most ozone exceedances in the Basin) respond to decreases in total Basin-wide anthropogenic VOC and NOx emissions beyond the existing adopted rules and regulations. In ozone isopleths, NOx and VOC emissions are each reduced from base levels equally across all sources; however, sensitivity tests demonstrate that the current cross-the-board reduction approach does not show significant differences from source-specific control scenarios and thus provides a reliable tool to evaluate potential attainment strategies. The corresponding ozone isopleths diagram for Central Los Angeles is presented in FIGURE 6. Estimated VOC and NOx emissions following the continued implementation of adopted rules and regulations in the 2023 timeframe are defined by the upper-right corner of the plot. The federal ozone standard is met within the yellow and green regions of the diagram (corresponding to Air Quality Index levels and colors). Three paths are illustrated on both isopleths diagrams to highlight the potential effects of different control strategies and to aid in policy discussions. Each control scenario on the plot illustrates the effects of reducing VOCs and/or NOx equally across all sources. Path C illustrates the impact of a control scenario that attains the ozone standards with only additional NOx reductions beyond what is required in current rules. In this scenario, additional VOC reductions beyond current requirements are not applied. A control scenario focusing solely on additional VOC control is shown with Path A. A hypothetical control scenario where additional (beyond scheduled reductions) NOx and VOC reductions occur at the same rate is illustrated with Path B. This is provided as an example of the results of a control strategy emphasizing VOC and NOx reductions equally.

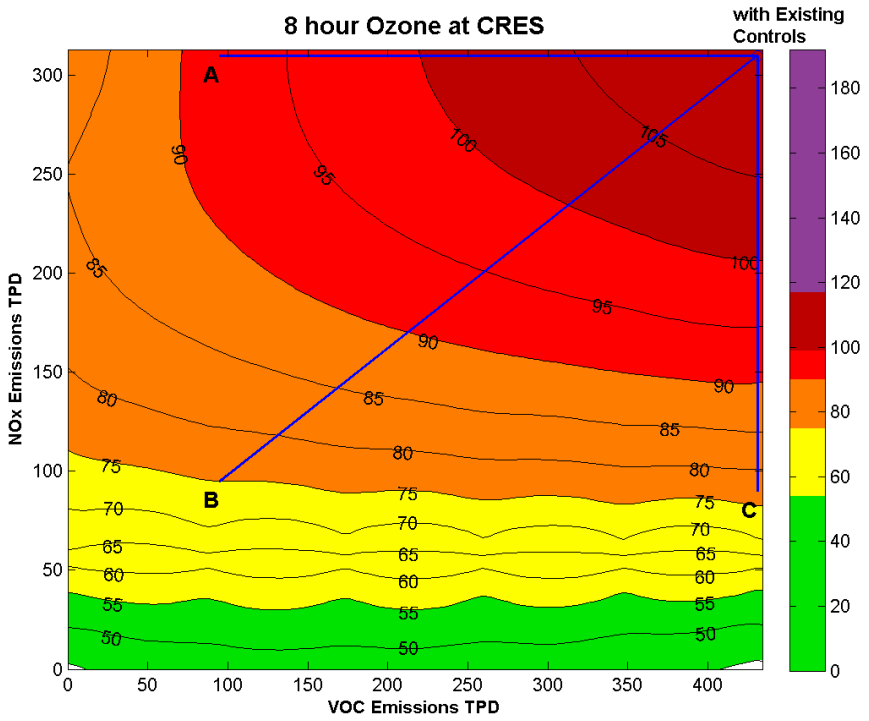

FIGURE 5

Ozone isopleths diagram showing 8-hour ozone isopleth at Crestline. The color shading corresponds to the air quality index (AQI) color code. This analysis is based on the emissions inventory used for the 2012 AQMP using CMAQ version 4.7, and will be updated for the 2016 AQMP analysis.

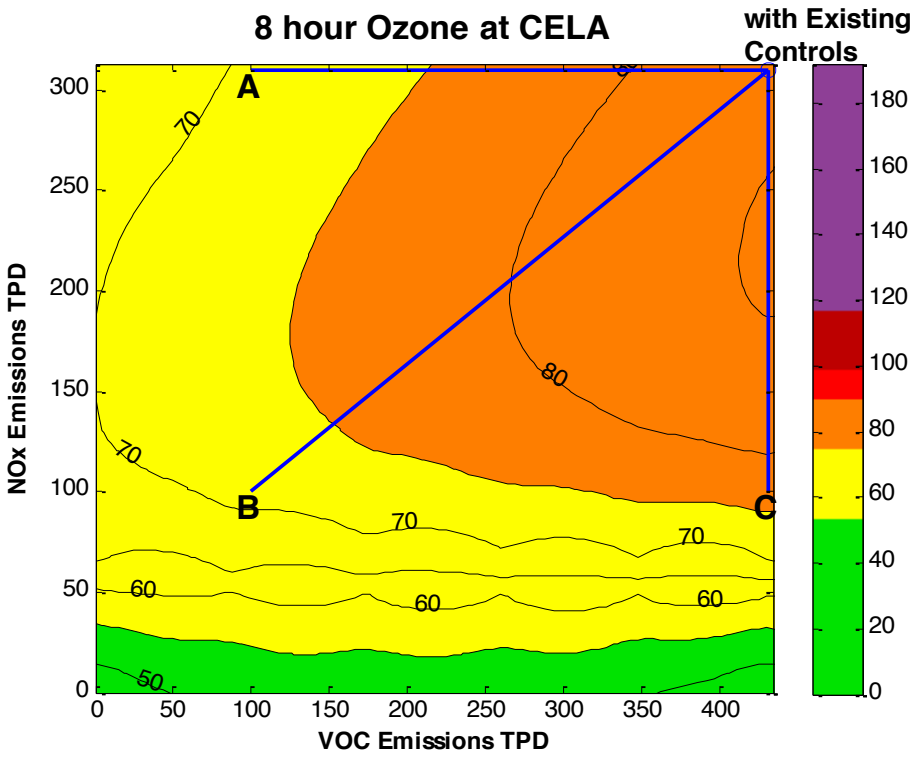

FIGURE 6

Ozone isopleths diagram showing 8-hour ozone isopleth at Central Los Angeles. The color shading corresponds to the air quality index (AQI) color code. This analysis is based on the emissions inventory used for the 2012 AQMP using CMAQ version 4.7, and will be updated for the 2016 AQMP analysis.

It is necessary to understand how ozone concentrations evolve during each of these three control paths at the Crestline and Central L.A. monitoring locations (FIGURE 7).

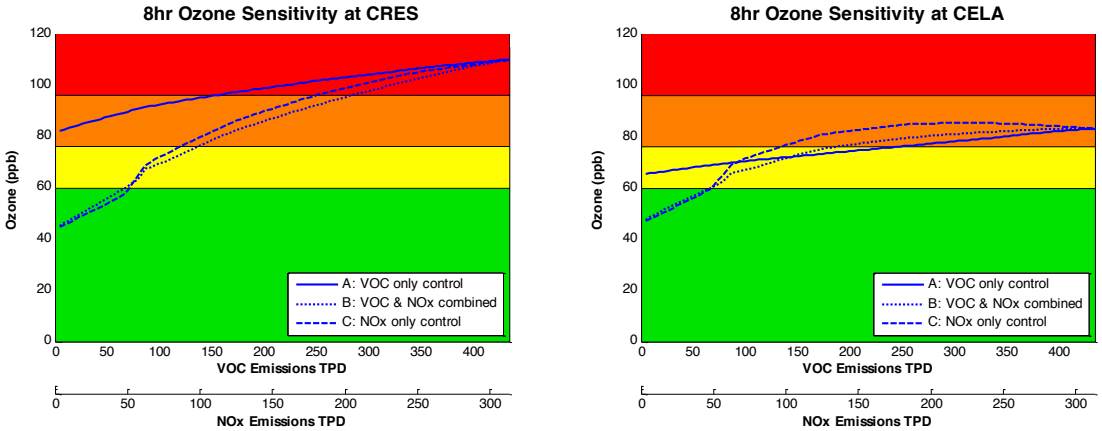

FIGURE 7

Ozone concentrations at Crestline and Central Los Angeles predicted to occur as a result of the specific control strategies (Paths A, B, and C) marked in FIGURE 5 and 6. This analysis is based on the emissions inventory used for the 2012 AQMP using CMAQ version 4.7, and will be updated for the 2016 AQMP analysis.

While the VOC-heavy control strategy (Path A from right to left) reaches attainment at CELA with the minimum amount of emissions reductions, this strategy will not lead to attainment at CRES, and thus the Basin, even with zero anthropogenic VOC emissions. Therefore, additional NOx reductions are required to achieve the ozone standards for both sites. Not only is the achievable endpoint different in each of the scenarios, the ozone concentrations predicted to occur along the path to attainment are also quite different. Moving from right to left in these figures along Path C, the NOx-heavy control strategy suggests that approximately an additional 200 ton per day (TPD) of NOx reductions beyond current regulations is required to attain the federal ozone standard (Note: Preliminary 2016 AQMP analysis suggests approximately 150 TPD is needed for attainment in 2023 rather than the 200 TPD, but the concepts regarding the emissions reduction scenarios are not expected to change). If NOx is reduced without additional VOC reductions beyond what is projected from current rules, as illustrated in Figure 7, there could be up to a 2 ppb increase in ozone in certain parts of the western Basin surrounding central LA along the path to attainment. FIGURE 8 shows the area that would be above the 1997 ozone standard of 80 ppb and how much the potential ozone exposure would increase. Several million people are estimated to be subject to this inadvertent increase of O3. It should be noted that this increased ozone phenomenon attributable to a NOx only reduction strategy is temporary and exists only along the path to attain the 80 ppb standard.

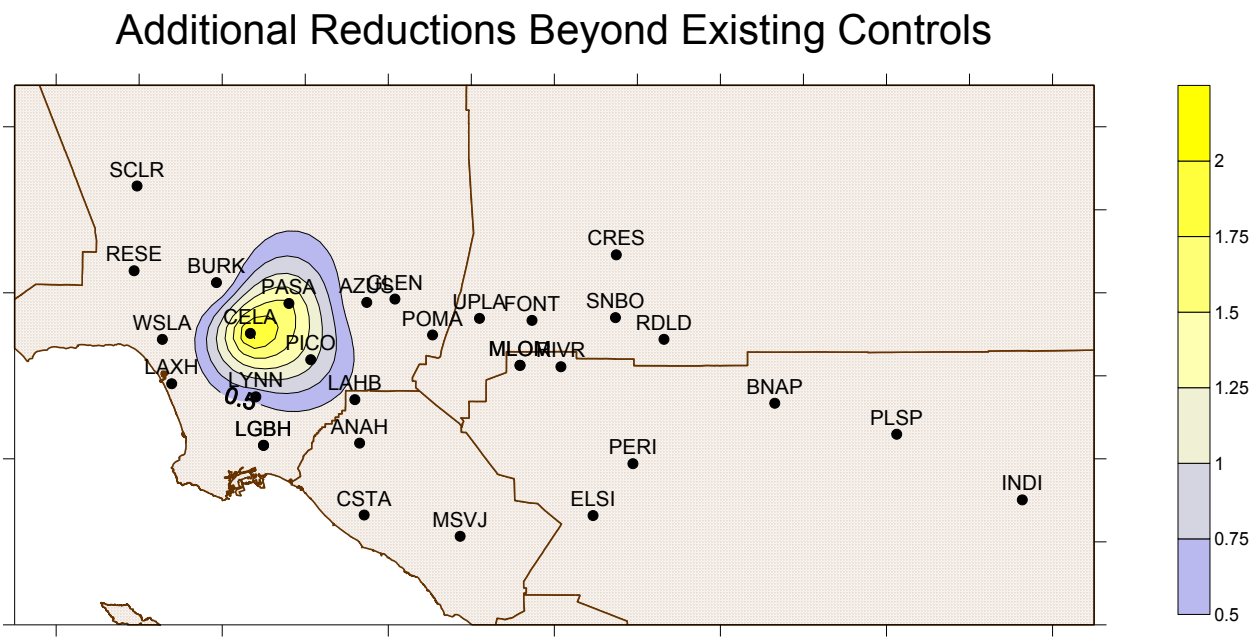

FIGURE 8

Maximum increase in ozone along the path to attainment with a pure NOx control strategy.
This analysis is based on the emissions inventory used for the 2012 AQMP using CMAQ version 4.7, and will be updated for the 2016 AQMP analysis.

Consideration of "Path to Clean Air" Scenarios

There are multiple paths to achieve ozone and PM2.5 standards based on various levels of control among the precursor pollutants. The total required emission reductions, technology readiness, cost-effectiveness, economic impacts, attainment deadlines, and the interaction with other attainment deadlines for other pollutants are all critical considerations in developing an overall multi-pollutant control strategy. Complex atmospheric chemistry and the non-uniform spatial distribution of both sources and the resulting ambient concentrations require a comprehensive analysis that ensures not only that ozone and PM2.5 meet standards, but also that unintended exposure increases are avoided if at all possible. Furthermore, concurrent reductions of other pollutants such as air toxics and greenhouse gases (GHGs) should also be considered in optimizing a path to meeting multiple standards, objectives, and deadlines.

NOx-Only Control Strategy (Path C)

As demonstrated above, a NOx-only approach can lead to attainment for the Basin. This approach does not require additional VOC controls and consequently has the minimum emission reduction tonnage and has commensurate benefits for PM2.5. Based on preliminary 2016 AQMP analysis, the amount of NOx reduction needed is estimated to be approximately 50-65% of total NOx emissions. While a reduction of this magnitude is challenging and will require significant investments, zero- and near zero- NOx emission reduction technologies currently exist, are in limited use, and can potentially be widely deployed in the next 10 to 20 years. Many of the currently available technologies needed for NOx reductions have air toxics and greenhouse gas co-benefits and vice-versa. Reducing NOx emissions will also mitigate adverse health effects associated with inhalation of locally elevated concentrations of NO_2, another criteria pollutant. However, this NOx-only (path C) approach leads to increased ozone and its exposure in the more densely populated western Basin during interim years to attainment. Consequently, millions of residents in the area would experience worse ozone air quality at levels above federal standards under this strategy.

VOC-Only Control Strategy (Path A)

A VOC-heavy control strategy without additional NOx controls, illustrated by Path A in Figure 6, will not lead to attainment of the ozone standards for the eastern Basin, even in the absence of any man-made VOC emissions. Furthermore, zero- and near-zero-VOC technologies for many of the major VOC-emitting categories (e.g. consumer products) may take many years for reformulation and market penetration, and are thus less mature than current low NOx technologies.

Combined NOx and VOC Control Strategies

A VOC and NOx combined strategy would require greater combined tons of reductions with greater associated compliance costs than a single-pollutant approach. However, a combined strategy would aid in mitigating interim increases in ozone, especially in the highly populated western side of the Basin, while potentially providing additional benefits for PM2.5, toxics, and greenhouse gases. Note that Path B in the above figures is provided only as an example, and a combined control strategy could lie anywhere between Path A and Path C that still reaches the ozone attainment.

For example, Figure 9 illustrates two potential scenarios, Paths D and E, designed to avoid the interim increase of ozone especially in the western Basin. Path D provides just enough additional VOC control (30 - 40 tons per day) to avoid any increases in ozone exposure above the 2023 attainment target of 84.5 ppb (this standard has been revoked, but the 2023 target remains with U.S. EPA's anti-backsliding provisions). Path E requires enough early VOC reductions to avoid any increases in ozone exposure in the western Basin. This would require approximately 100 tons per day of additional VOC controls, and for those controls to be timed to occur before the bulk of the NOx controls. In any case, the choice of the optimal path should consider multiple policy goals, including public health, cost-effectiveness, and economic impacts. Note that the isopleth analysis provided in this white paper is based on the 2012 AQMP emissions inventories, modeling methods, and air quality measurements. The 2016 AQMP will provide a complete update to this analysis, with potentially different levels of needed reductions under these varying scenarios.

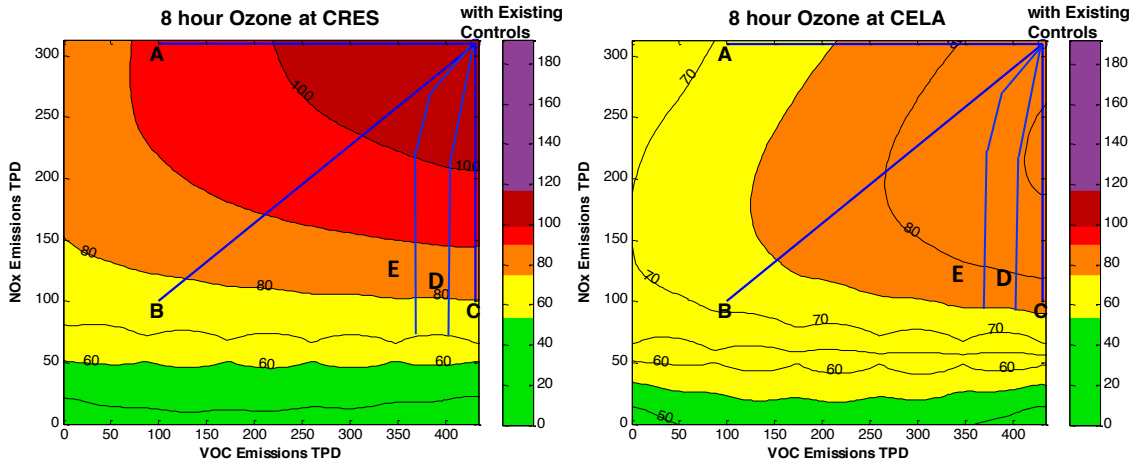

FIGURE 9

Additional emissions reduction options (Paths D and E) mitigating ozone increases in the western Basin (CELA). This analysis is based on the emissions inventory used for the 2012 AQMP using CMAQ version 4.7, and will be updated for the 2016 AQMP analysis.

Recommendations: NOx-Heavy Controls with Strategic and Tiered VOC Reductions

Given the availability of technology, climate and PM2.5 objectives, a desire to minimize control costs, and the lack of a viable path to attainment with VOC reductions only, a NOx-heavy approach with modest VOC controls as shown in Path D is preferred. It continues the path that was taken by both the 2007 and 2012 AQMPs that focuses primarily on NOx reductions, but is augmented with modest VOC reductions to mitigate increased ozone exposures along the path to attainment. According to this 2012 AQMP analysis, approximately 200 tons per day of NOx would be needed by 2023, and mitigating the interim ozone increases would require about 30 to 40 tons per day, or less than 10 percent of total anthropogenic VOC emissions beyond the existing adopted rules and regulations. However, preliminary 2016 AQMP analysis suggests approximately 150 tons per day of NOx reductions are needed by 2023, and will re-analyze the need for and effect of VOC reductions.

Reductions in VOC must occur at the earlier stage of control so that the path goes around the 85 ppb contour line illustrated as Path D and E in the Central Los Angeles (CELA) plot of Figure 9. It should be noted that Path D would also result in concurrent PM2.5 reductions throughout the entire air basin, which are needed to address the current PM2.5 annual standard of 12 $\mu g/m^3$.

Therefore, a control strategy that continues to focus on NOx reductions, with additional strategic and cost-effective VOC reductions, is the most desirable way to minimize the general public's exposure to unhealthy ozone pollution not only in the target attainment year, but also during the course of the control effort. The next section discusses a prioritized strategy to achieve cost-effective VOC reductions that maximizes co-benefits and emphasizes non-regulatory approaches.

Note that this analysis is based on the attainment demonstration used in the 2012 AQMP. A new analysis with updated emissions inventory, meteorological parameterizations and photochemical reaction mechanisms will be conducted during development of the 2016 AQMP. The general findings of the control strategies outlined above are expected to be similar, but the amount of reductions needed to attain the standard will be revised based on the most updated science and U.S. EPA attainment guidance (U.S. EPA 2014).

Tiered Approach to VOC Reductions

Based on the above analysis of the overall path to attainment and the role VOCs play in the ozone control program, control strategies continue to focus on significant NOx reductions but include meaningful VOC reductions where appropriate. In order of priority, the following potential strategy considerations are designed to achieve VOC reductions in a cost-effective and targeted fashion considering the co-benefits from and to other air quality objectives:

1. *Maximize co-benefits from NOx, GHG or air toxics controls that produce concurrent VOC reductions*

   Certain zero- or near-zero NOx technologies would also lead to VOC reductions. Given the continued NOx-heavy strategy, policies should promote technologies with these additional VOC co-benefits. For example, electric and hydrogen fuel cell vehicles, efficiency measures, or vehicle miles traveled (VMT) reductions produce both NOx and VOC reductions; many of these strategies also avoid evaporative losses associated with traditional fuels like gasoline. Similarly, control technologies for GHGs and air toxics may also produce concurrent VOC reductions. The 2016 AQMP will aim to better integrate and quantify these VOC reductions into the attainment plan.

2. *Promote pollution prevention at the source with associated cost savings*

   Reducing waste at the source is an efficient and effective way to reduce emissions. This strategy could involve the implementation of more robust leak detection and repair (LDAR) programs, including Smart LDAR using advanced infrared or optical technologies. This approach can lead to cost savings as less

product is lost through fugitive emissions. In other cases, this approach could reduce the use of VOC-containing products and/or the reliance on after-treatment control technology. This also can lead to cost savings. Examples of this are incentives and programs promoting the use of higher transfer efficiency spray painting equipment.

3. *Incentivize super-compliant zero- and near-zero VOC materials, especially during peak ozone season*

   Super-compliant zero- and near-zero VOC materials eliminate or drastically reduce emissions during the use of these products. There are several product categories where these materials perform as well as traditional products and are widely available in the market. Incentives to promote the use of super-compliant products containing no or little VOCs during ozone season could reduce ozone concentrations when exceedances are typically experienced.

4. *Maximize reductions from existing regulations via enhanced enforcement actions, removal of potential regulatory loopholes, and expanded reporting programs*

   Enhanced enforcement and the tightening of regulatory exemptions that may be used as loopholes in lieu of compliant technologies can lead to reduced emissions. Additionally, recent sales and emissions reporting programs have led to increased understanding of the VOC inventory, incentivized clean technology through fee structures, and better-focused future enforcement and regulatory actions. These enhancements not only ensure that the reductions assumed in the AQMP are actually occurring, but also allow the plan to capture market trends and compliance margins that go beyond the regulatory requirements.

5. *Prioritize emission reductions of the VOC species that are most reactive for ozone and/or PM2.5 formation and that produce concurrent air toxics or GHG benefits*

   The California Air Resources Board has an active reactivity program to investigate the scientific and policy implications of reactivity-based regulations [3]. Reducing emissions of the most reactive species, considering ozone and PM2.5 formation along with enforceability, toxicity, and climate impacts, may be an efficient method to reduce ambient ozone and PM2.5 concentrations, achieve multiple environmental and health benefits, while minimizing market disruptions. For example, for VOC controls that are equally cost-effective in terms of cost per unit of emissions reduced, controls for higher reactivity VOCs would be more cost-effective in terms of costs per unit of ozone reduced.

6. *Avoid toxicity trade-offs from exempt VOC replacements*

   In recent years more and more manufacturers are formulating their compliant products using exempt VOCs, which are VOCs that do not contribute significantly to ozone formation. However, sometimes these compounds may have or be suspected to have adverse health impacts. Their associated potential toxic risks, in comparison with existing products, are a complex issue in terms of how they are being

used by workers or the general public and associated work practices to reduce exposure. In some cases, health impacts may involve different health end points (acute vs. chronic or cancer risks) than existing formulations. SCAQMD staff held a one-day technical symposium on this issue to solicit inputs from experts in the field. Emerging from this and other discussions, is a policy debate as to whether we should treat new chemicals as "innocent until proven guilty" (i.e., not toxic until a risk factor is formally assigned by a health agency). In light of the amount of VOC reductions needed for attainment and other available VOC control opportunities, a precautionary approach is recommended to avoid particular VOC reductions that could potentially lead to the increased use of chemicals that are known or suspected to be toxic until it can be demonstrated that they would not create more toxic risks for workers or the public than the compounds they are replacing.

7. *Further evaluation of the practicality and effectiveness for time and place controls*

   Most ozone exceedances occur during the months of May through September (the "ozone season") when higher ambient temperatures and stronger solar radiation intensities accelerate ozone formation rates. In addition, during the ozone season, higher temperatures increase the volatility of organic compounds, leading to accelerated evaporation and larger emissions of precursor compounds. In contrast, PM2.5 concentrations are typically highest during the winter months when stagnant weather and temperature inversions trap emissions close to the ground. The implications of controlling ozone and PM2.5 sources differently based on location and season can be evaluated further through modeling exercises.

8. *Conduct further studies related to VOCs*

   Over the years, knowledge of the VOC emissions inventory, speciation profiles, and reactivity has improved significantly. Several topics should be further investigated to build a stronger scientific basis for future VOC control programs. These include optical remote sensing technologies that allow for the detection of emissions in locations where traditional monitoring techniques are not practical. Such fence-line systems could enhance the accuracy of emissions inventories, provide an alarm system in the case of process disruptions, and offer opportunities for real-time feedback for process and emissions control to the facility operator. Furthermore, ongoing and future studies of emissions, evaporation rates, ambient concentrations, ozone formation, and PM2.5 formation from SVOCs, IVOCs, and LVP-VOCs will help determine if controlling these compounds could assist the attainment strategies for ozone and PM2.5.

Conclusions

While air quality has improved considerably in the SoCAB over the past few decades, further emission reductions must be made to attain the federal standards for ozone and PM2.5. The analysis herein indicates that a NOx-heavy strategy accompanied by more modest VOC reductions will help to avoid temporary increases in ozone concentrations in the western side of the Basin. This finding reaffirms the previous NOx-heavy State Implementation Plan (SIP) strategies to meet both PM2.5 and ozone standards, but recognizes that VOC reductions can be given a lower priority. To this end, a strategic VOC control program is recommended for the 2016 AQMP to first maximize co-benefits of NOx, GHG, and air toxic controls, followed by controls that could create a win-win, "business case" for the affected entities, incentives for super-compliant products, while ensuring and capturing benefits from implementation of existing rules. When additional VOC controls are still needed, it is recommended to prioritize controls that will produce co-benefits for air toxics and GHGs, with a focus on VOC species that are most reactive in ozone and/or PM2.5 formation.

References

1. E.P.A., U.S., *National Ambient Air Quality Standards for Ozone: A Proposed Rule by the Environmental Protection Agency*. 79 FR 75233. 2014.
2. Gentner, D.R., et al., *Chemical Composition of Gas-Phase Organic Carbon Emissions from Motor Vehicles and Implications for Ozone Production.* Environmental Science & Technology, 2013. **47**(20): p. 11837-11848.
3. Chen, J. and D. Luo, *Ozone formation potentials of organic compounds from different emission sources in the South Coast Air Basin of California.* Atmospheric Environment, 2012. **55**(0): p. 448-455.

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2016 AQMP WHITE PAPER

OCTOBER 2015

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APPENDIX B – POTENTIAL EMISSION REDUCTION TECHNOLOGIES AND EFFICIENCY MEASURES

INTRODUCTION

Purpose and Objective

Despite the significant progress made in reducing emissions that has resulted in substantial improvements in air quality, additional emission reductions will be necessary to attain state and federal ambient air quality standards for ozone and fine particulate matter in the South Coast Air Basin. This white paper is intended to assist the public, stakeholders, and the SCAQMD in understanding key facts and policy issues related to the development of the 2016 South Coast Air Quality Management Plan (AQMP). The paper includes information regarding criteria pollutant emissions that are associated with the passenger transportation sector, which includes (for the purposes of this paper) passenger cars, passenger vans, light-duty trucks, and sport utility vehicles; transit and school buses; passenger locomotives; aircraft; and marine vessels such as cruise ships and ferries.

To illuminate policy choices relevant to the AQMP, the paper describes a number of potential scenarios for reducing emissions from the passenger transportation sector to support attainment of state and federal ozone and particulate matter standards. The emission reduction scenarios highlight emission source categories where emission reductions could potentially be achieved more readily compared to other emission source categories in this sector. In addition, if some emissions source categories are able to go beyond the overall emission reduction target needed for attainment of the air quality standard, the additional reductions would help compensate for other emissions source categories where reductions are more challenging to achieve. The scenarios do not reflect any control strategies or suggest any control approach. As such, this paper does not propose specific rules or other control measures, but provides information to assist in crafting control measures as part of the 2016 AQMP development process. This paper does discuss the potential for achieving additional emission reductions through: greater deployment of cleaner vehicles that have emission levels below the emission standards established in existing state and federal regulations, advanced emission control technologies, use of alternative and renewable fuels, electric power, and the use of operational efficiency measures such as intelligent transportation systems, mode choice, and active transportation.

In a separate effort, the SCAQMD staff has been working with the California Air Resources Board (CARB) and the Southern California Association of Governments (SCAG) to prepare updated emissions inventories for the attainment demonstration of the federal ozone and fine particulate air quality standards. However, the new emission inventories were not available to perform the analyses described above. Therefore, in order to develop this white paper to help illuminate policy

choices in the development of the 2016 AQMP, the emission inventories from the 2012 AQMP are used to perform the analyses described above. The initial observations and recommendations in this white paper are relevant regardless if a newer set of emissions inventories are used since the analyses examine the relative differences between the various emissions reduction scenarios since it is not the intent of this white paper to propose specific emissions control levels to meet federal air quality standards. That objective is part of the overall development of the 2016 AQMP.

Document Outline

This white paper provides background information on the base year and future year volatile organic compounds (VOC) and oxides of nitrogen (NOx) emissions inventories associated with the various passenger transportation emissions source categories. The following sections present brief descriptions of the current regional passenger system, associated air quality impacts, emission reduction progress, attainment challenges, and connections to climate change programs. Emission reduction scenario analyses were conducted to examine the range of emission reductions needed for each source category to help meet the ozone air quality standards by 2023 and 2032. The results of the scenario analysis are presented with an initial assessment of the issues and questions raised from the analysis. In addition, operational efficiencies and alternative mobility choices are discussed. Finally, recommendations are provided to help frame the discussions in the development of the 2016 AQMP.

A discussion of current regulatory programs and other planning efforts is provided in Appendix A. Information on potential emission reduction technologies and efficiency measures is discussed in Appendix B.

BACKGROUND

The South Coast Air Quality Management District (SCAQMD or District) consists of an area of approximately 10,743 square miles consisting of the South Coast Air Basin, and the Riverside County portions of the Salton Sea Air Basin (SSAB) known as the Coachella Valley Planning Area. The South Coast Air Basin, which is a subregion of the District's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The region is inhabited by more than 16 million people, representing about half of California's population. In addition, the SCAQMD region is projected to grow to approximately 18 million people by 2030, and this growth is expected to occur primarily in Riverside and San Bernardino Counties. This situation is expected to lead to a greater imbalance of

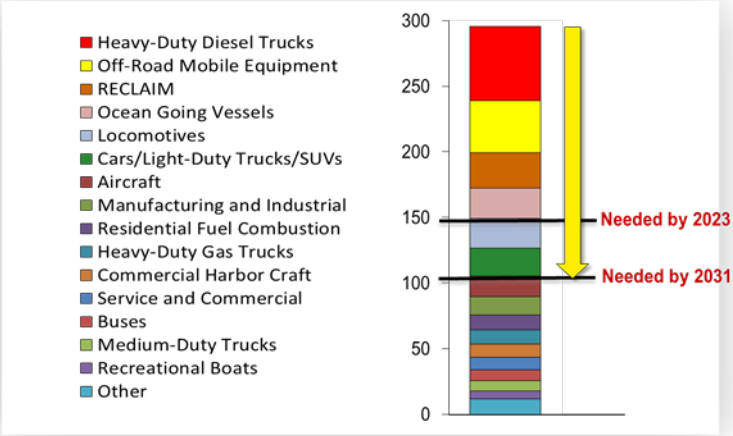
jobs and housing in the region, increasing transportation mobility and air quality challenges because of increased travel demand requirements.[1]

The SCAQMD region includes approximately 21,000 miles of highways and arterials, 450 miles of passenger rail, and six commercial airports. It is estimated that about 90 percent of trips in the SCAQMD make use of the highway and arterial system, utilizing various transportation modes including automobile, public transit, and active transportation (e.g., bicycling on arterial streets).[2]

Attainment Challenge

Meeting national ambient air quality standards for ozone and fine particulate matter will require additional NOx emission reductions in the South Coast Air Basin. Meeting state standards will be even more challenging. Preliminary ozone air quality analysis currently underway in the development of the 2016 AQMP indicates that NOx emissions will need to be reduced by approximately 50% in 2023 and 65% in 2031 (beyond projected 2023 baseline emissions). Note that the percentages will likely change slightly as the emission inventories are updated with more recent economic and demographic forecast information from the Southern California Association of Governments (SCAG) as part of the development of the 2016 AQMP. Figure 1 shows graphically the overall NOx emission reductions needed to attain the 8-hour ozone air quality standards in 2023 and 2031 and the major NOx emission sources contributing to the ozone air quality problem. This is especially challenging given that among the largest contributors to NOx emissions are mobile sources that are primarily regulated by the state and/or federal governments. Since many mobile sources have already achieved over a 90% reduction in NOx emissions, attainment of the ozone standards will require wide-scale deployment of not only new vehicles meeting the tightest tailpipe emissions standards, but also commercialization and deployment of technologies that achieve zero or near-zero emissions.

[1] 2012-2035 Regional Transportation Plan, Southern California Association of Governments, April 2012
[2] *Ibid.*



(Source: Preliminary Draft 2023 Baseline NOx Emissions Inventory, July 2015)

FIGURE 1

Needed NOx Emission Reductions to Achieve
Federal 8-Hour Ozone Ambient Air Quality Standards

Climate Challenge

The SCAQMD Governing Board (Board) has recognized the nexus between technologies that minimize climate impacts and technologies that reduce criteria pollutant emissions, since many of the same technologies simultaneously address both of these challenges. As such, the SCAQMD Governing Board has developed policies and guiding principles which include the coordinated development of criteria air pollutant strategies that have co-benefits in reducing greenhouse gas emissions, to make the most efficient use of limited resources and the time needed to deploy the necessary cleaner technologies. In September 2011, the Board adopted the SCAQMD Air Quality-Related Energy Policy. This policy was developed to integrate air quality, energy issues, and climate change in a coordinated manner. Various policies and actions were identified as part of this effort, some of which would specifically target passenger transportation emission sources. These include policies to promote zero- and near-zero emission technologies to the fullest extent feasible. Action items include studies to identify measures that reduce emissions from the passenger transportation sector, including incentivizing the early introduction of zero- and near-zero emission vehicles and identification of potential new funding mechanisms to support widespread penetration of such technologies within the transportation sector.

Clearly, aggressive and coordinated technology development and deployment efforts are needed in the transportation sector over the next 10 to 20 years to meet ozone ambient air quality standards in 2023 and 2032, as well as greenhouse gas reduction goals between 2020 and 2050. To this end, in 2012, the SCAQMD, California Air Resources Board (CARB), and San Joaquin Valley Unified Air Pollution Control District jointly prepared a document titled: "Vision for Clean Air: A Framework for Air Quality and Climate Planning." This document evaluated various technology scenarios in the transportation sector that provide direction on future control strategies to concurrently achieve criteria pollutant standards and climate change goals. Major conclusions from that effort are that significant changes in transportation technologies are needed to more widely deploy hybrid and electric vehicles as well as increased renewable sources of energy for electricity production.

PASSENGER TRANSPORTATION EMISSIONS SOURCE CATEGORIES

Tables 1 and 2 provide a list of passenger transportation emissions source categories for the discussion purposes of this white paper. The on-road emissions source categories shown in Table 1 include light-duty vehicles up to 5,750 lbs GVWR (gross vehicle weight rating), medium-duty vehicles (5,751 to 8,500 lbs GVWR), and heavy-duty vehicles with gross vehicle weight ratings greater than 8,500 lbs. Examples of light-duty vehicles include passenger cars, light-duty trucks, sport utility vehicles, and minivans. Medium-duty vehicles include heavier pickup trucks and passenger and cargo vans. Heavy-duty vehicles include passenger shuttles, transit buses, school buses, and motor homes. In addition to the vehicles listed above, motorcycles are included in the passenger transportation sector. To provide greater insight into the emissions contributions of each source category, the emissions are further disaggregated by weight category. For example, light-duty trucks are separated into two categories: LDT1 (up to 3,750 lbs GVWR) and LDT2 (3,751 to 5,750 lbs GVWR).

TABLE 1

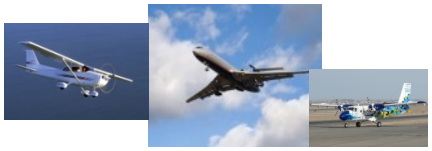
On-Road Transportation Categories

Description/ Weight Class (lbs)	
Passenger Car/Light Duty Automobile (LDA)	
Light-Duty Trucks 1 (LDT-1) (Up to 3,750)	
Light-Duty Trucks 2 (LDT-2) (3,751 – 5,750)	
Medium-Duty Vehicles (MDV) (5,751 – 8,500)	
Motorcycles (MCY)	
School Buses (SBUS)	
Urban Buses (UBUS)	
Other Buses (OBUS)	
Motor Homes (MH)	

Table 2 shows the various off-road emissions source categories that are part of the passenger transportation sector. These categories include passenger rail, passenger and excursion ferries, cruise ships, and commercial and general aviation aircraft.

TABLE 2

Off-Road Transportation Categories

Description	
Ocean-Going Vessels (Cruise Ships)	
Commercial Harbor Craft (Ferries and Excursion Vessels)	
Commuter Rail (Passenger Locomotives)	
Aircraft (Commercial and General Aviation)	

Air Quality Impacts of Passenger Transportation Sources

The adoption and implementation of control strategies specific to the passenger transportation sector have resulted in significant emissions reductions. However, additional emission reductions are needed in order to achieve federal ambient air quality standards for ozone and fine particulate matter. A discussion of the current regulatory programs and other planning efforts in the passenger transportation sector is provided in Appendix A.

NOTE: For the purposes of this white paper, the emissions inventories provided in this section and the subsequent sections are from the 2012 AQMP. The 2016 AQMP will contain updated emission inventories for use in demonstrating attainment of the federal ozone and fine particulate air quality standards.

Figures 2 and 3 show the VOC and NOx emissions in tons/day from the passenger transportation sector and their contribution to the total emissions for 2014, 2023, and 2032. For 2014, passenger transportation sources contribute approximately 23 and 28% of the South Coast Air Basin's VOC and NOx emissions inventory. The percent contribution from passenger transportation sources to total VOC and NOx emissions in 2032 are 11 and 21%, respectively.

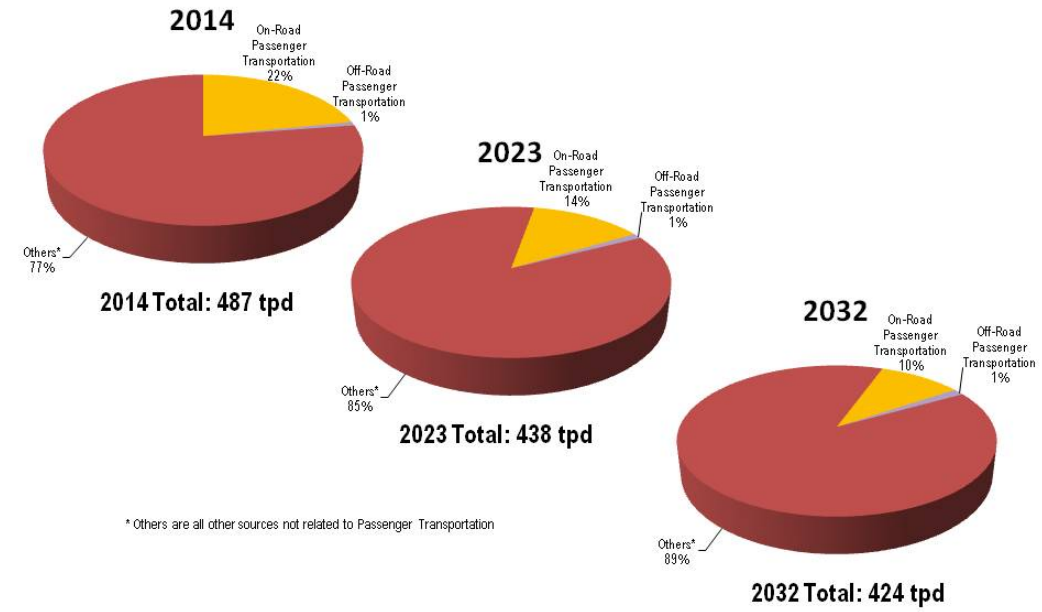


FIGURE 2

Passenger Transportation Sector VOC Emissions Contribution to the Total VOC Emissions for 2014, 2023, and 2032 (Source: 2012 AQMP)

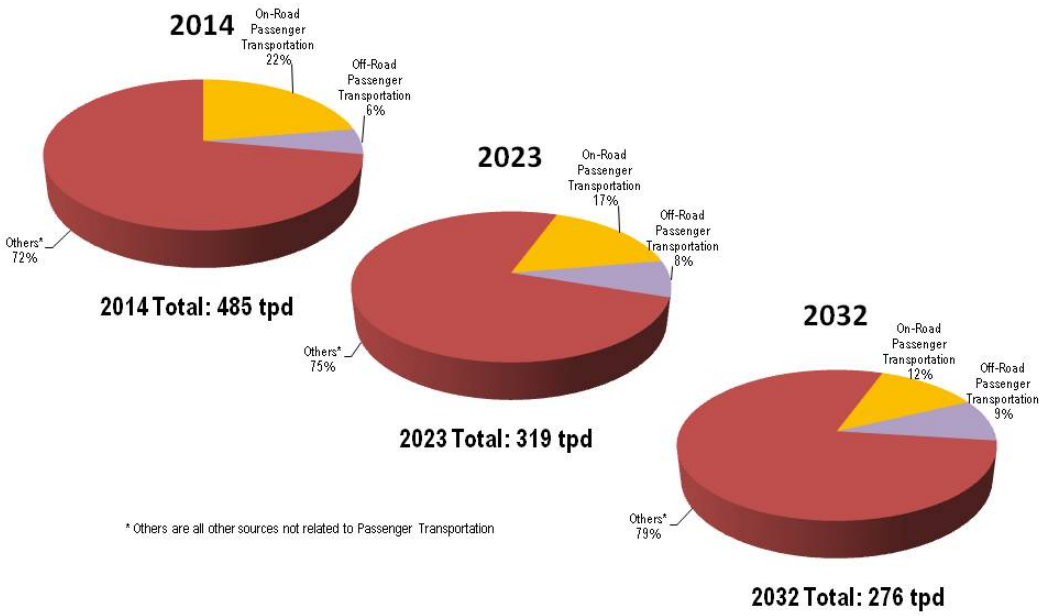


FIGURE 3

Passenger Transportation Sector NOx Emissions Contribution to the Total NOx Emissions for 2014, 2023, and 2032 (Source: 2012 AQMP)

Tables 3, 4, and 5 provide VOC and NOx emissions for the various emissions source categories in the passenger transportation sector for calendar years 2014, 2023, and 2032, respectively. In addition, the vehicle population and vehicle miles travelled are provided.

TABLE 3

VOC and NOx Emissions from On-Road Mobile Sources in the Passenger Transportation Sector for Calendar Year 2014 (Source: 2012 AQMP)

Source Category	Population	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Light Duty Passenger	5,728,985	202,036,463	44.63	31.00
Light Duty Trucks-1 (up to 3750 lb.)	670,990	23,667,541	13.61	9.02
Light Duty Trucks-2 (3751 to 5750 lb.)	1,873,658	70,389,181	19.24	20.33
Medium Duty Trucks (5751-8500 lb.)	1,545,179	54,982,815	19.71	23.84
Heavy Duty Diesel Urban Buses	7,114	762,389	0.5	12.67
Heavy Duty Gas Urban Buses	1,787	191,845	0.32	0.67
School Buses - Gas	1,510	54,279	0.08	0.12
School Buses - Diesel	4,643	172,951	0.04	2.15
Other Buses - Gas	7,024	290,381	0.36	0.86
Other Buses - Diesel	5,499	435,008	0.13	4.21
Motor Homes	70,444	782,786	0.19	1.47
Motorcycles	222,597	1,627,281	7.29	2.06
Total	**10,139,428**	**355,392,919**	**106.10**	**108.40**

TABLE 4

VOC and NOx Emissions from On-Road Mobile Sources in the Passenger Transportation Sector for Calendar Year 2023 (Source: 2012 AQMP)

Source Category	Population	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Light Duty Passenger	6,045,577	202,227,892	18.24	12.34
Light Duty Trucks-1 (up to 3750 lb.)	716,203	24,037,227	7.83	4.33
Light Duty Trucks-2 (3751 to 5750 lb.)	2,036,593	73,251,629	10.91	7.66
Medium Duty Trucks (5751-8500 lb.)	1,703,888	56,678,252	14.93	11.92
Heavy Duty Diesel Urban Buses	7,613	815,970	0.43	10.43
Heavy Duty Gas Urban Buses	1,958	210,257	0.3	0.61
School Buses - Gas	1,683	60,450	0.04	0.07
School Buses - Diesel	4,770	170,017	0.04	1.73
Other Buses - Gas	7,417	277,729	0.28	0.5
Other Buses - Diesel	6,444	528,964	0.1	0.94
Motor Homes	83,646	948,629	0.07	0.97
Motorcycles	239,153	1,734,034	6.58	2.03
Total	**10,854,946**	**360,941,049**	**59.75**	**53.53**

TABLE 5

VOC and NOx Emissions from On-Road Mobile Sources in the Passenger Transportation Sector for Calendar Year 2032 (Source: 2012 AQMP)

Source Category	Population	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Light Duty Passenger	6,198,902	208,469,240	8.88	6.83
Light Duty Trucks-1 (up to 3750 lb.)	774,282	26,511,038	4.69	1.91
Light Duty Trucks-2 (3751 to 5750 lb.)	2,220,575	80,214,386	8.51	4.48
Medium Duty Trucks (5751-8500 lb.)	1,881,310	62,155,336	12.43	6.82
Heavy Duty Diesel Urban Buses	8,234	882,829	0.35	7.85
Heavy Duty Gas Urban Buses	2,159	231,860	0.13	0.54
School Buses - Gas	1,890	67,874	0.02	0.05
School Buses - Diesel	4,808	165,524	0.05	1.07
Other Buses - Gas	7,924	297,772	0.26	0.37
Other Buses - Diesel	7,365	618,352	0.12	1.15
Motor Homes	113,494	1,308,532	0.05	0.92
Motorcycles	242,094	1,732,796	6.85	2.07
Total	**11,463,038**	**382,655,538**	**42.34**	**34.06**

Tables 6 through 8 show the VOC and NOx emissions associated with the off-road emissions source categories in the passenger transportation sector for 2014, 2023, and 2032, respectively.

TABLE 6

VOC and NOx Emissions from Off-Road Mobile Sources in the Passenger Transportation Sector for Calendar Year 2014 (Source: 2012 AQMP)

Source Category	VOC (tons/day)	NOx (tons/day)
Ocean-Going Vessels (Cruise Ships)	0.22	5.91
Passenger Locomotives	0.21	4.46
Harbor Craft (Ferries and Excursion Vessels)	0.42	4.09
Aircraft (Excluding Air Cargo Transport)	3.05	12.13
Total	**3.90**	**26.59**

TABLE 7

VOC and NOx Emissions from Off-Road Mobile Sources in the Passenger Transportation Sector for Calendar Year 2023 (Source: 2012 AQMP)

Source Category	VOC (tons/day)	NOx (tons/day)
Ocean-Going Vessels (Cruise Ships)	0.24	3.54
Passenger Locomotives	0.26	4.46
Harbor Craft (Ferries and Excursion Vessels)	0.43	3.32
Aircraft (Excluding Air Cargo Transport)	3.93	13.59
Total	**4.86**	**24.92**

TABLE 8

VOC and NOx Emissions from Off-Road Mobile Sources in the Passenger Transportation Sector for Calendar Year 2032 (Source: 2012 AQMP)

Source Category	VOC (tons/day)	NOx (tons/day)
Ocean-Going Vessels (Cruise Ships)	0.38	2.15
Passenger Locomotives	0.27	4.92
Harbor Craft (Ferries and Excursion Vessels)	0.43	3.30
Aircraft (Excluding Air Cargo Transport)	4.62	14.74
Total	**5.70**	**25.11**

Emissions Reduction Progress to Date

The following sections describe the historic emission trends from the on-road and off-road passenger transportation sources.

On-Road Passenger Transportation Emission Sources

As shown in Figure 4, on-road passenger transportation source emissions of VOC, NOx, and PM have experienced reductions ranging from 84 percent to 88 percent from 1990 levels. These reductions have primarily relied upon development and commercialization of technologies that control emissions from internal combustion engines.

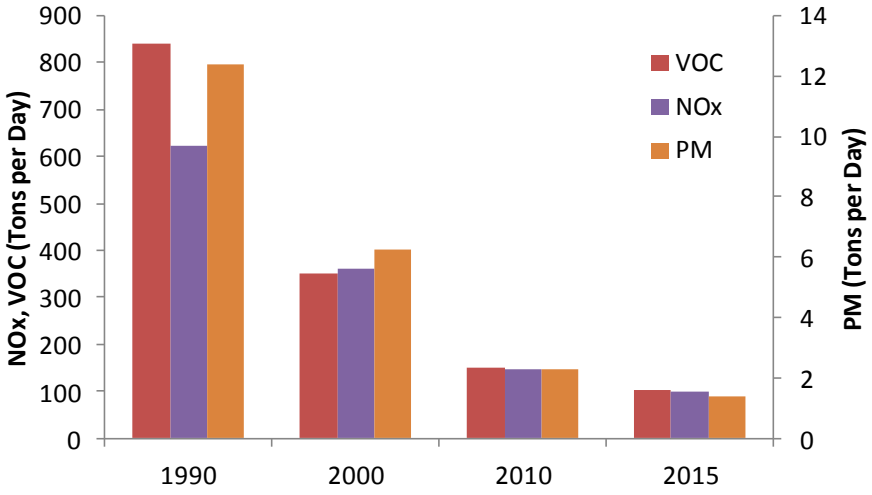


FIGURE 4

On-Road Passenger Transportation Sources
(Source: EMFAC2011 with Vehicle Miles Traveled Information from the 2012 AQMP)

NOx and VOC emissions from on-road passenger transportation emission sources provided in Tables 3, 4, and 5 are shown graphically in Figures 5 and 6 for 2014, 2023, and 2032 calendar years to illustrate the projected trend in emissions due to the impact of regulatory programs for specific sources of emissions in the passenger transportation sector. Regulatory programs include a combination of command and control programs, such as more stringent emission standards applicable to original equipment manufacturers and in-use compliance programs applicable to vehicle/fleet owners, as well as monetary incentive programs that promote the market penetration of lower-emitting vehicles. These emission reductions have occurred despite the general increase in the population of passenger transportation emission sources over time, as illustrated in Figure 7.

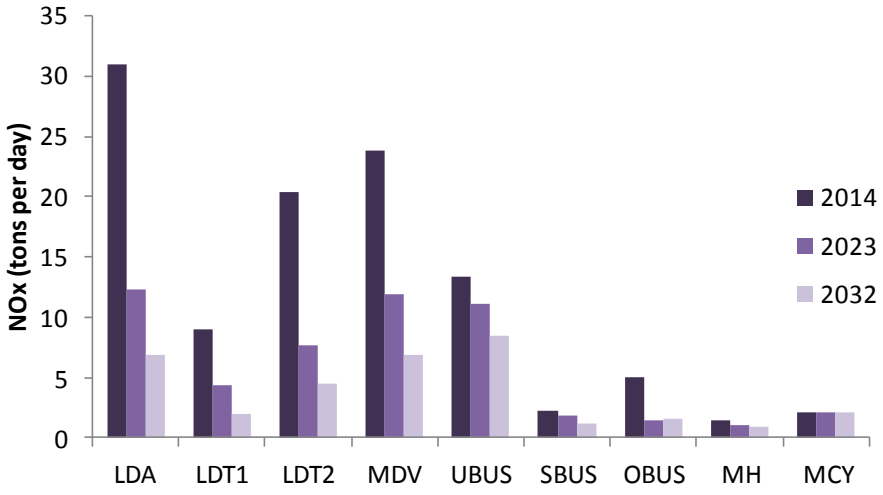


FIGURE 5

NOx Emissions for Specific On-Road Passenger Transportation Sources
(Source: 2012 AQMP)
(LDA – Light Duty Automobile; LDT1 and LDT2 –Light-Duty Trucks;
MDV – Medium-Duty vehicles; UBUS – Urban Buses; SBUS – School Buses:
OBUS – Other Buses; MH – Motorhomes; MCY – Motorcycles)

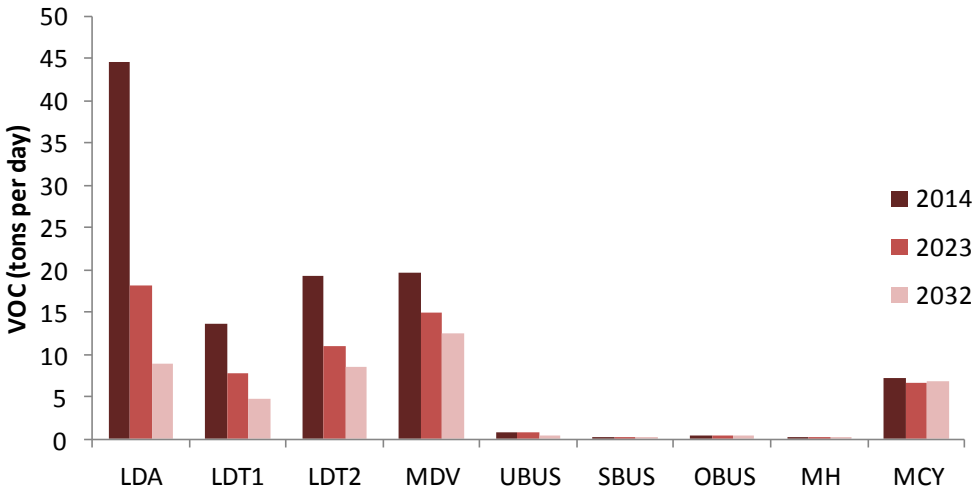


FIGURE 6

VOC Emissions for Specific On-Road Passenger Transportation Sources
(Source: 2012 AQMP)

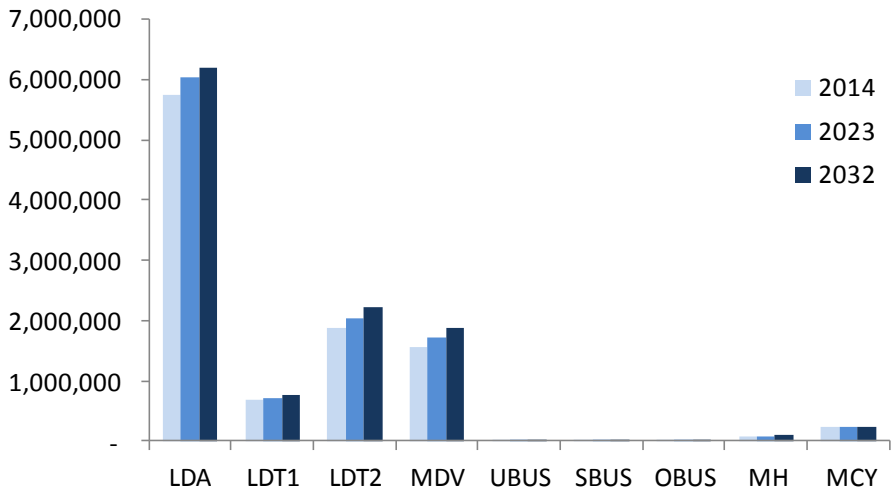


FIGURE 7

Populations for Specific On-Road Passenger Transportation Sources

(Source: 2012 AQMP)

Off-Road Passenger Transportation Emission Sources

NOx and VOC emissions from off-road passenger transportation sources provided in Tables 6, 7, and 8 are shown graphically in Figures 8 and 9 for 2014, 2023, and 2032 calendar years to illustrate the trend in emissions and the impact of regulatory programs on emissions for specific sources of emissions in the passenger transportation sector. Aircraft and commuter rail emissions of NOx increase over time due to greater activity and no additional regulations. Cruise ship and ferry/excursion vessel NOx emission decrease over time due to state regulations.

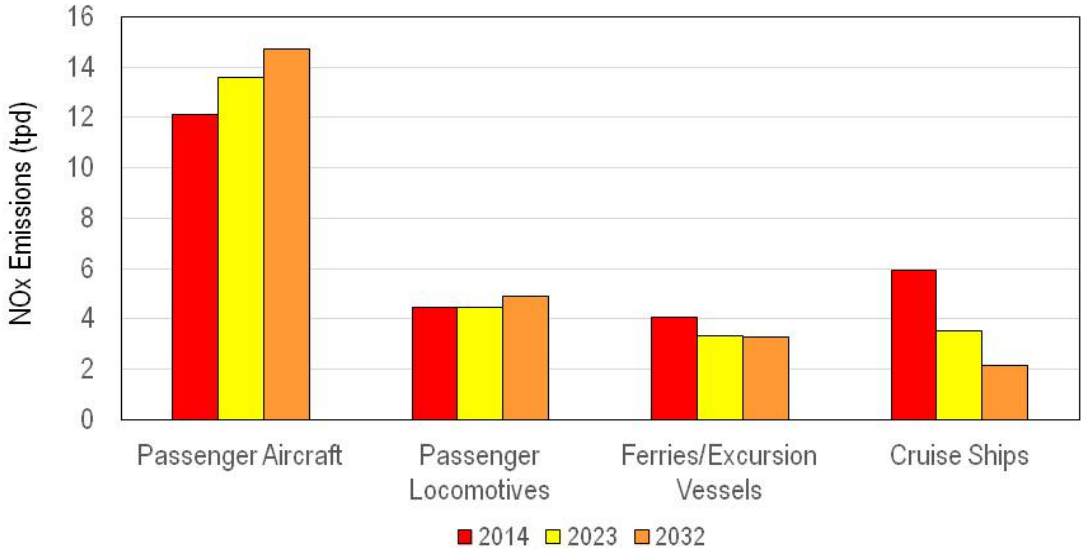


FIGURE 8

NOx Emissions for Specific Off-Road Passenger Transportation Sources
(Source: 2012 AQMP)

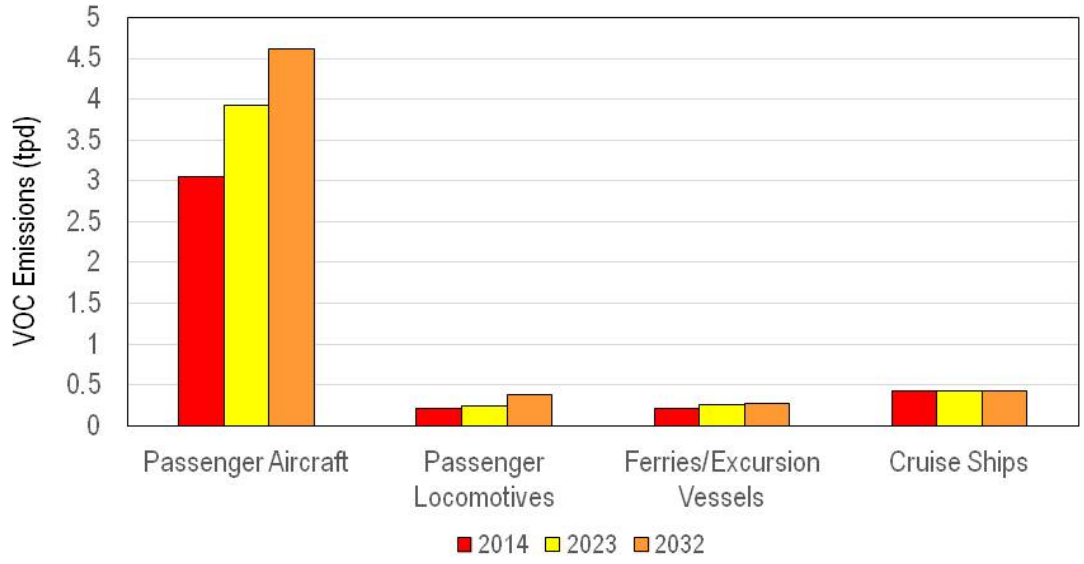


FIGURE 9

VOC Emissions for Specific Off-Road Passenger Transportation Sources
(Source: 2012 AQMP)

NOx EMISSION REDUCTION SCENARIOS

Various NOx emission reduction scenarios were developed to assess the amount of NOx emission reductions and levels of technology deployment that may be necessary across the passenger

transportation emission source categories to achieve regional NOx carrying capacities in attainment deadline years. In addition, these scenarios serve to provide insight into the various emission tradeoffs associated with different technology penetration rates. The emission scenarios are intended to help provide perspective on the challenging task to achieve necessary emission reductions in compressed timeframes to meet air quality attainment goals. The scenarios do not represent any specific strategies to meet the emission reductions associated with the various scenarios. As such, the scenarios do not take into consideration potential need for new advanced technologies, socioeconomic impacts, or the regulatory agency authority to regulate each of the emission source categories in this sector. Specific strategies will be developed as part of the 2016 AQMP development process.

As noted in the beginning of this white paper, the emissions inventories used for the emissions reduction scenarios are from the 2012 AQMP. The 2012 AQMP calls for 65 and 75 percent reduction in NOx emissions to attain the federal 8-hr ozone air quality standards in 2023 and 2032, respectively. However, preliminary analysis as part of the development of the 2016 AQMP indicates that the needed NOx emission reductions are approximately 50 and 65 percent for 2023 and 2031, respectively. The initial observations and recommendations would not change due to differences in the emissions inventories since the analysis are based on relative changes among the various emissions source categories.

The scenarios were developed using the latest approved CARB emissions inventory model, EMFAC2011, as provided in the Final 2012 AQMP. These scenarios and underlying assumptions are described below.

For the two attainment years 2023 and 2032, six scenarios were developed and analyzed. The six scenarios are:

- Equal Share Reduction in NOx
  Under this scenario, all of the transportation source category baseline emissions are reduced by 65% for 2023 and 75% for 2032 (from the 2023 baseline emissions).
- 100 Percent Existing Standards
  Under this scenario, all vehicle NOx emissions are assumed to be at the greatest level of control based on current exhaust emissions standards.
- 90 Percent Cleaner Combustion Technologies
  Transit and school bus NOx emissions are assumed to achieve additional 90 percent or cleaner emission levels beyond existing emission standards. Passenger locomotives and

marine vessels are assumed to achieve some additional level of NOx reductions beyond Tier 4.

- Varying Penetration of Zero-Emission Technologies (Three Scenarios)
  Three scenarios were developed analyzing the potential to have 25%, 50%, and 75% penetration of zero-emission technologies.

Tables 9 and 10 provide the results of the emissions analysis for each scenario for 2023 and 2032, respectively.

TABLE 9

Remaining NOx Emissions (tons/day) in 2023
(Baseline and Equal Share Emissions from the 2012 AQMP)

(a) On-Road Passenger Transportation Vehicles

Source	Baseline	Equal Share	100% Existing Standards	90% Cleaner	ATP1 - 25% Zero / 75% Near-Zero	ATP2 - 50% Zero / 50% Near-Zero	ATP3 - 75% Zero / 25% Near-Zero
LDA	12.34	4.32	5.17	5.17	3.88	2.58	1.29
LDT1	4.33	1.52	0.98	0.98	0.73	0.49	0.24
LDT2	7.66	2.68	2.86	2.86	2.15	1.43	0.72
MDV	11.92	4.17	2.82	2.82	2.11	1.41	0.70
UBUS-DSL	10.43	3.65	0.50	0.05	0.04	0.02	0.01
UBUS-GAS	0.61	0.21	0.08	0.01	0.01	0.00	0.00
SBUS-GAS	0.07	0.02	0.01	0.00	0.00	0.00	0.00
SBUS-DSL	1.73	0.61	0.28	0.03	0.02	0.01	0.01
OBUS-GAS	0.5	0.18	0.18	0.02	0.01	0.01	0.00
OBUS-DSL	0.94	0.33	0.94	0.09	0.07	0.05	0.02
MH	0.97	0.34	0.53	0.05	0.04	0.03	0.01
MCY	2.03	0.71	2.03	2.03	2.03	2.03	2.03
Total	**53.53**	**18.74**	**16.36**	**14.10**	**11.09**	**8.07**	**5.05**

(b) Off-Road Passenger Transportation

Source	Baseline	Equal Share	Existing Standard	90% Cleaner	ATP 1 - 25% Zero/ 75% Near-Zero	ATP 2 - 50% Zero/ 50% Near-Zero	ATP 3 - 75% Zero/ 25% Near-Zero
Ocean-Going Vessels	3.54	1.24	1.32	0.99	0.99	0.99	0.99
Passenger Locomotives	4.46	1.56	1.07	0.11	0.08	0.06	0.03
Harbor Craft	3.32	1.16	0.88	0.57	0.57	0.57	0.57
Aircraft	13.59	4.76	3.40	3.40	3.40	3.40	3.40
Total	**24.92**	**8.72**	**6.67**	**5.07**	**5.04**	**5.01**	**4.98**

(c) Total On-Road and Off-Road Passenger Transportation

All Sources	Baseline	Equal Share	Existing Standard	90% Cleaner	ATP 1 - 25% Zero/ 75% Near-Zero	ATP 2 - 50% Zero/ 50% Near-Zero	ATP 3 - 75% Zero/ 25% Near-Zero
Total	**78.45**	**27.46**	**23.03**	**19.17**	**16.13**	**13.08**	**10.03**

TABLE 10

Remaining NOx Emissions (tons/day) in 2032
(Baseline and Equal Share Emissions from the 2012 AQMP)

(a) On-Road Passenger Transportation Vehicles

Source	Baseline	Equal Share	100% Existing Standards	90% Cleaner	ATP1 - 25% Zero / 75% Near-Zero	ATP2 - 50% Zero / 50% Near-Zero	ATP3 - 75% Zero / 25% Near-Zero
LDA	6.83	3.07	5.33	5.33	4.00	2.66	1.33
LDT1	1.91	1.09	1.08	1.08	0.81	0.54	0.27
LDT2	4.48	1.93	3.13	3.13	2.35	1.57	0.78
MDV	6.82	3.00	3.09	3.09	2.32	1.54	0.77
UBUS-DSL	7.85	2.59	0.54	0.05	0.04	0.03	0.01
UBUS-GAS	0.54	0.15	0.10	0.01	0.01	0.01	0.00
SBUS-GAS	0.05	0.02	0.01	0.00	0.00	0.00	0.00
SBUS-DSL	1.07	0.43	0.30	0.03	0.02	0.02	0.01
OBUS-GAS	0.37	0.12	0.22	0.02	0.02	0.01	0.01
OBUS-DSL	1.15	0.23	1.15	0.11	0.09	0.06	0.03
MH	0.92	0.92	0.75	0.08	0.06	0.04	0.02
MCY	2.07	0.52	2.07	2.07	2.07	2.07	2.07
Total	**34.06**	**14.07**	**17.77**	**15.00**	**11.77**	**8.54**	**5.30**

(b) Off-Road Passenger Transportation

Source	Baseline	Equal Share	Existing Standard	90% Cleaner	ATP 1 - 25% Zero/ 75% Near-Zero	ATP 2 - 50% Zero/ 50% Near-Zero	ATP 3 - 75% Zero/ 25% Near-Zero
Ocean-Going Vessels	1.79	0.50	1.76	1.36	1.36	1.36	1.36
Passenger Locomotives	4.91	1.38	2.12	0.21	0.16	0.11	0.05
Harbor Craft	3.30	0.76	0.92	0.6	0.60	0.60	0.60
Aircraft	15.06	3.46	7.53	7.53	7.53	7.53	7.53
Total	**25.06**	**6.10**	**12.32**	**10.00**	**9.95**	**9.90**	**9.85**

(c) Total On-Road and Off-Road Passenger Transportation

All Sources	Baseline	Equal Share	Existing Standard	90% Cleaner	ATP 1 - 25% Zero/ 75% Near-Zero	ATP 2 - 50% Zero/ 50% Near-Zero	ATP 3 - 75% Zero/ 25% Near-Zero
Total	**59.12**	**20.17**	**30.09**	**25.00**	**21.72**	**18.44**	**15.15**

Equal Share Reduction in NOx Scenario

For the 2023 attainment year, an overall 65% NOx reduction for all source categories in the South Coast Air Basin was determined to be needed for attainment of the 80 ppb federal 8-hour ozone air quality standard. This is reflected in a straight 65% reduction across all passenger transportation source categories, resulting in an overall decrease of NOx emissions from 53.53 tons/day to 18.74 tons/day for on-road passenger transportation vehicles, and NOx emissions decrease from 24.92 to 8.72 tons/day for off-road sources [Tables 9(a) and 9(b)]. The total remaining NOx emissions combining on-road and off-road emissions are 27.46 tons/day [Table 9(c)].

For the 2032 attainment year, an overall 75% NOx reduction in all source categories based on 2023 baseline emission inventories was determined to be needed for attainment of the 75 ppb Federal 8-hour ozone standard. This is reflected in a straight 75% reduction across all passenger transportation sources as applied to 2023 baseline emission inventories, with remaining inventories applied to the 2032 attainment year. This calculation was performed in this manner to provide the incremental emission reductions by source category in "2023 currency" necessary to meet the more stringent Federal 8-hour ozone air quality standard in 2032. Reflecting all passenger transportation emission sources, the on-road NOx emissions are reduced from 34.0 tons/day to 14.1 tons/day in 2032 [Table 10(a)]. Off-road NOx emissions are reduced from 25.06 tons/day to 6.1 tons/day [Table 10(b)]. The total remaining NOx emissions combining on-road and off-road emissions are 20.17 tons/day [Table 10(c)].

100 Percent Existing Standards Scenario

This scenario assumes full implementation of existing adopted emission standards and complete fleet turnover to vehicles that meet these emission standards. For vehicles weighing up to 14,000 lbs. GVWR, the applicable emission standards are based on full implementation of CARB's Accelerated Clean Car Program in 2023 and 2032 (i.e., the vehicle emission standard component of this program (LEV III regulation) is fully phased–in by 2023). The in-use fleet average emission level for NOx was developed for the 2025 to 2032 calendar year timeframe, reflecting an in-use vehicle fleet that meets the most stringent LEV III emission standards while incorporating emissions deterioration.

A similar methodology was utilized for passenger transportation vehicle sources with gross vehicle weight ratings greater than 14,000 lbs. It was assumed that all vehicles meet the 2010 model year on-road heavy-duty engine exhaust emissions standard of 0.2 g/bhp-hr for NOx. To incorporate emission deterioration, for the 2023 and 2032 calendar year scenarios, EMFAC2011 was used to calculate in-use fleet average NOx emissions for the 2010 to 2023 calendar year timeframe and 2010 to 2032 calendar year timeframe, respectively. Reflecting all passenger transportation emission sources (on-road and off-road sources), the NOx inventory was reduced from 78.45 tons/day to 23.03 tons/day in 2023, and 59.12 tons/day to 30.09 tons/day in 2032 [Table 9(c) and 10(c)].

90 Percent Cleaner Combustion Technologies Scenario

For this scenario, light- and medium-duty vehicles (up to 14,000 lbs GVWR) are assumed to meet the cleanest combustion levels provided in the Advanced Clean Car Program (LEV III element). For vehicles weighing more than 14,000 lbs. GVWR, the 90% cleaner combustion technology reflects the entire on-road fleet meeting a 0.02 g/bhp-hr NOx emissions standard. For off-road passenger transportation sources, locomotives are assumed to reach a 90% cleaner level, NOx emissions from ocean-going vessels would be further reduced through reduction of emissions from auxiliary engines and boilers while at-berth, and ferry vessels emissions would be further reduced through deployment of cleaner engines and hybrid systems. The resulting remaining emissions shown in Tables 9(c) and 10(c), are 19.17 tons/day (from 78.45 tons/day) in 2023 and 25.0 tons/day (from 59.12 tons/day) in 2032.

Varying Penetration of Zero-Emission Technologies Scenarios

The varying penetration scenarios assume various in-use penetrations of zero emission technologies to achieve emission reductions beyond the 90% cleaner combustion scenario. Three specific in-use fleet penetration scenarios were evaluated corresponding to 25% ZEV/75% near-ZEV, 50% ZEV/50% near-ZEV, and 75% ZEV/25% near-ZEV. Note that "near-ZEV" corresponds to the vehicle technologies incorporated into the 90% cleaner combustion scenario. As expected, these scenarios result in the largest emission reductions for all scenarios evaluated, reducing the remaining NOx inventory in 2023 to 16.13 tons/day, 13.08 tons/day, and 10.03 tons/day, respectively, from a baseline inventory of 78.45 tons/day. In 2032, the remaining NOx inventories are reduced to 21.72 tons/ day, 18.44 tons/day, and 15.15 tons/day, respectively, from a baseline inventory of 59.12 tons/day.

INITIAL OBSERVATIONS

Emission Reduction Scenarios

The emission reduction scenario analysis provides insights into the development of control strategies needed to attain the federal 8-hour ozone air quality standards in 2023 and 2032. Some of the initial observations are provided below.

- The analysis conducted for this white paper focuses on specific emissions source categories related to the passenger transportation sector. As such, any analysis performed does not imply that the federal ozone air quality standards will be attained without further reductions from all emission source categories that contribute to the ozone air quality problem. That analysis will be conducted as part of the development of the 2016 AQMP. However, the scenarios analyzed as part of this white paper provide information on areas to focus on for the development of the 2016 AQMP.

- There is a general recognition that not all emission sources will be able to achieve an "equal share" reduction in NOx emissions for a variety of reasons, including, but not limited to, availability of cleaner technologies, cost-effectiveness, sheer number of vehicles or equipment, and the timeframe for turning over older vehicles to meet air quality standards.

- If all vehicles and equipment were turned over to meet the lowest emissions standards established in current international (IMO, ICAO), U.S. EPA, and CARB exhaust emission standards, the passenger transportation sector would not achieve the 75 percent "equal share" NOx emissions reductions needed to attain the federal ozone air quality standard in 2032.

- If all vehicle and equipment were turned over to meet the lowest emissions standards established in current exhaust emission standards, the passenger transportation sector would potentially achieve the 65 percent "equal share" NOx emissions reduction needed to attain the federal ozone air quality standard in 2023. However, given the significant number of vehicles and equipment in this sector, the likelihood of complete turnover will be challenging.

- Additional NOx reductions are needed from federal sources (i.e., locomotives, marine vessels, and aircraft).

- Accelerated deployment of commercially available zero-emission vehicles in the passenger transportation sector will be needed to help meet the "equal share" reduction levels in 2023 and 2032.

- If the passenger transportation sector does not achieve the needed NOx reductions, other emission sources must achieve greater NOx reductions to make up the difference. Conversely, if emission sources other than the passenger transportation sector do not achieve needed NOx reductions, there will be a need for the passenger transportation sector to achieve greater levels of NOx reductions to make up the difference.

- While significant emission reductions have occurred in this sector, new exhaust emission standards need to be established as early as possible. For the light- and medium-duty vehicle sectors, new criteria pollutant tailpipe emissions standards are needed beginning in 2025 and beyond to increase deployment of zero- and near-zero emission vehicles. In addition, new heavy-duty exhaust emissions standards must be established as early as possible. Given the low pollutant levels of such standards, innovative approaches will be needed in setting them and in maximizing the deployment of zero- and near-zero emission vehicles.

- Given the sheer number of registered vehicles in the South Coast Air Basin and their NOx contribution to the total emissions in this sector, the most effective set of strategies will consist of a combination of accelerated advanced technology deployment, incentive programs to accelerate older vehicle retirement, alternative mobility options, infrastructure enhancements, and transformative urban forms.

- Operational efficiency enhancements can be made relative to congestion relief, greater use of intelligent transportation systems, and connected vehicle technologies (i.e., equipped for wireless communication).

- There is a nexus with the goods movement sector. On certain freeways and arterial roads, heavy-duty truck traffic is shared with passenger cars and transit buses during the morning and evening commute hours. In addition, commuter rail operate on rail tracks shared with freight rail. The reader is referred to the Goods Movement White Paper for more information on the freight rail sector.

Advanced Technologies

The following are observations on the availability of zero- and near-zero emission technologies for the transportation sector. For some sectors (e.g., aircraft), if zero- or near-zero technologies are not feasible, cleaner combustion technologies are needed. In addition, advancing cleaner fuels and renewable fuels will help reduce criteria pollutant and greenhouse gas emissions. A discussion of existing emission control technologies and advanced technologies is provided in Appendix B.

- There is an increasing number of commercially-available battery-electric and plug-in hybrid electric light-duty vehicle models and increasing numbers of models sold each year. Current sales of zero-emission and plug-in hybrid electric vehicles have exceeded projections provided in CARB's Advanced Clean Car Program.

- Battery storage capacity is expected to increase significantly over the next few years and is expected to interest more consumers in acquiring a zero-emission or plug-in hybrid electric vehicle.

- There is a need to expand zero-emission technologies into categories of larger vehicles.

- Zero-emission buses are commercially available either in dedicated battery electric configurations or fuel cell configurations.

- The region's passenger rail locomotives are being replaced with Tier 4 locomotives. In the longer term, cleaner locomotives will need to be developed and demonstrated in the passenger transportation sector. Metrolink, the region's primary commuter rail service, has committed to testing cleaner locomotive technologies, such as alternative fuels, hybrid system, and wayside/external power, that provide emission benefits beyond current Tier 4 emission standards.

- Hybridization will have a significant role in reducing emissions from cruise ships and ferries.

- The FAA CLEEN Program plays an important role in developing lower NOx emitting aircraft engines with an objective to have new aircraft engines 60% cleaner in NOx emissions.

Efficiency Measures and Active Transportation

While greater penetration of zero- and near-zero emission technologies are needed to attain air quality standards, operational efficiencies in the roadway network and implementation of SB 375 sustainable community strategies will play an important role to help meet air quality standards. Some initial observations are:

- Intelligent transportation systems (ITS) and connected vehicles can potentially provide additional environmental benefits not only in congestion relief and fuel savings, but also in reduced criteria pollutant and greenhouse gas emissions.

- Operational efficiencies in goods movement will help reduce road congestion and reduce emissions.

- Implementation of SB 375 (including increased transit and commuter rail ridership) and active transportation programs will help reduce emissions and congestion.

RECOMMENDATIONS

The emission reduction scenario analysis for the passenger transportation sector shows a need for greater penetration of zero- and near-zero emission technologies in order to attain air quality standards. Given the large number of passenger cars registered in the South Coast Air Basin, existing programs such as older vehicle scrapping and incentives for zero-emission and alternative fueled vehicles are integral in the overall effort to reduce emissions from this sector. There is also a need to continue development of cleaner combustion engine technologies for federal transportation sources. The following are some key recommendations to consider during the development of the 2016 AQMP.

Technology-Related and Vehicle Deployment Recommendations

As mentioned earlier, the numbers of on-road zero-emission and plug-in hybrid electric vehicles offered commercially are growing every year. However, the sale percentage of advanced technology vehicles is relatively small compared to annual sales of conventionally-fueled vehicles, and the vehicle choices are generally smaller sized vehicles. Implementing the following recommendations would help accelerate deployment of cleaner vehicles.

- Current programs to accelerate early retirement of light- and medium-duty vehicles are important given the significant number of older vehicles operating in the South Coast Air Basin. Accelerated vehicle retirement combined with incentives to purchase cleaner, fuel efficient vehicles and advanced technology vehicles can help accelerate penetration of advanced technology vehicles for the foreseeable future.

- Increased public funding assistance will be beneficial for all categories of emissions in the passenger transportation sector.

- New mechanisms must be developed to significantly increase deployment of zero- and near-zero emission technology vehicles. Such mechanisms may take the form of regulations or monetary and non-monetary incentives.

- Establish a new NOx emissions standard for urban buses and school buses that is 90 percent cleaner than the current bus exhaust emissions standard. As part of this effort, develop new

certification test procedures for urban buses that take into account integration of hybrid systems that provide for zero-emission miles operation.

- Given the limited financial resources of public transit agencies and public school districts, seek additional funding opportunities for near-zero and zero-emission bus deployment.

- Seek funding opportunities to assist Metrolink in demonstrating alternative fuel and hybrid locomotives that are potentially significantly cleaner than the current Tier 4 locomotive NOx emissions standards.

- As deployment of near-zero and zero-emission technologies occur, additional public funding assistance will help in training technicians who are not familiar with the new technologies to maintain and operate advanced-model buses and vehicles.

- Encourage greater deployment of "emissions capture systems" at marine ports and at passenger rail maintenance facilities to reduce emissions from cruise ships and ferries while at berth and passenger rail locomotives during maintenance.

- Support the FAA CLEEN Program in the development of cleaner, more fuel efficient aircraft engine.

- Renewable fuels may potentially provide criteria pollutant emission reduction benefits along with greenhouse gas emissions benefits. The use of renewable fuels should be supported, such as renewable gasoline, renewable diesel, renewable natural gas, and other biofuels, to help reduce fine particulate emissions and to some extent NOx emissions. [Note: The reader is referred to the Energy Outlook White Paper for further discussions of renewable fuels and infrastructure development.]

Vehicle Miles Traveled (VMT) and Operational Efficiency Recommendations

Meeting SB 375 targets and improving operational efficiency in existing transportation infrastructure can have potential criteria pollutant co-benefits. The following recommendations can potentially help to further reduce criteria pollutant emissions and greenhouse gas emissions.

- Work with SCAG and the county transportation commissions to aggressively pursue and effectively implement SB 375 to reduce vehicle miles travelled (VMT).

- Work with the county transportation commissions to promote alternative forms of transportation to the single occupant vehicle. Such alternative forms include greater utilization of public transit and commuter rail, and active transportation.

- Encourage municipalities to consider "last mile" (e.g., distance from nearest public transportation node to the passenger's home or workplace) travel options in future land use planning efforts.

- Support studies to assess intelligent transportation systems' (ITS) potential to reduce congestion and criteria pollutant emissions.

- Support efforts to deploy ITS in key congestion areas and best practices in transit, commuter rail, and aviation to help further reduce emissions and reduce congestion.

- Urge Caltrans and the county transportation commission to incentivize zero- and near-zero trucks on proposed dedicated truck lanes as part of freeway expansion projects that can help reduce commuter traffic congestion where appropriate. However, there is a general recognition that an expanded freeway may eventually become congested due to economic and population growth.

REFERENCES

CARB (2013a). EMFAC2011, *California Air Resources Board*, January 2013

CARB (2013b). Staff Report: Initial Statement of Reasons, Proposed Amendments to California Exhaust and Evaporative Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, California Air Resources Board "LEV II", *California Air Resources Board*, September 1998.

CARB (2014). Lower NOx Heavy-Duty Diesel Engines Technology Assessment, *California Air Resources Board*, September 2014.

MECA (2013). LEV III and Tier 3 Exhaust Emission Control Technologies for Light-Duty Gasoline Vehicles, *Manufacturers of Emissions Controls Association*, April 2013.

MECA (2014). Technology Details Heavy-Duty Trucks and Buses, *Manufacturers of Emissions Controls Association*, http://www.meca.org/technology/technology-details?id=22&name=Heavy-Duty Trucks and Buses, February 2014.

SCAG (2012). Regional Transportation Plan and Sustainable Community Strategies, *Southern California Association of Governments*, Adopted – April 2012.

APPENDIX A

CURRENT EMISSION CONTROL PROGRAMS

CURRENT EMISSION CONTROL PROGRAMS

Current regulatory programs and other planning efforts affecting the passenger transportation sector are provided in this appendix.

PASSENGER TRANSPORTATION SECTOR

Commute Vehicles – Automobile, Light-Duty Trucks, SUVs, Passenger Vans

Commute vehicles are a subset of the on-road vehicle emission inventory, which is developed from activity data and emission rate data. For these categories of vehicles, activity data includes vehicle miles travelled and number of trips, and are generally estimated from vehicle owner surveys and vehicle count data. Emission rates are primarily based on actual measurements of tailpipe emissions (exhaust emissions) during engine operation and measurements of fuel that escapes from the vehicle's fuel system (evaporative emissions) both during engine operation and non-operation. Exhaust emissions result from incomplete fuel combustion and combustion byproducts, and consist of hydrocarbons, oxides of nitrogen, and particulate matter. Evaporative emissions consist solely of hydrocarbon emissions. The control of exhaust and evaporative emissions for a particular vehicle fundamentally depends on the technology used by the vehicle manufacturer to meet the applicable exhaust and evaporative emission standards, which are adopted and implemented by CARB, as well as control programs targeting the maintenance and repair of in-use vehicle emission control systems, implemented by CARB and the Bureau of Automotive Repair (BAR).

The specific processes generating exhaust emissions occur during running, idling, and starting conditions. Evaporative emission processes include diurnal, resting, hot soak, and running-loss. Diurnal and resting emissions result from heating and vaporization of the vehicle's fuel as the ambient temperature rises or declines during the day. Hot soak emissions are generated from residual engine heat vaporizing vehicle fuel subsequent to engine shut-down. Finally, running losses are generated by engine heat vaporizing vehicle fuel during engine operation. It should be noted that fuel evaporative emissions can also occur from vehicle refueling, where liquid fuel displaces vapor in the fuel tank during the refueling process.

SCAQMD Rule 2202 – On-Road Motor Vehicle Mitigation Options directly impacts mobile source emissions generated from employee commutes. Rule 2202 applies to employer worksites[3] with 250 or more employees, affecting home-to-work commute trips occurring between 6:00 AM and 10:00 AM from Monday through Friday. Rule 2202 provides a methodology to quantify commute emissions, an emission reduction target by employer depending on a number of factors such as employer location and number of commute vehicles, as well as a menu of options that can be implemented by employers to generate emission reductions for rule compliance. Rule 2202 was adopted in December 1995, with the first full year of implementation in 1996, replacing earlier trip reduction rules.

In Calendar Year 2013, Rule 2202 affected around 1,400 worksites, encompassing approximately 685,000 employees and 440,000 vehicles. During this calendar year, Rule 2202 targeted emission reductions were 1.68 tons/day VOC, 1.68 tons/day NOx, and 16.54 tons/day CO. Actual emission reductions exceeded these targets: 2.09 tons/day VOC, 1.70 tons/day NOx, and 17.41 tons/day CO.

Work-Related/Non-Goods Movement – Automobile, Light-Duty Trucks, and Cargo Vans

A small subset of the overall population of automobiles, light-duty trucks and vans are considered work related vehicles that carry workers from their residents to a jobsite and are considered as part of the passenger transportation sector. During the 1998 Low-Emission Vehicle (LEV) II rulemaking, CARB determined that work related vehicles up to 8,500 lbs. GVWR should be controlled to passenger car emission standards since available evidence indicated that these vehicles are primarily used for passenger transportation purposes, not as work vehicles. Cargo vans clearly are work vehicles; and models can weigh above or below 8,500 lbs. GVWR. It should be noted that the 8,500 lbs. to 10,000 lbs. GVWR category corresponds to the CARB Light-Heavy-Duty I category, and is included within the scope of the Goods Movement White Paper. In terms of how emissions are generated from these vehicles and controlled through regulation, see the preceding discussion on commute vehicles.

3 In Rule 2202, worksite means "a structure, building, portion of a building, or grouping of buildings that are in actual physical contact or are separated solely by a private or public roadway or other private or public right-of-way, and that are occupied by the same employer. Employers may opt to treat more than one structure, building or grouping of buildings as a single worksite, even if they do not have the above characteristics, if they are located within a 2 mile radius and are in the same Performance Zone. "

Transit System (Buses/Shuttles)

Transit system and shuttle bus vehicle emissions are regulated by a combination of rules, including the CARB heavy-duty vehicle emission standard regulations, Fleet Rule for Transit Agencies, and Truck and Bus Rule. In addition, transit agency emissions are regulated by SCAQMD Rule 1192 – Clean On-Road Transit Buses. CARB's emission standard regulation applies to engine manufacturers, while the remaining CARB and SCAQMD rules apply to vehicle fleets. In general, the CARB fleet rules require faster turnover to cleaner vehicles than would otherwise occur in the absence of the rules, or installation of retrofit emission control hardware. The SCAQMD rule requires the purchase of clean-fueled vehicles (e.g., CNG, LNG, electric) when a fleet decides on its own to either replace or add a vehicle to its fleet. Finally, CARB has adopted a zero-emission bus purchase requirement. CARB staff is conducting a technical assessment and is planning amendments to the transit fleet rule in an effort to further reduce criteria pollutant and greenhouse gas emissions, as well as promote zero-emission technologies in this sector.

Student Transportation

School buses come in a variety of sizes and configurations, powered by gasoline, diesel, CNG, propane, or electricity, and are generally assigned to one of four types: A, B, C, or D. Type A is considered a medium-duty vehicle with a weight rating of more than 10,000 lbs GVWR (Type A-I) or less than 10,000 lbs GVWR (Type A-II). Type A school buses are capable of transporting 10 to 24 passengers. The Type B school bus model is considered a step-van configuration, weighing more than 10,000 lbs. GVWR, with similar passenger capacities as Type A school buses. Type C school buses are considered heavy-duty vehicles weighing more than 14,000 lbs GVWR, with a front-mounted engine, capable of transporting between 42 and 72 passengers. Finally, the Type D school bus model is considered a "transit style bus" with a flat frontal area, and engine located either at the front or rear of the bus. These school buses can accommodate up to 90 passengers.

School buses are covered by a various regulations that impact engine and vehicle manufacturers as well as fleet owners. Specifically, CARB's Low-Emission Vehicle Regulation applies to school bus engines/vehicles weighing 14,000 lbs GVWR or less, and heavier school buses are covered by CARB's on-road heavy-duty engine emission standards. In addition, CARB's Truck and Bus Regulation affects school bus fleet owners, requiring them to install particulate filters on diesel-powered school buses weighing more than 14,000 lbs GVWR in accordance with a phase-in schedule. In addition, school bus fleets can obtain Truck and Bus Regulation compliance credit through the use of alternative-fuel vehicles (CNG, LNG, or electric).

Locally, SCAQMD's Rule 1195 affects school bus fleet operators by requiring the purchase of alternative-fuel school buses when a fleet owner decides on its own to replace or add to its vehicle fleet. To-date, a large number of the school buses operated by public school districts have been replaced with natural gas-powered buses. There have been various incentive programs to promote the use of low-emissions technology for the school bus sector – the largest program is the Lower Emission School Bus Incentive Program. Using state, federal and local matching funds, a total of 1,021 pre-1987 diesel school buses have been retired and replaced with 935 new CNG-powered school buses and 86 low-emitting diesel buses in the South Coast Air Basin. In addition, this incentive program has funded the installation of particulate filters in 3,425 school buses (1994 model-year and newer).

Passenger Locomotives

The four-county region of the Basin is serviced by a network of intercity (Amtrak) and commuter (Metrolink) heavy rail networks. Emissions are produced by diesel-electric locomotives. Diesel-electric locomotives have a large diesel engine (main traction engine) for generating electric power which in turn drives electric motors in each axle. Passenger locomotives also have auxiliary engines that provide power for lighting, utility power, heat and air conditioning the passenger cars. Passenger locomotives are forecast to contribute approximately 4.5 tons per day or 1.5% of NOx emissions in the South Coast Air Basin in 2023. In 2015, U.S. EPA Tier 4 standards take effect for new locomotive engines which are 90% lower in NOx and PM emissions than pre-control engines. Due to the long life of locomotives (>30 years), however, it will take many years to fully benefit from Tier 4 engines. In addition, Tier 4 locomotive NOx standards are substantially less stringent than Tier 4 off-road NOx standards, providing an opportunity to further strengthen locomotive emission standards in the future and to introduce alternative near-zero or zero-emission technology.

Commercial Aircraft

Commercial aircraft emission inventories combine passenger aircraft and dedicated cargo aircraft. CARB estimates that 87% of commercial aircraft emissions are attributable to passenger transport by commercial airlines. In addition, general aviation aircraft, primarily piston engine powered, contribute about 2% (0.3 tons per day) of aircraft emissions. Based on the South Coast Air Basin aircraft NOx emission forecast for 2023, 13.6 tons per day or 4% of NOx emissions in 2023 are attributed to aircraft emissions. Aircraft engine emissions are regulated by U.S. EPA, which harmonized emission standards in 2005 with the International Civil Aviation Organization's Committee on Aviation Environmental Protection (ICAO-CAEP). Aircraft have a long service life (typically, greater than 30 years) although there is an economic incentive to retire older aircraft due

to better fuel efficiency from new aircraft. The most stringent currently adopted standard took effect in 2014 and provided approximately 50% cleaner NOx emissions than engines manufactured before 2005.

Commercial Harbor Craft

Approximately 65 ferries and excursion vessels transport passengers within the District. They are forecast to emit 3.3 tons per day NOx in 2023. These vessels generally have multiple propulsion and auxiliary engines with total power between several hundred and several thousand horsepower. Essentially all of these vessels are currently diesel powered. Activities include scheduled trips to Catalina Island, whale watching, dinner cruises, and sightseeing trips. These harbor craft are subject to new engine regulations that now require Tier 3 standards for engines less than 800 hp and Tier 4 standards, the most stringent currently adopted, for engines greater than 800 hp. In addition, excursion vessels and ferries are subject to the CARB Commercial Harbor Craft regulation which specifies turnover of older marine engines for new engines on a schedule that essentially will leave all regulated harbor craft with Tier 2 or cleaner engines by 2023.

Ocean-Going Vessels

Ocean-going vessels transporting passengers, i.e., cruise ships, which primarily run on diesel fuel, contribute a significant portion of NO_x, PM, greenhouse gas, and toxic emissions particularly in coastal regions in and around shipping ports. These emissions contribute to on-shore air quality problems representing approximately 3.5 tons per day total NOx emissions in the South Coast Air Basin for 2023. NOx emissions produced by main propulsion and auxiliary engines when the vessels are transiting within the South Coast Air Basin and the auxiliary engines when the vessels are anchored or docked at a port in the South Coast Air Basin are included in the emission inventory. CARB has introduced low sulfur fuel standards which reduced PM and SOx emissions but not NOx emissions. Lower NOx emission propulsion and auxiliary engines are being introduced in compliance with the International Maritime Organization (IMO) standards but due to the long useful life of ocean-going vessels, these standards will have limited beneficial effect by 2023. Additional retrofit control technologies are being explored by the San Pedro Bay Ports Technology Advancement Program (TAP) Advisory Group, which is comprised of CARB, U.S. EPA, SCAQMD, and the ports of Los Angeles and Long Beach. The ports are also exploring the use of dock-side or barge-mounted capture and treatment systems for auxiliary engine emissions which represent a significant fraction of the marine vessel NOx emissions, particularly near the ports.

OTHER PLANNING EFFORTS AFFECTING THE PASSENGER TRANSPORTATION SECTOR

SB 375 Sustainable Communities and Climate Protection Act of 2008

The Sustainable Communities and Climate Protection Act of 2008 supports California's climate action goals to reduce greenhouse gas (GHG) emissions through coordinated transportation and land use planning with the goal of more sustainable communities.

Under the Sustainable Communities Act, CARB sets regional targets for GHG emissions reductions from passenger vehicle use. In 2010, CARB established these targets for 2020 and 2035 for each region covered by one of the State's metropolitan planning organizations (MPO), and CARB will periodically review and update the targets as needed.

Each MPO must prepare a Sustainable Communities Strategies (SCS) as an integral part of its Regional Transportation Plans (RTP). The SCS contains land use, housing, and transportation strategies that, if implemented, would allow the region to meet its GHG emission reduction targets. Once adopted by the MPO, the RTP/SCS guides the transportation policies and investments for the region. CARB must review the adopted SCS to confirm and accept the MPO's determination that the SCS, if implemented, would meet the regional GHG targets. If the combination of measures in the SCS does not meet the regional targets, the MPO must prepare a separate "alternative planning strategy" (APS) to meet the targets.

SCAG Regional Transportation Plan

The Southern California Association of Governments (SCAG) prepares the RTP, with the primary goal of increasing mobility in the region. An additional goal includes increasing the region's sustainability and reduction in greenhouse gas emissions, officially incorporated into the RTP as the SCS. The most recent RTP/SCS is the 2012 – 2035 RTP/SCS, and was adopted by SCAG on April 12, 2012. (http://www.scagrtp.net).

The 2012 RTP/SCS includes elements that would reduce emissions from transportation sources, improve public health, and help the region meet national ambient air quality standards. Specifically, the 2012 RTP incorporates widespread utilization of zero- and near-zero emission transportation technologies in the 2023 to 2035 timeframe and various mechanisms to incrementally achieve this objective. This approach is intended to generate numerous co-benefits, including energy security, cost certainty, increased public support for infrastructure, GHG reduction, and economic development.

Federal Surface Transportation Reauthorization

Every five years the federal government usually adopts legislation broadly categorized as "federal surface transportation legislation" that authorizes and funds transportation related infrastructure, impacting the federal highway system, transit system, and related local infrastructure projects. The latest federal surface transportation legislation enacted by Congress is the "Moving Ahead for Progress in the 21st Century," known as MAP-21. It was adopted in 2012 with expiration at the end of 2014. The short expiration date resulted from lack of funding primarily due to shortfalls in vehicle fuel taxes ($/gallon), imposed at the pump, that were established approximately 20 years ago and never increased over time to offset the effects of lower gasoline consumption from increased fuel economy. At the end of 2014, MAP-21 was extended to May 2015 as a temporary measure, and federal surface transportation legislation targeting up to a six-year time frame is currently being developed.

As a result of the authorization and funding components, surface transportation legislation establishes policy on the priority of highway and related infrastructure projects that are federally supported. This legislation provides a mechanism by which the federal government can participate in the funding of critical infrastructure projects, that support the widespread deployment of near-zero and zero-emission vehicle technologies in the SCAQMD region. As identified previously, the deployment of these technologies is critical for ambient air quality standard attainment as reflected in the 2012 AQMP.

Caltrans California Transportation Plan 2040

The California Transportation Plan (CTP) provides a long-range policy framework to meet California's future mobility needs and reduce greenhouse gas emissions. The CTP defines goals, performance-based policies, and strategies to achieve our collective vision for California's future statewide, integrated, multimodal transportation system. The plan envisions a sustainable system that improves mobility and enhances the quality of life. While the plan focuses on sustainable transportation, the plan identifies key mobility and technology strategies that can potentially lead to criteria pollutant emission reduction benefits. A draft CTP (CTP 204) was released in March 2015 for public comments. (http://www.dot.ca.gov/ hq/tpp/californiatransportationplan2040/)

APPENDIX B

POTENTIAL EMISSION REDUCTION TECHNOLOGIES AND EFFICIENCY MEASURES

POTENTIAL EMISSION REDUCTION TECHNOLOGIES AND EFFICIENCY MEASURES

Provided in this Appendix are discussions on emission control technologies that have led to criteria pollutant emission reductions in the passenger transportation sector historically and potential technologies to further reduce emissions including greater deployment of zero-emission and near-zero emission advanced technologies. In addition, operational efficiency measures will have an important role in reducing not only congestion, but also criteria pollutant and greenhouse gas emissions.

PASSENGER TRANSPORTATION SECTOR

Light- and Medium-Duty Vehicles

In January 2012, CARB adopted the Low-Emission Vehicle (LEV) III Program, commonly called the Advanced Clean Car (ACC) Regulation. This regulation incorporates a coordinated approach to meet criteria pollutant and climate air quality goals. Incorporated into this regulatory package are more stringent low-emission vehicle standards for vehicles weighing up to 14,000 lbs. GVWR, with a major objective to reduce the fleet average emissions of passenger cars, light-duty trucks, and medium-duty passenger vehicles to super ultra-low emissions levels by 2025. This program element will yield significant emission benefits for the transportation vehicle sector, and will lead to advanced gasoline and diesel technologies applied to almost all vehicle product lines for this sector, resulting in an overall 75% reduction from current average emission levels. It should be noted that this control program will also reduce GHG emissions by 34% in 2025 for this vehicle sector.

Another component of the ACC Program is the Zero-Emission Regulation. This regulation will require manufacturers to commercialize increasing numbers of plug-in hybrid electric vehicles and zero-emission vehicles for the 2018 to 2025 timeframe. CARB projects that by 2025, approximately 15% of new vehicles sales will consist of a mix of fuel cell vehicles, battery-electric vehicles, and plug-in hybrid vehicles. The Zero-Emission Regulation in combination with the LEV III Regulation puts California on a trajectory to generate the needed GHG reductions from this sector to contribute to the overall state attainment of an 80% reduction in GHG emissions from 1990 levels by 2050.

As part of the ACC Program, CARB developed market penetration forecasts of zero- and near-zero vehicle technologies. Figure B-1 illustrates one scenario depicting new vehicle sales statewide for zero- and new-zero technologies through 2025. In addition, Figure B-2 shows one possible zero- and near-zero vehicle penetration scenario through 2050 for GHG target attainment, which builds upon the 2025 new vehicle sales forecast shown in Figure B-1.

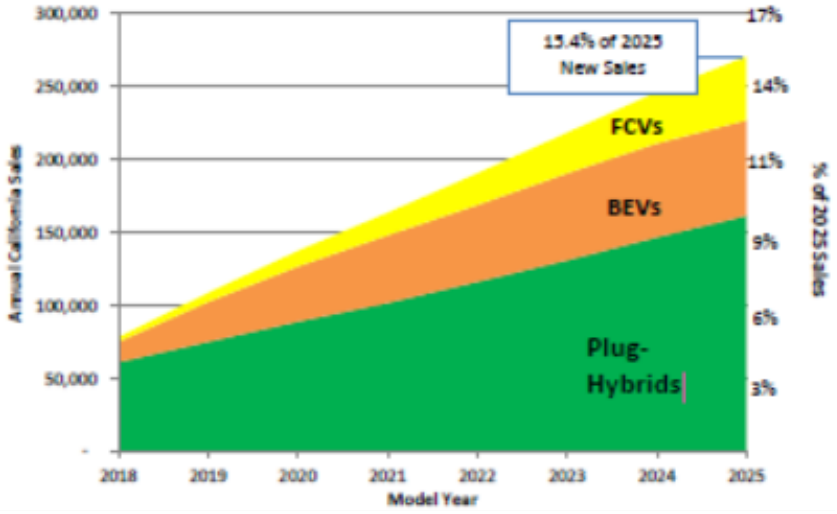


FIGURE B-1

Expected ZEV Regulation Compliance for 2018 to 2025 Model Years[4]

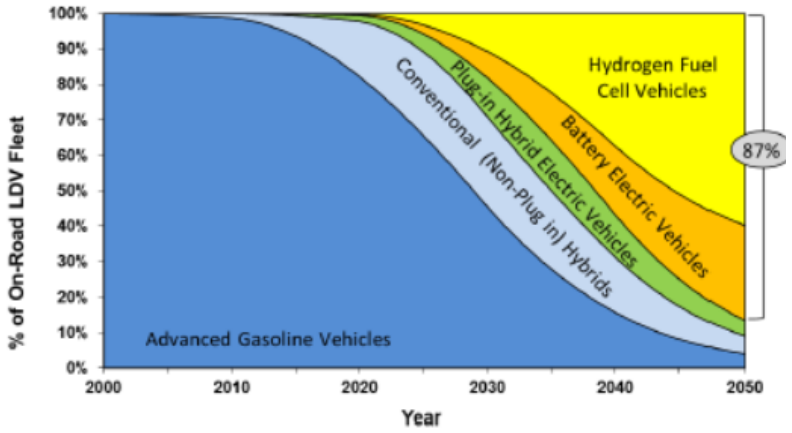


FIGURE B-2

On-Road Passenger Car Scenario to Meet 2050 Goal

[4] Advanced Clean Cars Summary, California Air Resources Board, January 2012

The final component of the ACC Program is the Clean Fuels Outlet Regulation. An amendment to this regulation was proposed as part of the ACC Program, which would have required construction and operation of alternative fuel outlets for a particular fuel, triggered when specific numbers of alternative fuel vehicles are commercially deployed. The Clean Fuels Outlet requirements have been placed on hold to allow for funding opportunities to expand the network of hydrogen refueling stations throughout California.

Current on-road vehicles powered by spark ignition engines (e.g., gasoline and natural gas engine) use a portfolio of on-board emission reduction technologies to meet emission standard requirements. To reduce exhaust emissions from internal combustion engines, three-way catalytic converters, on-board computer hardware, and sensors measuring engine operational parameters and inputting this information into the on-board computer hardware are used to simultaneously reduce tailpipe hydrocarbon, NOx, and carbon monoxide emissions. In addition, exhaust gas recirculation (EGR) valve and other engine-based technologies such as improved combustion-chamber and ignition system design are used to further reduce exhaust emissions.

To comply with CARB low-emission vehicle requirements, including the Advanced Clean Cars Program requirements, vehicle manufacturers have significantly improved these technologies resulting in exhaust emission reductions greater than 95% compared to uncontrolled levels (MECA, 2013). Examples of these improvements include dual oxygen sensors, adaptive fuel control systems, sequential multi-point fuel injections, close-coupled catalysts, increased catalyst loading in catalytic converters, electrically-heated catalysts, and full electronic EGR.

As mentioned previously, another major source of vehicle pollution is fuel evaporative emissions (gasoline vehicles). These emissions are addressed by on-board carbon canisters that adsorb evaporative emissions and subsequently release these emissions into the engine for combustion. Examples of improvements needed to meet the latest evaporative emission standards include low permeation polymer fuel tanks, multilayer co-extruded hoses, low permeation seals and gaskets, and high working capacity activated carbon canisters. These improvements have substantially reduced evaporative emissions from gasoline vehicles.

With regard to compression ignition engines (diesel engines), current exhaust aftertreatment control technologies include urea-based selective catalytic reduction (SCR) systems, catalyzed diesel particulate filters, diesel oxidation catalysts, ammonia slip catalysts, as well as engine based technologies such as cooled EGR, variable geometry turbochargers, and high pressure injection (CARB, 2014). Depending on system design SCR systems can reduce NOx emissions greater than 95% (MECA, 2014). These systems can also reduce hydrocarbon and PM emissions by up to 80%

and 20 to 30%, respectively. Catalyzed diesel particulate filters can additionally reduce PM emissions more than 90% (MECA, 2014).

Alternative-Fuel Vehicles, Biofuels, Hybrid, and Dedicated Zero-Emission Technologies

Alternative fuel vehicles and biofuels in the light- and medium-duty vehicle sector (up to 14,000 lbs. GVWR), follow CARB low-emission vehicle regulations, meeting the same corresponding emission standards as conventional fuels including gasoline and diesel. Because these emission standards are so stringent, requiring advanced engine-based emission control and exhaust aftertreatment technologies, emission reduction potential for both categories of fuels are similar. It should be noted that hybrid-electric, battery electric, and fuel cell vehicles will generate additional emission reductions depending on percent of operation in all-electric or zero-emission mode.

Fuel cell technology can be utilized in all types of vehicle models; however, according to vehicle manufacturer input received by CARB, fuel cell vehicles will most likely be used in mid-sized sedans and larger sized vehicles such as trucks and sport utility vehicles. Battery electric vehicles will most likely be used in small vehicle platforms, in urban locations where fewer batteries need to be used. Plug-in hybrid vehicles will most likely be used as a bridge from conventional hybrid electric vehicles to battery electric and fuel cell vehicles. Plug-in hybrid vehicles have the advantage of adequate vehicle range for all applications; however, there is currently a tradeoff between longer all-electric range and associated costs. CARB indicated that in order for plug-in hybrid vehicles to achieve needed GHG reductions, advanced low carbon biofuels need to be used to meet the 2050 goal. It is uncertain whether biofuel fuel use in plug-in hybrid applications will be utilized in significant quantities in the long term without additional incentives given that conventional gasoline fuel remains the dominant choice to power these vehicles when not operating in all-electric mode.

Transit and School Buses

The same general principles that apply to lighter vehicles also apply to heavy-duty passenger shuttles, transit buses, and school buses (14,000lbs. GVWR and greater), regarding the need to implement advanced engine based and exhaust aftertreatment technologies to meet emission standards for both alternative- and conventional-fuel vehicles. Similarly, the potential for additional emission reductions also exists for operation in zero-emissions mode for dedicated and hybrid technologies. However, there is the potential for significant additional NOx emission reductions for both diesel and natural gas heavy-duty engines.

Research is underway to further reduce NOx levels of current diesel and natural gas-powered heavy-duty vehicles to near-zero levels, specifically targeting a 90% NOx reduction from the current level

of 0.2 g/bhp-hr. This research is being conducted separately by CARB under a contract with Southwest Research Institute. Under funding from the SCAQMD, California Energy Commission, and Southern California Gas Company, several natural gas engine manufacturers are developing the next generation natural gas engines to meet a 0.02 g/bhp-hr exhaust emissions level in the next several years. CARB research efforts focus on the development of emission control technologies that could be used to further reduce NOx emissions from diesel and natural gas engines. The ultimate goal of the work being conducted under sponsorship from the SCAQMD, CEC, and Southern California Gas Company is to have commercialized natural gas engine products as early as possible. Further improvements in engine and aftertreatment control technologies will be investigated as part of these research projects. It may be possible to extrapolate the results of this research for application with other fuels of interest (e.g., renewable diesel, biofuels, and renewable natural gas) to further address criteria pollutant and GHG emission reduction goals.

Battery electric and hybrid-electric technologies can also play an important role in generating needed emission reductions in heavy-duty passenger transportation applications (includes urban buses, school buses, other buses, and motor homes). Similar limitations associated with the use of these technologies in light- and medium-duty passenger transportation applications are also applicable for heavy-duty vehicle applications.

Passenger Locomotives

The most stringent locomotive standard is Tier 4 and takes effect in 2015. This standard is expected to be met through engine modifications and without aftertreatment technologies. These engine modifications include high rate cooled EGR, two stage turbochargers, and improved fuel injection systems. These technologies were previously adopted in automotive and truck diesel engines. Also due to the long service life of locomotives, modification of in-use engines should also be considered. These in-use engine modifications may include addition of dual fuel systems, engine overhaul kits (injectors, fuel pumps, cylinder heads, turbochargers, manifolds, etc.) or reprogrammed engine management computers that reduce emissions. Modified in-use engines are unlikely to meet Tier 4 standards and the emission reduction from these modifications will vary depending on the technology utilized and the original engine design.

Further emission reductions beyond Tier 4 could be achieved using aftertreatment technologies such as oxidation or three-way catalysts, diesel particulate filters, and selective catalytic reduction (SCR) systems incorporated into Tier 4 engines. These technologies may also be retrofitted to in-use engines where technically feasible. Diesel oxidation catalysts do not reduce NOx but can reduce hydrocarbons by 50% and particulates by 20-25%. Three-way catalysts for stoichiometric spark ignition natural gas engines can reduce hydrocarbon, carbon monoxide, and NOx by 90% but

are not effective on particulates or for NOx reductions in lean burn gas or diesel engines. Diesel particulate filters do not reduce NOx, but can reduce particulate emissions by more than 90% by mass and, depending on design, may also reduce hydrocarbons. SCR systems can reduce NOx by 90% using a reductant such as urea, commercially available as Diesel Exhaust Fluid, and in some cases, can provide moderate reductions in particulate emissions. Aftertreatment systems do not reduce CO2 emissions.

Alternative power sources include electric hybrid, fuel cell, battery-electric with tender car, and catenary electric systems. Hybrid systems provide emission reductions of criteria and GHG emissions of 20-30% when used in applications with opportunities for energy recovery such as commuter service with multiple stops and/or hilly terrain. Alternative power sources have been commercialized for on-road vehicles, but have not been extensively adopted for passenger locomotives in the region; due in part, that the local commuter rail agencies, Metrolink and Amtrak, share their operations on freight rail tracks owned by the Class I railroads.

Alternative fuels include dedicated natural gas, dual fuel systems (diesel ignition with natural gas), propane, biodiesel, and hydrogen. The use of these fuels has the potential to further reduce NOx emissions with appropriate engine development similar to their on-road counterparts. The use of alternative fuels also reduces particulate and CO2 emissions compared to diesel or gasoline. For passenger locomotives, the most likely alternative fuel will be natural gas, either liquefied or compressed due to the lower fuel cost.

There are opportunities for combining technologies to gain greater emission reductions. For example, natural gas-hybrids with high-efficiency aftertreatment systems combine low carbon emissions of natural gas engines, energy savings of hybrids, and low NOx emissions from advanced aftertreatment.

Efficiency measures include improved route scheduling, addition of double tracks and sidings to reduce congestion at traffic choke points, and steps to reduce accidents and equipment downtime.

Ocean-Going Vessels (OGVs)

OGVs produce emissions from main (propulsion) engines as well as auxiliary engines (electrical generators). Passenger-carrying OGVs are cruise ships. Cruise ships have particularly large auxiliary engines to provide shipboard power while docked and at sea. New vessels built beginning in 2016 must have engines capable of meeting Marine Category 3 Tier 3 standards when operating in Emission Control Areas (ECAs) established by the International Maritime Organization (IMO). These areas include waters off the United States and Canada. Technologies required to meet these

standards include engine modifications/improvements such as common rail injection, electronic engine monitoring/control, slide valve injectors, advanced injector orifice design, turbocharging, and cooled EGR. The controls individually, do not necessarily achieve Tier 3 standards, but enable use of aftertreatment seawater scrubber or SCR technology, which will. Tier 3 standards vary by engine horsepower and design but typically reduce NOx by approximately 80% compared to a fleet average of Tier 1.

Liquified natural gas (LNG) is being considered as a fuel for ocean-going vessels to reduce both fuel cost and emissions. LNG-powered vessels are currently deployed in several regions around the world. Some of the LNG-powered vessels are meeting Tier 3 NOx emissions levels. However, LNG-powered cruise vessels have not been deployed. Combined with aftertreatment, LNG-powered engines have the potential to achieve NOx levels lower than Tier 3 diesel engines. In addition to LNG fuel, emulsified fuels have been considered as an alternative or supplement to EGR for NOx reduction.

Cruise ships are also subject to the CARB At-Berth regulation to reduce fleet emissions from auxiliary engines when docked. This regulation is generally satisfied by using shore power instead of ship-board power although alternative capture and treatment systems can be used if shown to provide equivalent reductions to shore power. At-berth auxiliary emissions from cruise ships using shore power or capture and treatment systems are reduced about 90%. Capture and treatment systems can also be applied to boiler emissions which are not regulated by the At-Berth Regulation.

IMO standards require 30% improvement in vessel fuel efficiency by 2025 as a means of reducing GHG from ocean-going vessels. Reductions in fuel consumption will also lead to proportional reductions in NOx emissions. Several alternative technologies can contribute to that goal: fuel cells, wind power, hull coatings, hull design, propeller optimization, and engine heat recovery. Vessel trip optimization and vessel speed reduction also contribute to reduced fuel consumption and emissions.

Commercial Harbor Craft

Commercial harbor craft used in passenger transport include ferries and excursion vessels. The boats operate primarily in or from the Ports of Los Angeles and Long Beach. Commercial harbor craft have a long useful life and turnover to newer engines or vessels is slow. Most commercial harbor craft have engines less than 800 horsepower, for which the most stringent standard is Tier 3 (5.4 g/bhp-hr NOx) for Category 1 and 2 marine engines. Engines greater than 800 horsepower, used mainly on ferries, are subject to the Tier 4 standard (1.3 g/bhp-hr NOx) for Category 1 and 2 marine engines, which may need SCR and possibly diesel particulate filters. Marine emission

standards are not as stringent as off-road standards of the same tier. As such, additional emission reductions could be obtained by introducing lower emission standards to force new engine designs or use of SCR aftertreatment. Promising alternative technologies include fuel cells and hybrid-diesel or hybrid-natural gas engines. Hybrid vessels have been shown to reduce overall emissions approximately 30%. Fuel cells and battery systems can be used for auxiliary power which would reduce emissions.

Improvements in vessel efficiency will also lead to proportional reductions in NOx emissions. Several alternative technologies can contribute to that goal: hull coatings, hull design, and propeller optimization.

Commercial Aircraft

Lower NOx emissions and fuel consumption will be obtained through improved jet engine combustor, turbine, and air frame designs. The improvements are driven by international and U.S. EPA emission standards for aircraft engines. Research supporting these improvements is guided by the Federal Aviation Administration (FAA) Continuous Lower Energy, Emissions, and Noise (CLEEN) Program. In efforts to reduce fuel consumption, many airports provide landside electrical power to run the auxiliary power units (APUs) on aircraft. In addition, several airlines are testing biofuels to reduce particulate, GHG emissions, and potentially, NOx emissions. Fuel cell technologies are also being investigated for auxiliary power as are wing and airframe designs to improve flight efficiency.

TRANSPORTATION SYSTEM EFFICIENCY MEASURES

While improvements in existing control technologies and increased deployment of near-zero and zero-emission vehicles will lead to reduced emissions, improvements and enhancements to the transportation system in terms of reduced roadway congestion can result in reduced idling emissions and vehicle miles traveled when considering alternative mode choices (i.e., ridesharing, public transit, commuter rail, and active transportation).

The state of technology for providing real-time information is continuing to grow and become available to commuters and regional traffic managers. Intelligent transportation systems (ITS) cover a broad range of information communications and control technologies that improve the safety, efficiency, and performance of the surface transportation system. ITS technologies provide the traveling public with accurate, real-time information, allowing them to make more informed and efficient travel decisions.[5] Such technologies will enhance current traffic control and

[5] Caltrans (2015). Draft California Transportation Plan 2040. March 2015.

management systems, incident management systems, and advance traveler information systems, which potentially can result in reducing emissions. In addition, greater use of sophisticated technologies such GPS (global positioning systems), wireless connected vehicles, and intelligent transportation systems can potentially lead to additional criteria pollutant reductions.

Land use decisions by local governments and SCAG can have a beneficial impact on the transportation system through coordinated planning with the county transportation commissions and SCAG. For more information, see SCAG's 2012 – 2035 RTP/SCS.

(http://www.dot.ca.gov/hq/tpp/californiatransportationplan2040/)

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SOUTH COAST
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Goods Movement

2016 AQMP WHITE PAPER

OCTOBER 2015

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INTRODUCTION

Purpose and Objective

Despite the significant progress made in reducing emissions that has resulted in substantial improvements in air quality, additional emission reductions will be necessary to attain state and federal ambient air quality standards for ozone and fine particulate matter in the South Coast Air Basin. This white paper is intended to assist the public, stakeholders, and the SCAQMD in understanding key facts and policy issues related to the development of the 2016 South Coast Air Quality Management Plan (AQMP). The paper includes information regarding criteria pollutant emissions that are associated with the goods movement sector, which includes (for the purposes of this paper) on-road heavy-duty trucks; freight locomotives; aircraft; marine vessels such as oceangoing vessels and commercial harbor craft; and cargo handling equipment.

To illuminate policy choices relevant to the AQMP, the paper describes a number of potential scenarios for reducing emissions from the goods movement sector to support attainment of state and federal ozone and particulate matter standards. The emission reduction scenarios highlight emission source categories where emission reductions could potentially be achieved more readily compared to other emission source categories in this sector. In addition, if some emissions source categories are able to go beyond the overall emission reduction target needed for attainment of the air quality standard, the additional reductions would help compensate for other emissions source categories where reductions are more challenging to achieve. The scenarios do not reflect any control strategies or suggest any control approach. As such, this paper does not propose specific rules or other control measures, but provides information to assist in crafting control measures as part of the 2016 AQMP development process. This paper does discuss the potential for achieving additional emission reductions through greater deployment of cleaner vehicles that have emission levels below the emission standards established in existing state and federal regulations, advanced emission control technologies, use of alternative and renewable fuels, and the use of operational efficiency measures such as intelligent transportation systems, connected trucks, enhanced routing efficiencies, and vessel sharing.

In a separate effort, the SCAQMD staff has been working with the California Air Resources Board (CARB) and the Southern California Association of Governments (SCAG) to prepare updated emissions inventories for the attainment demonstration of the federal ozone and fine particulate air quality standards. However, the new emission inventories were not available to perform the analyses described above. Therefore, in order to develop this white paper to help illuminate policy choices in the development of the 2016 AQMP, the emission inventories from the 2012 AQMP are

used to perform the analyses described above. The initial observations and recommendations in this white paper are relevant regardless if a newer set of emissions inventories are used since the analyses examine the relative differences between the various emissions reduction scenarios since it is not the intent of this white paper to propose specific emissions control levels to meet federal air quality standards. That objective is part of the overall development of the 2016 AQMP.

Document Outline

This white paper provides background information on the base year and future year volatile organic compounds (VOC) and oxides of nitrogen (NOx) emissions inventories associated with the various goods movement emissions source categories. The following sections present brief descriptions of the associated air quality impacts, emission reduction progress, attainment challenges, and connections to climate change programs. Emission reduction scenario analyses were conducted to examine the range of emission reductions needed for each source category to help meet the ozone air quality standards by 2023 and 2032. The results of the scenario analysis are presented with initial observations of the issues and questions raised from the analysis. In addition, operational efficiencies are discussed. Finally, recommendations are provided to help frame the discussions in the development of the 2016 AQMP.

A discussion of current regulatory programs and other planning efforts is provided in Appendix A. Information on potential emission reduction technologies and efficiency measures is discussed in Appendix B.

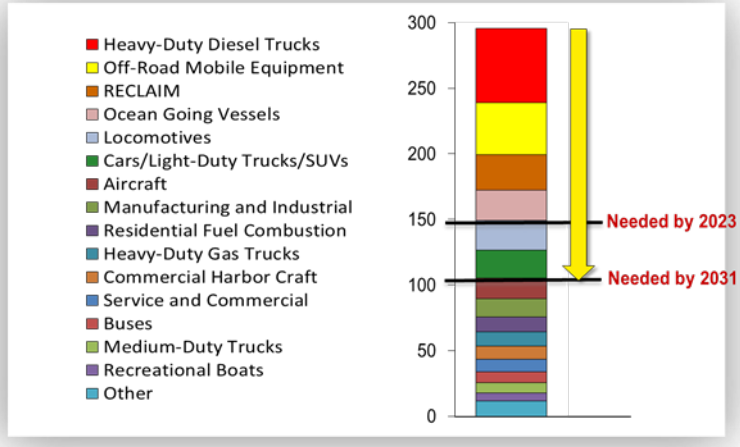
BACKGROUND

The South Coast Air Quality Management District (SCAQMD or District) consists of an area of approximately 10,743 square miles consisting of the South Coast Air Basin, and the Riverside County portion of the Salton Sea Air Basin (SSAB) known as the Coachella Valley Planning Area. The South Coast Air Basin, which is a subregion of the District's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The region is inhabited by more than 16 million people, representing about half of California's population. In addition, the SCAQMD region is projected to grow to approximately 18 million people by 2030, and this growth is expected to occur primarily in Riverside and San Bernardino Counties. This situation is expected to lead to a greater imbalance of jobs and housing in the region, increasing transportation mobility and air quality challenges because of increased travel demand requirements and economic growth.

The SCAQMD region includes approximately 21,000 miles of highways and arterials, 450 miles of passenger rail, and six commercial airports. It is estimated that about 90% of trips in the SCAQMD make use of the highway/arterial system, utilizing various transportation modes including automobile, transit, and active transportation. (SCAG, 2012). The nation's largest marine ports are located in the South Coast Air Basin. Close to 40% of the containerized goods that enter the Ports of Los Angeles and Long Beach are destined to areas outside of the South Coast Air Basin. As such, South Coast Air Basin residents are the recipients of the emissions associated with the movement of goods across the region that benefits the rest of the nation.

Attainment Challenge

Meeting U.S. Environmental Protection Agency (EPA) national ambient air quality standards for ozone and fine particulate matter will require additional NOx emission reductions in the South Coast Air Basin. Meeting state standards will be even more challenging. Preliminary ozone air quality analysis currently underway in the development of the 2016 AQMP indicates that NOx emissions will need to be reduced by approximately 50 percent in 2023 and 65 percent in 2031 (beyond projected 2023 baseline emissions). Note that the percentages will likely change slightly as the emission inventories are updated with more recent economic and demographic forecast information from the Southern California Association of Governments (SCAG) as part of the development of the 2016 AQMP. Figure 1 shows graphically the overall NOx emission reductions needed to attain the 8-hour ozone air quality standards in 2023 and 2031 and the major NOx emission sources contributing to the ozone air quality problem. This is especially challenging given that among the largest contributors to NOx emissions are mobile sources that are primarily regulated by the state and/or federal governments. Since many mobile sources have already achieved over a 90% reduction in NOx emissions, attainment of the ozone standards will require wide-scale deployment of not only new vehicles meeting the tightest tailpipe emissions standards, but also commercialization and deployment of technologies that achieve zero or near-zero emissions.



(Source: Preliminary Draft 2023 Baseline NOx Emissions Inventory, July 2015)

FIGURE 1

Needed NOx Emission Reductions to Achieve
Federal 8-Hour Ozone Ambient Air Quality Standards

Climate Challenge

The SCAQMD Governing Board (Board) has recognized the nexus between technologies that minimize climate impacts and technologies that reduce criteria pollutant emissions, since many of the same technologies simultaneously address both of these challenges. As such, the SCAQMD Governing Board has developed policies and guiding principles which include the coordinated development of criteria air pollutant strategies that have co-benefits in reducing greenhouse gas emissions to make the most efficient use of limited resources and the time needed to deploy the necessary cleaner technologies. In September 2011, the Board adopted the SCAQMD Air Quality-Related Energy Policy. This policy was developed to integrate air quality, energy issues, and climate change in a coordinated manner. Various policies and actions were identified as part of this effort, some of which would specifically target goods movement emission sources. These include policies to promote zero- and near-zero emission technologies to the fullest extent feasible. Action items include studies to identify measures that reduce emissions from the goods movement sector, including incentivizing the early introduction of zero- and near-zero emission measures and identification of potential new funding mechanisms to support widespread penetration of such technologies within the goods movement sector.

Clearly, aggressive and coordinated technology development and deployment efforts are needed in the goods movement sector over the next eight to twenty years to meet ozone ambient air quality standards in 2023 and 2032, as well as greenhouse gas reduction goals between 2020 and 2050. To this end, in 2012, the SCAQMD, California Air Resources Board (CARB), and San Joaquin Valley Unified Air Pollution Control District jointly prepared a document titled: "Vision for Clean Air: A Framework for Air Quality and Climate Planning". This document evaluated various technology scenarios in the transportation sector that provide direction on future control strategies to concurrently achieve criteria pollutant standards and climate change goals. Major conclusions from that effort are that significant changes in transportation technologies are needed to more widely deploy hybrid and electric vehicles as well as increased renewable sources of energy for electricity production.

GOODS MOVEMENT RELATED EMISSIONS SOURCE CATEGORIES

Tables 1 and 2 provide a list of goods movement related emissions source categories for discussion purposes in this white paper. The on-road emissions source categories shown in Table 1 include light heavy-duty vehicles with gross vehicle weight rating (GVWR) from 8,501 lbs to 14,000 lbs, medium heavy-duty vehicles (14,001 to 33,000 lbs GVWR), and heavy heavy-duty vehicles with gross vehicle weight ratings greater than 33,000 lbs. Examples of light heavy-duty vehicles include cargo vans and heavier pickup trucks. Medium heavy-duty vehicles include single unit trucks, box trucks, vocation vehicles such as solid waste collection vehicles, crew trucks, and delivery trucks. Heavy heavy-duty vehicles include over the road tractor/trailer combinations. To provide greater insight into the emissions contributions of each source categories, the emissions are further disaggregated by weight category. For example, light heavy-duty trucks are separated into two categories: LHT1 (up to 8,501 to 10,000 lbs GVWR) and LHT2 (10,001 to 14,000 lbs GVWR).

TABLE 1

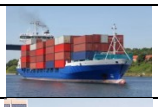
On-Road Goods Movement Vehicle Categories

Description/ Weight Class (lbs)	
Light Heavy-Duty Trucks 1 (8,501 – 10,000)	
Light Heavy-Duty Trucks 2 (10,001 – 14,000)	
Medium Heavy-Duty Trucks (14,001 – 33,000)	
Heavy Heavy-Duty Vehicles (Greater than 33,000)	

Table 2 shows the various off-road emissions source categories that are part of the goods movement sector. These categories include freight rail, ocean-going vessels, commercial harbor craft, and cargo handling equipment. For the purposes of this white paper, airport ground support equipment and transportation refrigeration units are discussed in the Off-Road Equipment White Paper.

TABLE 2

Off-Road Goods Movement Categories

Description/ Weight Class (lbs)	
Ocean-Going Vessels	
Freight Locomotives	
Commercial Harbor Craft	
Cargo Handling Equipment	

Air Quality Impacts of Goods Movement Sources

The adoption and implementation of control strategies specific to the goods movement sector have resulted in significant emissions reductions. However, additional emission reductions are needed in order to achieve federal ambient air quality standards for ozone and fine particulate matter.

NOTE: For the purposes of this white paper, the emissions inventories provided in this section and the subsequent sections are from the 2012 AQMP. The 2016 AQMP will contain updated emission inventories for use in demonstrating attainment of the federal ozone and fine particulate air quality standards.

Figures 2 and 3 show the VOC and NOx emissions in tons/day from the goods movement sector and their contribution to the total emissions for 2014, 2023, and 2032. For 2014, goods movement sources contribute approximately 4 and 42% to the total VOC and NOx emissions inventory. The percent contribution from goods movement sources to total VOC and NOx emissions in 2032 are 4 and 40%, respectively. Goods movement related emissions are more significant contributors to the total overall NOx emissions than to total VOC emissions.

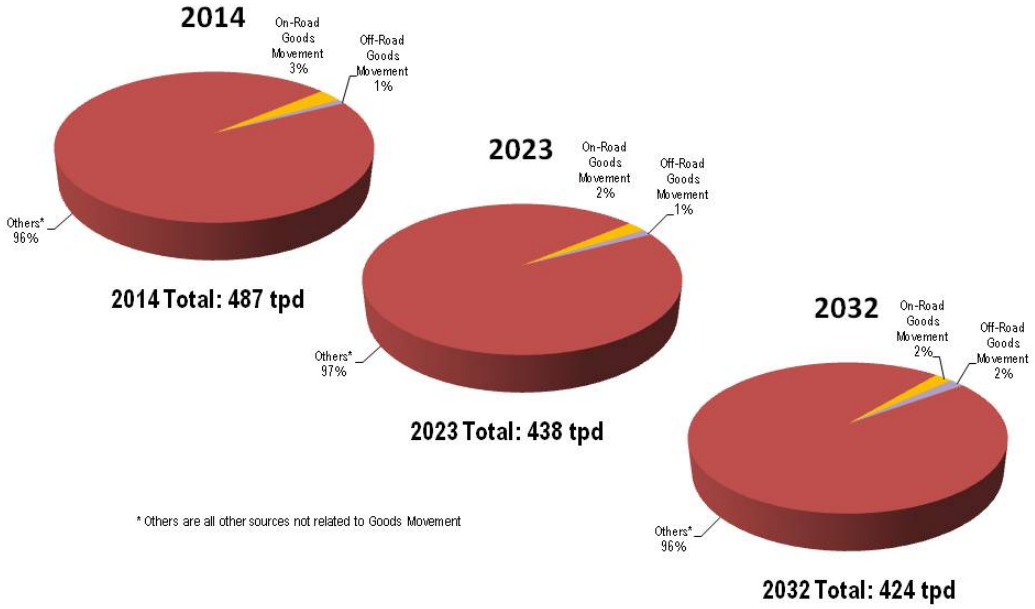


FIGURE 2

Goods Movement Sector VOC Emissions Contribution to the Total VOC Emissions for 2014, 2023, and 2032 (Source: 2012 AQMP)

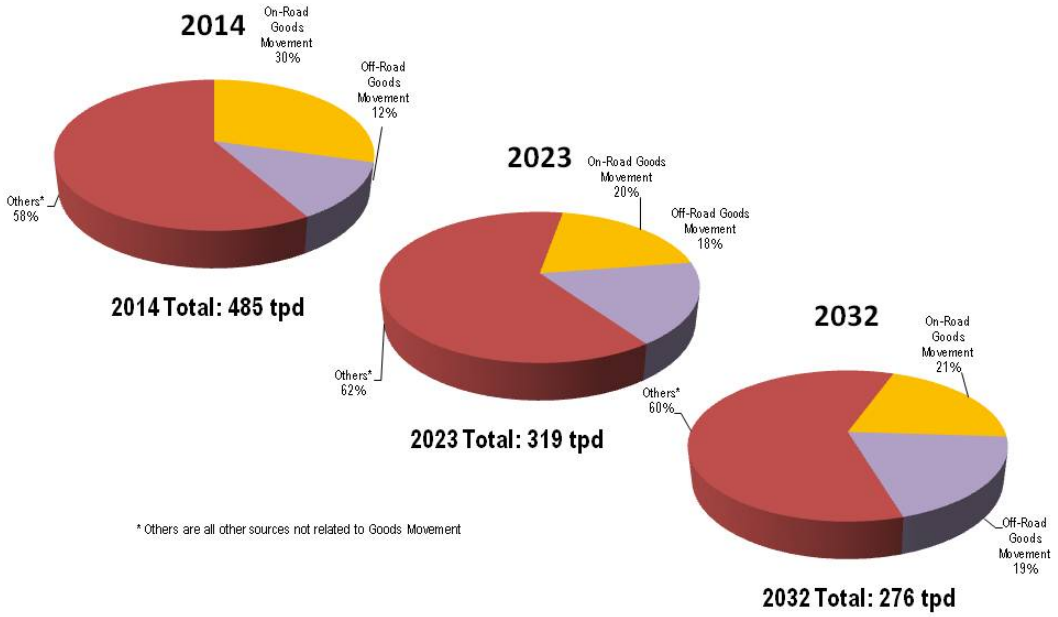


FIGURE 3

Goods Movement Sector NOx Emissions Contribution to the Total NOx Emissions for 2014, 2023, and 2032 (Source: 2012 AQMP)

Tables 3, 4, and 5 provide VOC and NOx emissions for the various emissions source categories in the goods movement sector for calendar years 2014, 2023, and 2032, respectively. In addition, the vehicle population and vehicle miles travelled are provided.

TABLE 3

VOC and NOx Emissions from On-Road Mobile Sources in the Goods Movement Sector for Calendar Year 2014 (Source: 2012 AQMP)

Source Category	Population	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Light HD Gas Trucks-1 (8501-10000 lb.)	274,553	11,988,596	6.58	15.01
Light HD Gas Trucks-2 (10001-14000 lb.)	29,078	1,261,404	0.66	1.49
Medium HD Gas Trucks (14001-33000 lb.)	23,181	960,000	1.18	2.43
Heavy HD Gas Trucks (>33000 lb.)	1,585	186,000	0.19	1.02
Light HD Diesel Trucks-1 (8501-10000 lb.)	86,598	3,679,455	0.56	17.48
Light HD Diesel Trucks-2 (10001-14000 lb.)	29,299	1,231,545	0.19	5.69
Medium HD Diesel Trucks (14001-33000 lb.)	80,061	4,101,000	0.94	23.30
Heavy HD Diesel Trucks (>33001 lb.)	72,411	8,216,000	3.29	76.43
Total	**596,766**	**31,624,000**	**13.59**	**142.85**

TABLE 4

VOC and NOx Emissions from On-Road Mobile Sources in the Goods Movement Sector for Calendar Year 2023 (Source: 2012 AQMP)

Source Category	Population	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Light HD Gas Trucks-1 (8501-10000 lb.)	315,011	13,400,938	4.76	10.93
Light HD Gas Trucks-2 (10001-14000 lb.)	32,770	1,407,062	0.39	1.00
Medium HD Gas Trucks (14001-33000 lb.)	26,017	1,046,000	0.54	1.08
Heavy HD Gas Trucks (>33000 lb.)	1,776	173,000	0.09	0.86
Light HD Diesel Trucks-1 (8501-10000 lb.)	101,566	4,150,710	0.39	9.74
Light HD Diesel Trucks-2 (10001-14000 lb.)	33,579	1,360,290	0.14	3.19
Medium HD Diesel Trucks (14001-33000 lb.)	89,766	4,609,000	0.40	4.99
Heavy HD Diesel Trucks (>33001 lb.)	90,511	10,412,000	3.06	31.39
Total	**690,995**	**36,559,000**	**9.77**	**63.18**

TABLE 5

VOC and NOx Emissions from On-Road Mobile Sources in the Goods Movement Sector for Calendar Year 2032 (Source: 2012 AQMP)

Source Category	Population	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Light HD Gas Trucks-1 (8501-10000 lb.)	350,806	14,536,676	3.80	7.82
Light HD Gas Trucks-2 (10001-14000 lb.)	36,613	1,547,324	0.31	0.77
Medium HD Gas Trucks (14001-33000 lb.)	29,088	1,128,000	0.47	0.71
Heavy HD Gas Trucks (>33000 lb.)	2,038	188,000	0.09	0.93
Light HD Diesel Trucks-1 (8501-10000 lb.)	112,978	4,531,254	0.28	4.73
Light HD Diesel Trucks-2 (10001-14000 lb.)	37,402	1,496,746	0.12	1.61
Medium HD Diesel Trucks (14001-33000 lb.)	100,084	4,998,000	0.45	5.42
Heavy HD Diesel Trucks (>33001 lb.)	108,911	12,278,000	3.57	34.41
Total	**777,921**	**40,704,000**	**9.09**	**56.40**

Tables 6 through 8 show the VOC and NOx emissions associated with the off-road emissions source categories in the goods movement sector for 2014, 2023, and 2032, respectively.

TABLE 6

VOC and NOx Emissions from Off-Road Mobile Sources in the Goods Movement Sector for Calendar Year 2014 (Source: 2012 AQMP)

Source Category	VOC (tons/day)	NOx (tons/day)
Ocean Going Vessels (Except Cruise Ships)	1.86	29.23
Freight Locomotives	1.47	17.27
Harbor Craft (Except Ferries/Excursion Vessels)	0.66	7.80
Cargo Handling Equipment	0.33	3.40
Aircraft (Estimated Air Cargo Portion)	0.46	1.81
Total	**4.78**	**59.51**

TABLE 7

VOC and NOx Emissions from Off-Road Mobile Sources in the Goods Movement Sector for Calendar Year 2023 (Source: 2012 AQMP)

Source Category	VOC (tons/day)	NOx (tons/day)
Ocean Going Vessels (Except Cruise Ships)	3.02	28.51
Freight Locomotives	1.03	17.77
Harbor Craft (Except Ferries/Excursion Vessels)	0.62	5.89
Cargo Handling Equipment	0.42	2.23
Aircraft (Estimated Air Cargo Portion)	0.59	2.03
Total	**5.68**	**56.43**

TABLE 8

VOC and NOx Emissions from Off-Road Mobile Sources in the Goods Movement Sector for Calendar Year 2032 (Source: 2012 AQMP)

Source Category	VOC (tons/day)	NOx (tons/day)
Ocean Going Vessels (Except Cruise Ships)	4.92	27.33
Freight Locomotives	0.74	14.72
Harbor Craft (Except Ferries/Excursion Vessels)	0.63	6.68
Cargo Handling Equipment	0.61	2.38
Aircraft (Estimated Air Cargo Portion)	0.72	2.25
Total	**7.62**	**53.36**

Emissions Reduction Progress to Date

On-Road Heavy-Duty Truck Emissions

As shown in Figure 4, on-road truck emissions of VOC, NOx, and PM have experienced reductions ranging from 46% to 89% from 1990 levels. (Note that during the 1990s NOx emissions increased since the first on-road heavy-duty engine exhaust emissions standard for NOx became effective in 1996.) These reductions have primarily relied upon development and commercialization of technologies that control emissions from internal combustion engines with most of the trucks meeting 2010 emissions standards equipped with aftertreatment control technologies such as selective catalytic reduction (SCR) and diesel particulate filters. While directly emitted PM emissions affect PM air quality and are associated with local air toxic exposure, directly emitted PM emissions do not have a direct impact on ozone formation. However, NOx and VOC emissions are precursors to both ozone and fine particulates.

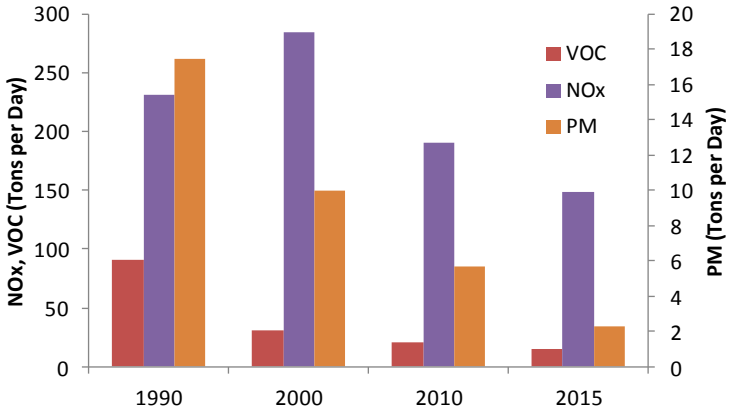


FIGURE 4

On-Road Heavy-Duty Truck Emissions in the South Coast Air Basin
(Source: EMFAC2011 with Vehicle Miles Traveled information from the 2012 AQMP)

The on-road heavy-duty trucks NOx and VOC emissions provided in Tables 3, 4, and 5 are shown graphically in Figures 5 and 6 for 2014, 2023, and 2032 calendar years to illustrate the projected trend in NOx and VOC emissions due to the impact of regulatory programs for specific weight categories of heavy-duty trucks. Regulatory programs include a combination of command and control programs, such as more stringent emission standards applicable to original equipment manufacturers and in-use compliance programs applicable to vehicle/fleet owners, as well as monetary incentive programs that promote the market penetration of lower-emitting vehicles. These emission reductions have occurred despite the general increase in the population of on-road heavy-duty trucks over time, as illustrated in Figure 7. It is also important to note that while the heavy heavy-duty truck population represents 12 to 15% of the total heavy-duty truck population (Figure 7), its contribution to the total NOx emissions ranges from around 50 to 60% of the total NOx emissions (Figure 5).

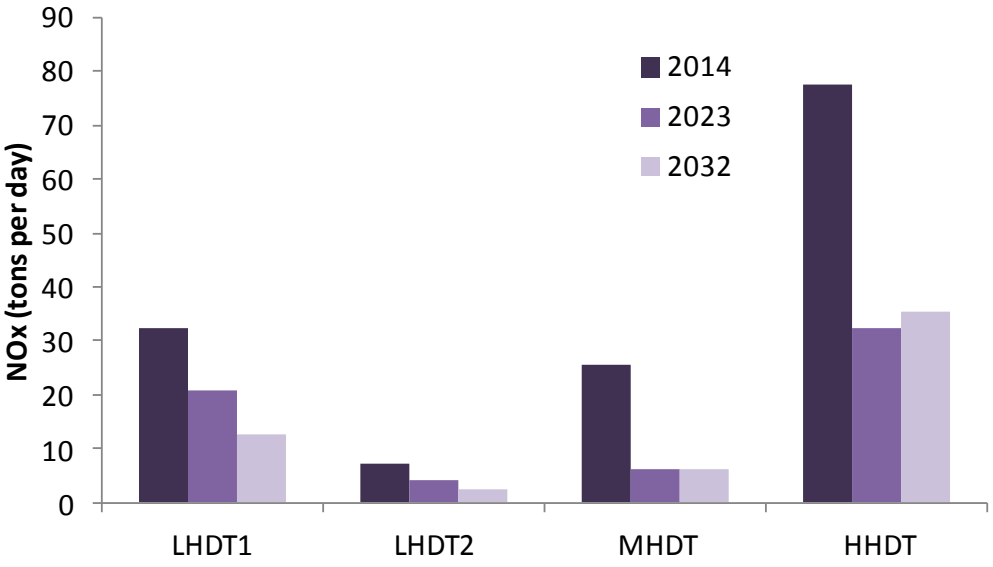


FIGURE 5

NOx Emissions for Specific On-Road Heavy-Duty Vehicles
(Source: 2012 AQMP; LHDT1 AND LHDT2 – Light Heavy-Duty Trucks; MHDT – Medium Heavy-Duty Trucks; HHDT – Heavy Heavy-Duty Trucks)

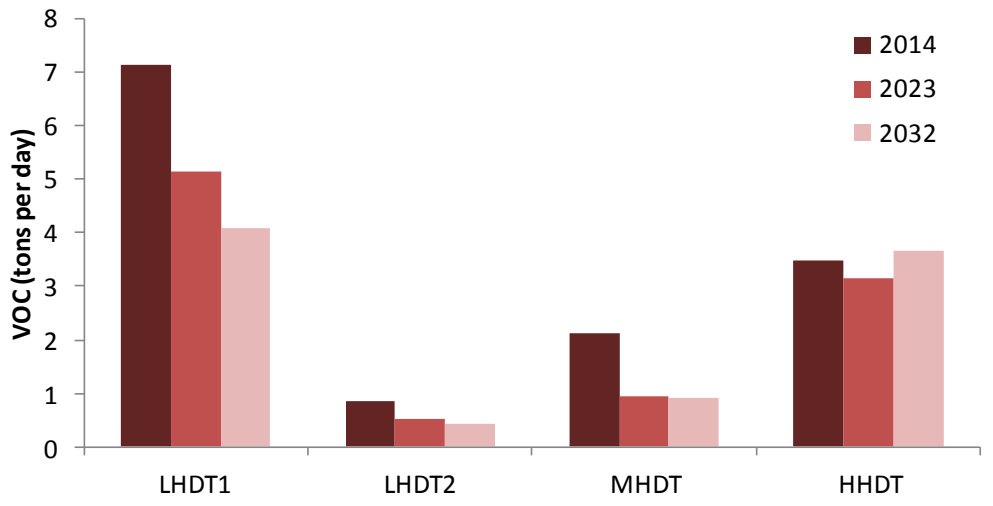


FIGURE 6

VOC Emissions for Specific On-Road Heavy-Duty Vehicles (Source: 2012 AQMP)

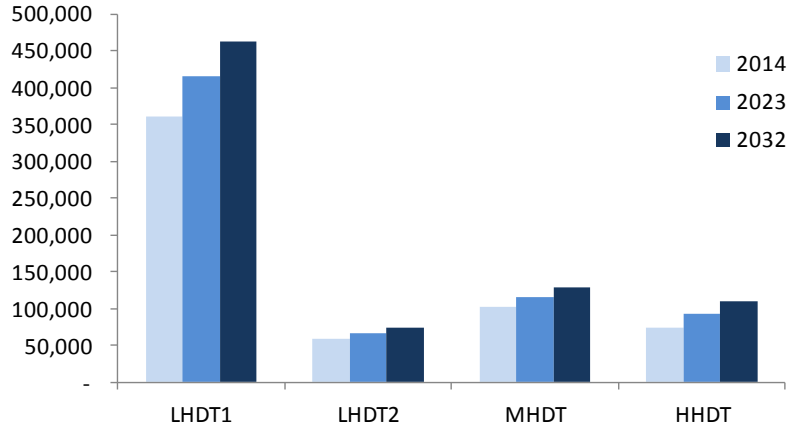


FIGURE 7

Populations for Specific On-Road Heavy-Duty Vehicles (Source: 2012 AQMP)

Off-Road Goods Movement Emission Sources

Off-road goods movement source emissions of NOx and VOC provided in Tables 6, 7, and 8 are shown graphically in Figures 8 and 9 for 2014, 2023, and 2032 calendar years to illustrate the trend in emissions and the impact of regulatory programs on emissions for specific sources. There is generally a small decrease in NOx emissions over time due to current regulations. However, air cargo related aircraft emissions increase slightly. Relative to VOC emissions, ocean-going vessel, cargo handling equipment, and air cargo related aircraft VOC emissions increase over time whereas VOC emissions from freight locomotives decrease from 2014 to 2032. Commercial harbor craft VOC emissions are at about the same levels from 2014 to 2032.

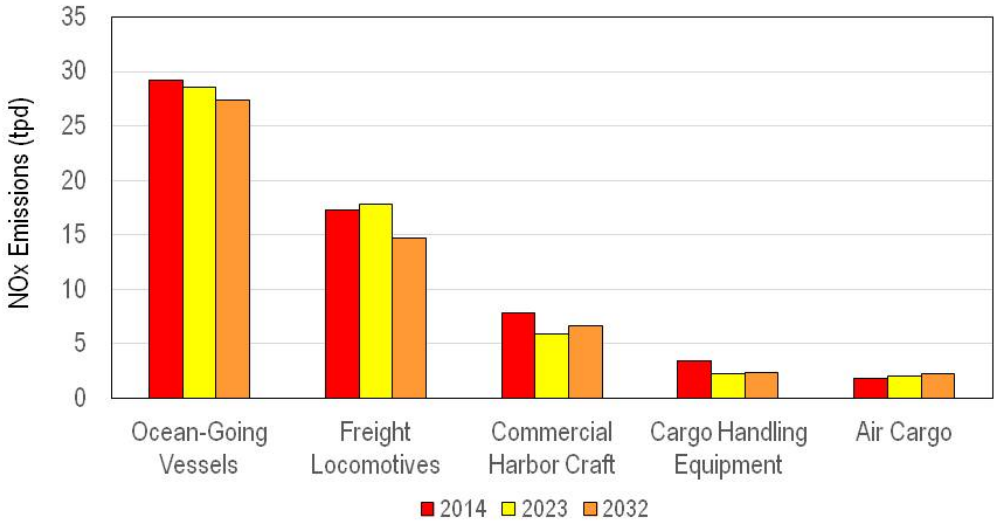


FIGURE 8

NOx Emissions for Specific Off-Road Goods Movement Sources (Source: 2012 AQMP)

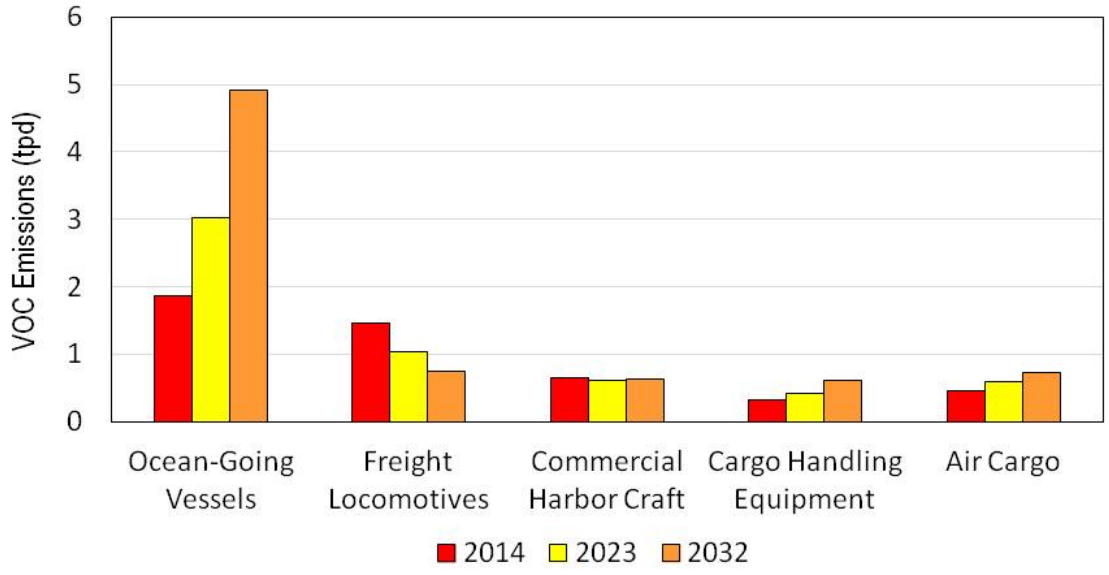


FIGURE 9

VOC Emissions for Specific Off-Road Goods Movement Sources (Source: 2012 AQMP)

NOx EMISSION REDUCTION SCENARIOS

Various NOx emission reduction scenarios were developed to assess the amount of NOx emission reductions and levels of technology deployment that may be necessary across the various emissions source categories in the goods movement sector to achieve regional NOx carrying capacities in attainment deadline years. In addition, these scenarios serve to provide insight into the various emission tradeoffs associated with different technology penetration rates. The emission scenarios are intended to help provide perspective on the challenging task to achieve necessary emission reductions in compressed timeframes to meet air quality attainment goals. The scenarios do not represent any specific strategies to meet the emission reductions associated with the various scenarios. As such, the scenarios do not do not take into consideration potential need for new advanced technologies, socioeconomic impacts, or the regulatory agency authority to regulate each of the emission source categories in this sector. Specific strategies will be developed as part of the 2016 AQMP development process.

As noted in the beginning of this white paper, the emissions inventories used for the emissions reduction scenarios are from the 2012 AQMP. The 2012 AQMP calls for 65 and 75 percent reduction in NOx emissions to attain the federal 8-hr ozone air quality standards in 2023 and 2032, respectively. However, preliminary analysis as part of the development of the 2016 AQMP indicates that the needed NOx emission reductions are approximately 50 and 65 percent for 2023

and 2031, respectively. The initial observations and recommendations would not change due to differences in the emissions inventories since the analysis are based on relative changes among the various emissions source categories.

The scenarios were developed using the latest approved CARB emissions inventory model, EMFAC2011, as provided in the Final 2012 AQMP. These scenarios and underlying assumptions are described below.

For the two attainment years 2023 and 2032, six scenarios were developed and analyzed. The six scenarios are:

- Equal Share Reduction in NOx
  Under this scenario, all of the goods movement source category baseline emissions are reduced by 65 percent for 2023 and 75 percent for 2032 (from the 2023 baseline emissions).
- 100 Percent Existing Standards
  Under this scenario, all vehicles and equipment NOx emissions are assumed to be at the greatest level of control based on current exhaust emissions standards.
- 90 Percent Cleaner Combustion Technologies
  On-road heavy-duty truck NOx emissions are assumed to achieve additional 90 percent or cleaner emission levels beyond the existing 2010 NOx emission standard. Freight locomotives and ocean-going vessels are assumed to achieve some additional level of NOx reductions beyond Tier 4.
- Varying Penetration of Zero-Emission Technologies (Three Scenarios)
  Three scenarios were developed analyzing the potential to have 25 percent, 50 percent, and 75 percent penetration of zero-emission technologies.

Tables 9 and 10 provide the results of the emissions analysis for each scenario for 2023 and 2032, respectively.

TABLE 9

Remaining NOx Emissions (tons/day) in 2023
(Baseline and Equal Share Emissions from the 2012 AQMP)

(a) On-Road Heavy-Duty Trucks

Source	Baseline	Equal Share	100% Existing Standards	90% Cleaner	ATP1 - 25% Zero / 75% Near-Zero	ATP2 - 50% Zero / 50% Near-Zero	ATP3 - 75% Zero / 25% Near-Zero
Light HD Gas Trucks-1	10.93	3.83	4.22	4.22	3.17	2.11	1.06
Light HD Gas Trucks-2	1.00	0.35	0.48	0.48	0.36	0.24	0.12
Medium HD Gas Trucks	1.08	0.38	0.38	0.04	0.03	0.02	0.01
Heavy HD Gas Trucks	0.86	0.30	0.74	0.07	0.06	0.04	0.02
Light HD Diesel Trucks-1	9.74	3.41	2.12	2.12	1.59	1.06	0.53
Light HD Diesel Trucks-2	3.19	1.12	0.79	0.79	0.59	0.39	0.20
Medium HD Diesel Trucks	4.99	1.75	4.73	0.47	0.35	0.24	0.12
Heavy HD Diesel Trucks	31.39	10.99	28.80	2.88	2.16	1.44	0.72
Total	**63.18**	**22.11**	**42.25**	**11.07**	**8.30**	**5.53**	**2.77**

(b) Off-Road Goods Movement

Source	Baseline	Equal Share	Existing Standard	90% Cleaner	ATP 1 - 25% Zero/ 75% Near-Zero	ATP 2 - 50% Zero/ 50% Near-Zero	ATP 3 - 75% Zero/ 25% Near-Zero
Ocean-Going Vessels	28.51	9.98	13.27	8.80	8.80	8.80	8.80
Freight Locomotives	17.77	6.22	5.48	0.55	0.41	0.28	0.14
Cargo Handling Equipment	2.23	0.78	1.20	0.12	0.09	0.06	0.03
Harbor Craft	5.89	2.06	1.62	1.39	1.39	1.39	1.39
Aircraft	2.03	0.71	0.51	0.51	0.51	0.51	0.51
Total	**56.42**	**19.75**	**22.07**	**11.37**	**11.20**	**11.04**	**10.87**

(c) Total On-Road and Off-Road Goods Movement

All Sources	Baseline	Equal Share	Existing Standard	90% Cleaner	ATP 1 - 25% Zero/ 75% Near-Zero	ATP 2 - 50% Zero/ 50% Near-Zero	ATP 3 - 75% Zero/ 25% Near-Zero
Total	**119.60**	**41.86**	**64.32**	**22.44**	**19.50**	**16.57**	**13.64**

TABLE 10

Remaining NOx Emissions (tons/day) in 2032
(Baseline and Equal Share Emissions from the 2012 AQMP)

(a) On-Road Heavy-Duty Trucks

Source	Baseline	Equal Share	100% Existing Standards	90% Cleaner	ATP1 - 25% Zero / 75% Near-Zero	ATP2 - 50% Zero / 50% Near-Zero	ATP3 - 75% Zero / 25% Near-Zero
Light HD Gas Trucks-1	7.82	2.74	4.58	4.58	3.44	2.29	1.15
Light HD Gas Trucks-2	0.77	0.25	0.52	0.52	0.39	0.26	0.13
Medium HD Gas Trucks	0.71	0.27	0.45	0.05	0.03	0.02	0.01
Heavy HD Gas Trucks	0.93	0.21	0.84	0.08	0.06	0.04	0.02
Light HD Diesel Trucks-1	4.73	2.41	2.31	2.31	1.73	1.15	0.58
Light HD Diesel Trucks-2	1.61	0.8	0.87	0.87	0.65	0.43	0.22
Medium HD Diesel Trucks	5.42	1.25	5.31	0.53	0.40	0.27	0.13
Heavy HD Diesel Trucks	34.41	7.92	33.15	3.32	2.49	1.66	0.83
Total	**56.40**	**15.85**	**48.04**	**12.26**	**9.19**	**6.13**	**3.06**

(b) Off-Road Goods Movement

Source	Baseline	Equal Share	Existing Standard	90% Cleaner	ATP 1 - 25% Zero/ 75% Near-Zero	ATP 2 - 50% Zero/ 50% Near-Zero	ATP 3 - 75% Zero/ 25% Near-Zero
Ocean Going Vessels	27.33	7.65	19.71	13.19	13.19	13.19	13.19
Freight Locomotives	14.72	4.12	6.53	0.65	0.49	0.33	0.16
Cargo Handling Equipment	2.38	0.71	1.89	0.19	0.14	0.10	0.05
Harbor Craft	6.68	1.53	1.94	1.26	1.26	1.26	1.26
Aircraft	2.25	0.52	1.13	1.13	1.13	1.13	1.13
Total	**53.36**	**14.54**	**31.19**	**16.39**	**16.12**	**15.91**	**15.70**

(c) Total On-Road and Off-Road Goods Movement

All Sources	Baseline	Equal Share	Existing Standard	90% Cleaner	ATP 1 - 25% Zero/ 75% Near-Zero	ATP 2 - 50% Zero/ 50% Near-Zero	ATP 3 - 75% Zero/ 25% Near-Zero
Total	**109.76**	**30.39**	**79.23**	**28.65**	**25.31**	**22.04**	**18.21**

Equal Share Reduction in NOx Scenario

For the 2023 attainment year, an overall 65 percent NOx reduction for all source categories in the South Coast Air Basin was determined to be needed for attainment of the 80 ppb federal 8-hour ozone air quality standard. This is reflected in a straight 65% reduction across all goods movement source categories, resulting in an overall decrease of NOx emissions from 63.18 tons/day to 22.11 tons/day for on-road heavy-duty trucks, and NOx emissions decrease from 56.42 to 19.75 tons/day for off-road sources [Tables 9(a) and 9(b)]. The total remaining NOx emissions combining on-road and off-road emissions are 41.86 tons/day [Table 9(c)].

For the 2032 attainment year, an overall 75 percent NOx reduction in all source categories based on 2023 baseline emission inventories was determined to be needed for attainment of the 75 ppb Federal 8-hour ozone standard. This is reflected in a straight 75% reduction across all goods movement sources as applied to 2023 baseline emission inventories, with remaining inventories applied to the 2032 attainment year. The calculation was performed in this manner to provide the incremental emission reductions by source category in "2023 currency" necessary to meet the more stringent Federal 8-hour ozone air quality standard in 2032. Reflecting all on-road heavy-duty trucks, the on-road NOx emissions are reduced from 56.4 tons/day to 15.85 tons/day in 2032 [Table 10(a)]. Off-road NOx emissions are reduced from 53.36 tons/day to 14.54 tons/day [Table 10(b)]. The total remaining NOx emissions combining on-road and off-road emissions are 30.39 tons/day [Table 10(c)].

100 Percent Existing Standards Scenario

This scenario assumes full implementation of existing adopted emission standards. For on-road heavy-duty trucks, this scenario assumes that all trucks meet the 2010 model year on-road heavy-duty engine exhaust emissions standard of 0.2 g/bhp-hr for NOx. To incorporate emission deterioration, for the 2023 and 2032 calendar year scenarios, EMFAC2011 was used to calculate in-use fleet average NOx emissions for the 2010 to 2023 calendar year timeframe and 2010 to 2032 calendar year timeframe, respectively. Similarly, the off-road sources are assumed to meet the most stringent existing emissions standards. For example, cargo handling equipment and locomotives are assumed to be at 100% Tier 4 NOx emissions levels and ocean-going vessels are at the Tier 3 NOx emissions standard. Aircraft are assumed to meet the current U.S. EPA NOx emission standards. Again, the analysis provided here does not reflect how these levels are achieved. The total NOx emissions were reduced from 119.6 tons/day to 64.32 tons/day in 2023, and 109.76 tons/day to 79.23 tons/day in 2032 [Table 9(c) and 10(c)].

90 Percent Cleaner Combustion Technologies Scenario

For this scenario, on-road heavy-duty trucks are assumed to meet a 90 percent cleaner combustion technology from the 2010 NOx exhaust emissions standard or 0.02 g/bhp-hr. For off-road sources, locomotives are assumed to reach a 90% cleaner level, NOx emissions from ocean-going vessels would be further reduced through reduction of emissions from auxiliary engines and boilers while at-berth, and cargo handling equipment and harbor craft emissions would be further reduced through deployment of cleaner engines and hybrid systems. No additional reductions were assumed for the aircraft sector. The resulting remaining emissions shown in Tables 9(c) and 10(c), are 22.44 tons/day (from 119.6 tons/day) in 2023 and 28.65 tons/day (from 109.76 tons/day) in 2032.

Varying Penetration of Zero-Emission Technologies Scenarios

The varying penetration scenarios assume various in-use penetrations of zero-emission technologies to achieve emission reductions beyond the 90 percent cleaner combustion scenario. Three specific in-use fleet penetration scenarios were evaluated corresponding to 25% ZEV/75% near-ZEV, 50% ZEV/50% near-ZEV, and 75% ZEV/25% near-ZEV. Note that "near-ZEV" corresponds to the vehicle technologies incorporated into the 90% cleaner combustion scenario. As expected, these scenarios result in the largest emission reductions for all scenarios evaluated, reducing the remaining NOx inventory in 2023 to 19.5 tons/day, 16.57 tons/day, and 13.64 tons/day, respectively, from a baseline inventory of 119.6 tons/day. In 2032, the remaining NOx inventories are reduced to 25.31 tons/ day, 22.04 tons/day, and 18.21 tons/day, respectively, from a baseline inventory of 109.76 tons/day.

INITIAL OBSERVATIONS

Emission Reduction Scenarios

The emission reduction scenario analysis provides insights into the development of control strategies needed to attain the federal 8-hour ozone air quality standards in 2023 and 2032. Some of the initial observations are provided below.

- The analysis conducted for this white paper focuses on specific emissions source categories related to the goods movement sector. As such, any analysis performed does not imply that the federal ozone air quality standards will be attained without further reductions from all emission source categories that contribute to the ozone air quality problem. That analysis will be conducted as part of the development of the 2016 AQMP. However, the scenarios analyzed as

part of this white paper provide information on areas to focus on for the development of the 2016 AQMP.

- If all trucks and off-road equipment were turned over to meet the lowest emissions standards established in current international (IMO, ICAO), U.S. EPA, and CARB exhaust emission standards, the goods movement sector would not achieve the 65% or 75% "equal share" NOx emissions reductions needed to attain the federal ozone air quality standards.

- On-road heavy-duty trucks remain the largest contributor to the total NOx emissions inventory. While on-road heavy heavy-duty trucks (with gross vehicle weight ratings over 33,000 lbs) represent around 15 percent of the total heavy-duty truck population in 2032, the on-road heavy-duty truck NOx emissions are over half of the total heavy-duty trucks emissions (see Table 5).

- There is a general recognition that not all emission sources will be able to achieve an "equal share" reduction in NOx emissions for a variety of reasons, including, but not limited to, availability of cleaner technologies, cost-effectiveness, sheer number of vehicles or equipment, and the timeframe to turn over older vehicles to meet air quality standards.

- Additional NOx reductions are needed from federal transportation sources (i.e., locomotives, marine vessels, and aircraft).

- Accelerated deployment of commercially available zero-emission vehicles in the goods movement sector will be needed to help meet the "equal share" reduction levels in 2023 and 2032.

- If the goods movement sector does not achieve the needed NOx reductions, emission sources in other sectors must achieve greater NOx reductions to make up the difference. Conversely, if emission sources other than the goods movement sector do not achieve needed NOx reductions, there will be a need for the goods movement sector to achieve greater levels of NOx reductions to make up the difference.

- While significant emission reductions have occurred in this sector, new exhaust emission standards are needed. New heavy-duty exhaust emissions standards must be established as early as possible. Given the low pollutant levels of such standards, innovative approaches will be needed in setting them and in maximizing the deployment of zero- and near-zero emission vehicles.

- The most effective set of strategies will consist of a combination of accelerated advanced technology deployment, incentives programs to accelerate replacement of older trucks and off-road equipment, infrastructure enhancements, and funding incentives. Regarding funding incentives, there is a need to develop funding mechanisms that will allow operators complying with the lowest emissions standards to help recoup their investments when considering a near-zero or zero-emission vehicle or equipment.

- There is a nexus with the passenger transportation sector. On certain freeways and arterial roads, heavy-duty truck traffic is shared with passenger cars and transit buses during the morning and evening commute hours. In addition, commuter rail operate on rail tracks shared with freight rail. The reader is referred to the companion Passenger Transportation White Paper for more information.

Advanced Technologies

The following are observations on the availability of zero- and near-zero emission technologies for the goods movement sector. For some sectors (e.g., aircraft), if zero- or near-zero technologies are not feasible, cleaner combustion technologies are needed. In addition, advancing cleaner fuels and renewable fuels will help reduce criteria pollutant and greenhouse gas emissions.

- Federal transportation sources (locomotives, ocean-going vessels, and aircraft) are not required to use the cleanest technologies when transporting goods in and out of California. As such, there is a need to develop mechanisms or incentives for rail operators, vessel operators, and air cargo transportation operators to use the cleanest equipment when transporting goods through California.

- Many of the equipment used in the goods movement sector have long remaining useful lives. As such, new acquisitions should be at the cleanest levels of emissions and there is a need to commercialize near-zero and zero-emission technologies as early as possible.

- Zero-emission trucks are currently in development and are being demonstrated in the port area. However, there is a need to complete the field demonstrations and develop a commercial market base for the zero-emission trucks. Similar efforts will be needed for near-zero emission trucks. In addition, zero-emission yard tractors are being demonstrated at the Ports.

- As the Class I railroads begin purchasing Tier 4 line-haul locomotives, there is a need to deploy as many Tier 4 locomotives in the Southern California region as early as possible. If nearly all freight locomotives operating in California were at the Tier 4 emissions level, freight locomotives would achieve the overall 65% reduction in NOx needed by 2023. However, in the

longer term, even cleaner locomotives will need to be developed and deployed. The use of liquefied natural gas, hybrid systems, and external electrical power can lead to NOx emission levels lower than the current Tier 4 emissions standard. However, research and demonstration of the technologies described must be initiated as soon as possible to help meet ozone air quality standards in the 2032 timeframe.

- The FAA CLEEN Program plays an important role in developing lower NOx emitting aircraft engines with an objective to have new aircraft engines 60% cleaner in NOx emissions.

Efficiency Measures

While greater penetration of zero- and near-zero emission technologies are needed to attain air quality standards, operational efficiencies in the roadway network and best practices at marine ports, warehouse distribution centers, and intermodal yards can potentially provide criteria pollutant and greenhouse gas emission reduction benefits. Some initial observations are:

- Operational efficiency enhancements can be made relative to industry best practices to reduce fuel costs and improve delivery of goods.

- Intelligent transportation systems (ITS) and connected vehicles (i.e., equipped for wireless communication) can potentially provide additional environmental benefits not only in congestion relief and fuel savings, but also reduced criteria pollutant and greenhouse gas emissions.

- Operational efficiencies in goods delivery routing will help reduce road congestion and reduce emissions. Potential criteria pollutant emission reductions resulting from implementing operational efficiency strategies need to be quantified and recognized as part of the development of the 2016 AQMP.

RECOMMENDATIONS

The emission reduction scenario analysis for the goods movement sector shows a need for greater penetration of zero- and near-zero emission technologies in order to attain air quality standards. Given the long remaining useful life of off-road emission sources in the goods movement sector, existing funding programs such as the Carl Moyer Program and Proposition 1B, need to continue to help accelerate deployment of zero- and near-zero emission technologies. There is also a need to continue development of cleaner combustion engine technologies for federal transportation

sources. The following are some key recommendations to consider during the development of the 2016 AQMP.

Technology-Related and Vehicle Deployment Recommendations

As mentioned earlier, on-road zero-emission trucks are currently being demonstrated. However, to commercialize the zero-emission trucks, new and innovative approaches must be developed. Implementing the following recommendations will help accelerate deployment of cleaner vehicles.

- The U.S. EPA and CARB need to establish a new NOx emissions standard for on-road heavy-duty engines that is 90 percent cleaner than current on-road heavy-duty engine exhaust emissions standard as soon as possible. As part of this effort, new certification test procedures should be developed for on-road heavy-duty trucks that take into account hybridization that provides for zero-emission miles operation.

- The appropriate international organizations and U.S. EPA need to establish new exhaust emission standards that are substantially lower than the existing emission standards for locomotives, ocean-going vessels, and aircraft. In addition, sustained incentives programs (monetary and non-monetary) are needed for operators to deploy the cleanest equipment in the South Coast Air Basin. As part of this effort, initiate research and demonstration projects should be initiated to develop new engines meeting the lower emission standards.

- Sustained public funding assistance will benefit all emission source categories in the goods movement sector to maximize deployment of zero- and near-zero emission technologies.

- New mechanisms must be developed to significantly increase deployment of zero- and near-zero technology vehicles. Such mechanisms may take the form of regulations or monetary and non-monetary incentives.

- Develop mechanisms for greater deployment of "emissions capture systems" at marine ports and at freight rail maintenance facilities to reduce emissions from ocean-going vessels while at berth and freight rail locomotives during maintenance.

- Support the FAA CLEEN Program in the development of cleaner, more fuel-efficient aircraft engines.

- Renewable fuels may potentially provide criteria pollutant emission reduction benefits along with greenhouse gas emissions benefits. The use of renewable fuels should be supported, such as renewable gasoline, renewable diesel, renewable natural gas, and other biofuels, to

help reduce fine particulate emissions and to some extent NOx emissions. [Note: The reader is referred to the Energy Outlook White Paper for further discussions of renewable fuels and infrastructure development.]

Operational Efficiency Recommendations

Operational efficiency improvements currently in practice and new strategies to further reduce fuel costs need to be quantified in terms of criteria pollutant emission benefits as part of the 2016 AQMP. Improvements to the existing transportation infrastructure have potential criteria pollutant co-benefits. The following recommendations can potentially help to further reduce criteria pollutant emissions and greenhouse gas emissions.

- Work with stakeholders in the goods movement sector to develop industry best practice examples for others to implement where appropriate.
- Conduct studies to assess intelligent transportation systems' (ITS) potential to reduce truck and traffic congestion and criteria pollutant emissions.
- Promote deployment of ITS in key congestion areas and in implementation of best practices in goods delivery to help further reduce emissions and reduce congestion.
- Where dedicated truck lanes are being proposed in freeway expansion projects, dedicated truck lanes should give preferential treatment to zero- and near-zero emission trucks.

REFERENCES

CARB (2013a). EMFAC2011, *California Air Resources Board*, January 2013

CARB (2013b). Staff Report: Initial Statement of Reasons, Proposed Amendments to California Exhaust and Evaporative Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, California Air Resources Board "LEV II", *California Air Resources Board*, September 1998.

CARB (2014). Lower NOx Heavy-Duty Diesel Engines Technology Assessment, *California Air Resources Board*, September 2014.

MECA (2013). LEV III and Tier 3 Exhaust Emission Control Technologies for Light-Duty Gasoline Vehicles, *Manufacturers of Emissions Controls Association*, April 2013.

MECA (2014). Technology Details Heavy-Duty Trucks and Buses, *Manufacturers of Emissions Controls Association*, http://www.meca.org/technology/technology-details?id=22&name=Heavy-Duty Trucks and Buses, February 2014.

SCAG (2012). Regional Transportation Plan and Sustainable Community Strategies, *Southern California Association of Governments*, Adopted – 2012.

APPENDIX A

CURRENT EMISSION CONTROL PROGRAMS

CURRENT EMISSION CONTROL PROGRAMS

Current regulatory programs and other planning efforts affecting the goods movement sector are provided in this appendix.

GOODS MOVEMENT SECTOR EMISSION SOURCES

On-Road Heavy-Duty Trucks

The on-road heavy-duty truck category includes diesel and spark-ignition heavy-duty trucks and contributes 53% of goods movement NOx emissions in 2023 (Tables 4 and 7). The current heavy-duty NOx engine exhaust standard of 0.2 g/bhp-hr NOx was phased-in beginning in 2007 with full implementation beginning in 2010, and became mandatory in 2008 for spark ignition engines and 2010 for diesel engines. CARB recently adopted a set of optional low-NOx engine exhaust emissions standards at 0.1, 0.5, and 0.02 g/bhp-hr. Engine manufacturers are not required to produce engines that meet the optional NOx emission standards. However, heavy-duty engines certified to the lower optional NOx standards can be eligible for public funding since the lower emissions from these engines would be considered surplus to the mandatory standard.

In 2023, spark ignition (gasoline and natural gas) trucks emissions are estimated around 14 tons/day of NOx representing approximately 22% of truck emissions and 12% of all goods movement NOx emissions. Heavy-duty diesel trucks are subject to CARB's Truck and Bus Regulation, which requires turnover of nearly all heavy-duty diesel trucks to at least the 0.2 g/bhp-hr NOx emissions standard by 2023. Heavy-duty spark ignition engine vehicles do not have an in-use CARB fleet rule.

Freight Locomotives

A substantial fraction of international goods moving through the South Coast Air Basin is carried by freight trains pulled by diesel-electric locomotives. Diesel-electric locomotives have a large diesel engine (main traction engine) for generating electric power which in turn drives electric motors in each axle. Goods movement-related locomotives are forecast to contribute approximately 18 tons per day of NOx emissions to the South Coast Air Basin in 2023. There are two Class I railroads that operate in the South Coast Air Basin. The two railroads are subject to the 1998 Memorandum of Understanding (MOU) with CARB to reach a NOx fleet average emission rate to meet the U.S. EPA Tier 2 locomotive emissions standard by 2010. In 2008, U.S. EPA adopted new locomotive emission standards establishing a NOx emissions level of 0.13 g/bhp-hr for locomotive engines produced beginning in 2015.

Ocean-Going Vessels

Ocean-going vessels (OGVs) contribute a significant portion of NOx, PM, greenhouse gas, and toxic emissions particularly in coastal regions in and around shipping ports. These emissions contribute to on-shore air quality problems representing approximately 9% of total NOx emissions in the South Coast Air Basin for 2023. NOx emissions produced by main propulsion and auxiliary engines when the vessels are transiting within the South Coast Air Basin and the auxiliary engines, when the vessels are anchored or docked at a port in the South Coast Air Basin, are included in the emission inventory. CARB has established low sulfur content fuel standards for marine fuels that took effect since 2009 with the lowest maximum sulfur content limit of 0.1% taking effect beginning 2014. The use of lower sulfur content marine fuels primarily reduced PM and SOx emissions with some reductions in NOx. The International Maritime Organization (IMO) has established lower NOx emission standards for Category 3 propulsion and auxiliary engines. Ocean-going vessels built today must meet a Tier 2 NOx emissions standard, while vessels built beginning in 2016 must meet the Tier 3 standard of 3.4 g/bhp-hr if the vessel will be calling at marine ports located in an Emissions Control Area (ECA) established by IMO. Currently, the North American ECA is in effect, which requires ocean-going vessels to use 0.1% sulfur content marine fuels when transiting within 200 nautical miles off the North American coast.

Aircraft

Passenger aircraft carry cargo as well as passengers. Commercial aircraft emission inventories combine passenger aircraft and dedicated cargo aircraft. CARB estimates that 13% of aircraft emissions are attributable to air cargo (CARB, 20313), which includes mail, express packages, and freight. Based on the South Coast Air Basin aircraft NOx emission forecast for 2023, 2 tons/day of NOx are attributed to air cargo. Aircraft engine emissions are regulated by U.S. EPA, which harmonized emission standards in 2005 with the International Civil Aviation Organization's Committee on Aviation Environmental Protection (ICAO-CAEP). Aircraft have a long service life (typically, greater than 30 years) although there is an economic incentive to retire older aircraft due to better fuel efficiency from new aircraft. The most stringent currently adopted standard took effect in 2014 and provides approximately 50% cleaner NOx emissions than engines manufactured before 2005.

Commercial Harbor Craft

There are approximately 750 commercial harbor craft operating within the South Coast Air Basin. Commercial harbor craft NOx emissions are estimated to be around 6 tons/day in 2023. Commercial harbor craft related to goods movement activities include barges, crew/supply vessels,

dredges, pilot vessels, tow/push boats for barges, tug boats for assisting ocean-going vessels, and work boats for harbor construction and maintenance activities. Commercial harbor craft generally have multiple propulsion and auxiliary engines per vessel with total power between several hundred and several thousand horsepower. Essentially all commercial harbor craft are currently diesel powered. Work activity varies significantly with some vessels spending most time within the port harbor and adjacent waters, while others leave the local port for adjacent ports, Catalina Island, or off-shore platforms. Harbor craft are subject to new engine regulations that now require meeting Tier 3 exhaust emission standards for engines less than 800 hp and Tier 4 standards, the most stringent currently adopted, for engines greater than 800 hp. In addition, crew and supply vessels, dredges, tow/push boats, tug boats, and work boats are also subject to the CARB Commercial Harbor Craft regulation which specifies turnover of older marine engines for new engines on a schedule that will leave essentially all regulated harbor craft with Tier 2 or cleaner engines by 2023.

Cargo Handling Equipment

There are approximately 5,700 pieces of diesel powered cargo handling equipment (CHE) operated at marine ports, intermodal freight facilities, and warehouse distribution centers in the South Coast Air Basin. Cargo handling equipment includes forklifts, yard hostlers (i.e., top picks, side picks, etc), cranes, excavators, tractors, loaders, and other cargo or material handling equipment used to load or unload cargo from vessels, trucks, and rail cars. Based on the emissions projections in the 2012 AQMP, cargo handling equipment NOx emissions are around 2 tons/day in 2023. Tier 4 off-road emission standards, currently the most stringent emissions standard for diesel powered equipment, took effect in 2014 and required greater than 90% reduction in NOx and PM emissions for new engines compared to uncontrolled engines. CARB also adopted a Cargo Handling Equipment regulation to accelerate reduction in emissions from 2006 and older equipment by specifying an equipment retrofit or replacement schedule. With full implementation of the rule, all cargo handling equipment will be at Tier 3 emissions levels or cleaner by 2023. Zero emission and alternative fueled cargo handling equipment are also becoming available and are being deployed in a number of demonstration projects. In addition, funding assistance is available for the deployment of zero-emission and alternative fuel cargo handling equipment.

OTHER PLANNING EFFORTS AFFECTING THE GOODS MOVEMENT SECTOR

SCAG Regional Transportation Plan

The Southern California Association of Governments (SCAG) prepares the Regional Transportation Plans (RTP), with the primary goal of increasing mobility in the region. An additional goal includes increasing the region's sustainability, officially incorporated into the RTP as the Sustainable Communities Strategies (SCS). The most recent RTP/SCS is the 2012 – 2035 RTP/SCS, and was adopted by SCAG on April 12, 2012. It can be accessed at the following link: http://www.scagrtp.net.

The 2012 RTP/SCS includes a freight element that provides near-term actions to further emission reductions in the region Specifically, the 2012 RTP incorporates widespread utilization of zero- and near-zero emission transportation technologies in the 2023 to 2035 timeframe and various mechanisms to incrementally achieve this objective. This approach is intended to generate numerous co-benefits, including greater energy security and cost certainty, increased public support for infrastructure, GHG reduction, and economic development.

San Pedro Bay Ports Clean Air Action Plan (CAAP)

The CAAP was adopted in late 2006 by the Ports of Los Angeles and Long Beach and outlines a path for the San Pedro Bay Ports to reduce criteria pollutant emissions from Port facilities. Port-related emission sources included heavy-duty drayage trucks, freight locomotives, ocean-going vessels, commercial harbor craft, and cargo handling equipment. The CAAP was initially a 5-year plan, beginning with fiscal year (FY) 2006/2007, and ending with FY 2010/2011. In 2010, the CAAP was updated reflecting new emission inventories and longer-term emission reduction goals.

The CAAP involves investments by the two ports for air quality programs to reduce PM, NOx, and SOx. The CAAP commits the Ports to develop policies, standards, specifications, and incentives to accelerate the introduction of low emission technologies, operational changes such as vessel speed reduction programs, and fuels that reduce emissions. The CAAP encompasses 11 specific control measures including two for heavy-duty drayage trucks, five for ocean-going vessels, three for locomotives and near-dock railyards, and one each for cargo handling equipment and commercial harbor craft. Additional commitments by the Ports include working with air quality regulatory agencies (SCAQMD, CARB, and U.S. EPA) to establish San Pedro Bay Air Quality Standards as well as tracking improvements in air quality compared to 2005 through annual emission inventories. The goals set forth in the CAAP include the following, and for 2014, have been met:

- by 2014, reduce emissions of DPM, NOx, SOx by 72%, 22%, 93%
- by 2023, reduce emissions of DPM, NOx, SOx by 77%, 59%, 93%
- by 2020, reduce population-weighted cancer risk by 85%

Federal Surface Transportation Legislation

Every five years the federal government usually adopts legislation broadly categorized as "federal surface transportation legislation" that authorizes and funds transportation related infrastructure, impacting the federal highway system, transit systems, and related local infrastructure projects. The latest federal surface transportation legislation enacted by Congress was named "Moving Ahead for Progress in the 21st Century", known as MAP-21. It was adopted in 2012 with expiration at the end of 2014. The short expiration date resulted from lack of funding primarily due to shortfalls in vehicle fuel taxes ($/gallon), imposed at the pump, that were established approximately 20 years ago and have not increased over time to offset the effects of lower gasoline consumption from increased fuel economy. At the end of 2014, MAP-21 was extended to May 2015 as a temporary measure, and federal surface transportation legislation targeting up to a six-year time frame is currently being developed. As a result of the authorization and funding components, surface transportation legislation establishes policy on the priority of highway and related infrastructure projects that are federally supported. This legislation provides a mechanism by which the federal government can participate in the funding of critical infrastructure projects, that support the widespread deployment of near-zero and zero-emission vehicle technologies in the SCAQMD region. As identified previously, the deployment of these technologies is critical for ambient air quality standard attainment as reflected in the 2012 AQMP.

MAP-21 includes a number of provisions to improve the condition and performance of the national freight network and support investment in freight-related surface transportation projects. Some of the provisions include having the U.S. Department of Transportation (DOT) establish a national freight network to assist States in strategically directing resources toward improved movement of freight on highways and allowing a maximum federal share of 95% for an interstate system project (or of 90% for a non-interstate system project) if the project makes a demonstrable improvement in the efficiency of freight movement and is identified in a State freight plan. U.S. DOT would also lead efforts on the national level for future freight planning.

California Freight Mobility Plan (CFMP)

The California State Transportation Agency (CalSTA) and the California Department of Transportation (Caltrans) developed the California Freight Mobility Plan (CFMP) in partnership with stakeholders representing other state agencies such as CARB, local government agencies such as SCAG and

SCAQMD, private industries, and public interest groups. The CFMP is a plan that governs the immediate and long-range planning activities, provides a comprehensive inventory of transportation infrastructure, volume and value of goods moved, facilities, identifies potential improvements to the transportation system, and guides the state's capital investments with respect to the movement of freight. The CFMP complies with the relevant provisions of the federal Moving Ahead for Progress in the 21st Century Act (MAP-21), which encourages each state to develop a freight plan.

CARB Sustainable Freight Strategy Discussion Draft

CARB is developing the California Sustainable Freight Strategy with the goal of describing CARB's vision and options for a clean freight system that meets the needs of diverse goods movement stakeholders. The strategy document, expected to be released in 2015, will identify both regulatory and voluntary levers to accomplish a near-zero or zero emission freight system, taking into consideration the current and anticipated state of commercialization of various technologies that can achieve very large reductions in criteria pollutant and GHG emissions.

More specific information is contained in each of the above documents. The reader is referred to those documents for further detailed information.

APPENDIX B

POTENTIAL EMISSION REDUCTION TECHNOLOGIES AND EFFICIENCY MEASURES

POTENTIAL EMISSION REDUCTION TECHNOLOGIES AND EFFICIENCY MEASURES

Provided in this Appendix are discussions on emission control technologies that have led to criteria pollutant emission reductions in the goods movement sector historically and potential technologies to further reduce emissions including greater deployment of zero-emission and near-zero emission advanced technologies. In addition, operational efficiency measures will have an important role in reducing criteria pollutant and greenhouse gas emissions.

OVERVIEW - TYPES OF CONTROL TECHNOLOGIES AND EFFICIENCY MEASURES

The California Air Resources Board is currently conducting a comprehensive technology assessment for goods movement related sources, which includes the emission sources identified in this document and in addition, transportation refrigeration units and fuels. The reader is referred to CARB's website (www.arb.ca.gov) for further information. The following sections summarize some of the control technologies that can potentially further reduce criteria pollutant combustion emissions. Specific control technologies by emissions source are provided in the next section.

Aftertreatment Emissions Control Technologies

Aftertreatment technologies to reduce NOx and particulate emissions include oxidation or three-way catalysts, selective catalytic reduction (SCR) systems, exhaust gas recirculation, and diesel particulate filters. These technologies may be retrofitted to in-use engines where technically feasible or may be incorporated in certified engines as originally manufactured.

Diesel oxidation catalysts do not reduce NOx but can reduce hydrocarbons by 50% and particulates by 20-25%. Three-way catalysts for spark ignition engines can reduce hydrocarbon, carbon monoxide, and NOx by 90%, but are not effective on particulates.

SCR systems can reduce NOx by 90% using a reductant such as urea, commercially available as Diesel Exhaust Fluid, and in some cases, can provide moderate reductions in particulate emissions. However, SCR performance and efficiency is highly dependent on the exhaust temperature. In-use measurements of NOx emissions from heavy-duty vehicles has found higher levels of NOx emissions from diesel vehicles when the vehicles operate in shorter trips where exhaust temperatures are below the level needed for the SCR system to work effectively. There are on-going investigations to address this performance issue.

Diesel particulate filters do not reduce NOx, but can reduce particulate emissions by more than 90% by mass and, depending on design, may also reduce hydrocarbons.

Aftertreatment systems do not generally reduce CO2 emissions and in some instances, may increase CO2 emissions due primarily to increased fuel usage.

Exhaust Gas Recirculation

Exhaust gas recirculation (EGR) is another technology that reduces NOx emissions. EGR works by recirculating a portion of an engine's exhaust gas back to the engine cylinders. The presence of exhaust gas in the engine cylinders reduces the fraction of cylinder volume available for combustion, thus reducing combustion temperature and corresponding NOx formation. The EGR valve sits between the exhaust and intake manifolds on a vehicle engine and regulates the amount of spent exhaust gas that is mixed into the intake stream. Diesel engines relied on EGR to reduce NOx to meet NOx emissions standards prior to 2010. Since 2010, almost all on-road diesel engines rely on SCR to meet the 2010 on-road heavy-duty exhaust NOx emissions standard as discussed above. Alternative fueled engines, which are typically spark ignited engines, also rely on EGR to reduce NOx. "Supercooled" EGR systems have been developed to meet 2010 NOx emissions standards for most alternative fueled engines.

The use of EGR systems may lead to greater fuel use. Engine manufacturers have been combining other engine technologies or modifying the engine performance to address potential increase in fuel usage.

Engine Modifications

Engine modifications are performed on heavy-duty engines and change the engine calibration, configuration, or operation of an existing engine. Modifications may include addition of dual fuel systems, engine overhaul kits (injectors, fuel pumps, cylinder heads, turbochargers, manifolds, etc.) that reduce emissions or reprogrammed computers that reduce emissions. The emission reduction of these changes varies depending on the technology and original engine design. More advanced engine modifications such as variable valve timing and homogeneous combustion compression ignition can provide additional NOx reductions.

Alternative Fuels

Alternative fuels include dedicated natural gas, high pressure direct injection and dual fuel systems (diesel ignition with natural gas), propane, and hydrogen. These fuels have the potential to significantly reduce NOx emissions. In-use measurements of NOx emissions from modern diesel and natural gas engines typically, show NOx emissions levels from engines running on alternative

fuels to be half as much as their diesel engine counterparts. In addition, these fuels generally reduce particulate and CO2 exhaust emissions compared to exhaust emissions from diesel engines.

Alternative Power Sources

Alternative power sources include engine-electric hybrids, engine-hydraulic hybrids, fuel cells, and battery systems. Hybrid systems provide emission reductions of criteria and GHG emissions of 20 to 30% when used in applications with opportunities for energy recovery such as trucks driving in "stop and go" conditions or for power demand leveling such as with tugboats, loaders, or cranes. Hybrid systems have been commercialized for light-duty vehicles and are available for a variety of smaller commercial trucks. Fuel cell and battery systems reduce criteria and GHG emissions 100% at point of use. Light-duty battery electric vehicles have been commercialized and prototype commercial vehicles are being demonstrated. Prototype fuel cell systems are being demonstrated in light duty-vehicles and commercial trucks up to Class 8 vehicles.

Technology Combination

There are opportunities for combining technologies to gain greater emission reductions. For example, natural gas-plug-in hybrids combine the low emissions of natural gas engines, the energy savings of hybrids, and grid power for battery charging.

Efficiency Measures

Efficiency measures include cargo handling automation, reduced handling steps, improved vehicle-vehicle and vehicle-infrastructure communication, and improved scheduling/coordination of ground with marine/air cargo handling and movement. These steps are intended to reduce queuing or wait times and inefficient utilization of logistics resources which can reduce traffic congestion, emissions, and energy consumption.

Another form of efficiency is "vessel sharing". This practice described by the Pacific Merchant Shippers Association, is where shippers share the movement of goods in one common vessel instead of multiple vessels; thus, reducing the number of vessel calls at the Ports of Los Angeles and Long Beach. In addition, to be more efficient and further reduce fuel costs, newer container vessels can carry more containers than older smaller vessels, thus reducing the number of vessel calls.

CONTROL TECHNOLOGY APPLICATION BY EMISSIONS SOURCE CATEGORY

On-Road Heavy-Duty Trucks

Since the 2010 model year, on-road heavy-duty diesel engines have been equipped with diesel oxidation catalysts, cooled EGR, high pressure fuel injection, variable geometry turbochargers, urea-based SCR and catalyzed DPFs in order to meet the current emission standards of 0.2 g/bhp-hr NOx and 0.01 g/bhp-hr PM. The following additional enhancements may be required to achieve additional NOx reduction to reach a 90% level of 0.02 g/bhp-hr with combustion engines: improved air and fuel control, reduced cylinder to cylinder and cycle to cycle variation, shortened catalyst light-off time to better control cold start conditions, and improved low temperature catalyst activity or thermal management to maintain catalyst temperature above 250°C. Hybrid technologies are commercially available in light and medium heavy-duty trucks. Current commercial hybrid technologies will reduce greenhouse gas emissions on the order of 10 to 30% depending on duty cycle. However, many of the current hybrid technologies have limited reductions in NOx emissions. In addition to hybrid technologies, zero emission technologies such as battery electric are commercially available for smaller size trucks.

Research is now being conducted to further reduce NOx levels of current diesel and natural gas-powered heavy-duty vehicles to near-zero levels, specifically targeting a 90% NOx reduction from the current level of 0.2 g/bhp-hr. This research is being conducted separately by SCAQMD, CARB, California Energy Commission, Southern California Gas Company, U.S. Department of Energy (DOE), and other stakeholders. CARB is sponsoring a study focused on the development of emission control technologies for both diesel and natural gas engines to determine the feasibility of reaching a 90% reduction in NOx emissions. Under funding from the SCAQMD, California Energy Commission, and Southern California Gas Company, several natural gas engine manufacturers are developing next-generation natural gas engines to meet a 0.02 g/bhp-hr exhaust emissions level in the next several years. The SCAQMD's research focuses on a natural gas engine's ability to achieve a 90% reduction in NOx emissions. The 90% cleaner natural gas engine will be deployed in various vocations as part of the field demonstration efforts of the SCAQMD's program. Further improvements in engine and aftertreatment control technologies will be investigated as part of these research projects. It may be possible to extrapolate the results of this research for application with other fuels of interest (e.g., renewable biofuels) to further address criteria pollutant and GHG goal attainment.

In addition to the research on the next-generation of heavy-duty combustion engines, zero emission technologies are being demonstrated. Dedicated battery electric trucks and fuel cell

trucks are being developed and demonstrated at the Ports. Dedicated battery electric trucks are envisioned to provide drayage to the existing and planned near-dock railyards, which are around five miles from the marine terminals to the nearest railyard. Fuel cell trucks have the potential to travel up to 200 miles before refueling. As such, fuel trucks may potentially make several trips to intermodal yards and warehouse distribution centers located farther away from the ports. Another demonstration project is the use of catenary systems to provide external electrical power to the electric motor equipped on the truck. When external power is not available, the truck will run on the internal combustion engine. This configuration provides flexibility for the truck to be used beyond the region where external power is available.

Freight Locomotives

The most stringent locomotive standard is Tier 4 and takes effect in 2015. This standard is expected to be met through engine modifications and without aftertreatment technologies. Potential engine modifications include high-rate cooled EGR, two-stage turbochargers, and improved fuel injection systems. Also, due to the long service life of locomotives, modification of in-use engines (remanufacturing) should also be considered. In-use engine modifications may include addition of dual fuel systems, engine overhaul kits (injectors, fuel pumps, cylinder heads, turbochargers, manifolds, etc.) or reprogrammed engine management computers that reduce emissions. Modified in-use engines are unlikely to meet Tier 4 standards unless required and the emission reduction from these modifications will vary depending on the technology utilized and the original engine design.

Further emission reductions beyond Tier 4 could be achieved using aftertreatment technologies such as oxidation or three-way catalysts, diesel particulate filters, and selective catalytic reduction (SCR) systems incorporated into Tier 4 engines. SCR systems can potentially reduce NOx by up to 90% compared to the current Tier 4 NOx emissions standard using a reductant such as urea, commercially available as Diesel Exhaust Fluid, and in some cases, can provide moderate reductions in particulate emissions. Diesel oxidation catalysts do not reduce NOx, but can reduce hydrocarbons by 50% and particulates by 20 to 25%. Diesel particulate filters do not reduce NOx, but can reduce particulate emissions by more than 90% by mass and, depending on design, may also reduce hydrocarbons. These technologies may also be retrofitted to in-use engines where technically feasible.

Other potential approaches to reducing NOx and PM emissions include electric hybrid, fuel cell, battery-electric with tender car, and catenary electric systems. Hybrid systems provide emission reductions of criteria and greenhouse gas emissions typically, on the order of 20 to 30% when used

in applications with opportunities for energy recovery such as service with multiple stops and/or hilly terrain.

More recently, the Class I railroads are investigating the feasibility of using natural gas for locomotive operations. The use of natural gas has the potential to further reduce NOx emissions with appropriate engine development similar to their on-road counterparts. The use of natural gas would also reduce particulate emissions compared to diesel usage.

Note: The following information (shown in italics) was provided by Sempra Energy Utilities.

It has been reported extensively that Class 1 railroad companies are currently evaluating the technical, economic and logistical feasibility of deploying LNG fueled locomotives rail system wide.[1] *A positive decision to move from diesel to natural gas fuel would likely result in deployment of LNG technology simultaneously and rapidly across all Class 1 railroad companies, with a complete switch from diesel to LNG occurring in the span of 20 years.*[2] *Furthermore, it is believed that LNG will be deployed trans-continentally on a line-by-line basis with LNG fueling infrastructure installed at appropriate intervals along the specific route. Conversion of a line would ensure the most modern locomotives will be operating on this route as they would be either a Tier 4 new build or an older locomotive repowered to meet a Tier 3+ NOx emission rate; all earlier Tier locomotives would be removed from service, defacto.*

If LNG fueling infrastructure and capacity was readily available at intermodal port facilities, such as OGV bunkering facilities, Class 1 railroad companies could be engaged to initiate their conversion with Southern California intercontinental railroad lines.

There are opportunities for combining technologies to gain greater emission reductions. GE Transportation (one of the two leading locomotive manufacturers) has developed a diesel hybrid locomotive concept that achieves a nominal level of "zero emission track miles" (i.e., the locomotive is operating solely on the electric motor).

Ocean-Going Vessels

Control technologies for main propulsion engines of ocean-going vessels (OGVs) include engine modifications such as common rail injection, electronic engine monitoring/control, slide valve injectors, advanced injector orifice design, turbocharging, and EGR. In addition, water

[1] Kemp, John, "Next energy revolution will be on roads and railroads," Reuters, August 12, 2014, http://www.reuters.com/article/2014/08/12/us-lng-railways-kemp-idUSKBN0GC11K20140812, accessed July 2015.

[2] This is based on the time it took the Class 1 railroad companies to switch from coal to diesel fuel.

emulsification and seawater scrubber technologies, can reduce NOx and PM emissions. SCR systems have been used in ocean-going vessels and are able to meet the IMO Tier 3 NOx emissions standard. Lastly, heat recovery systems being implemented on newer vessels can potentially reduce NOx emissions as well as greenhouse gas emissions. Some of the control technologies can be combined to meet the IMO Tier 3 NOx emissions standard.

More recently, natural gas as a transportation fuel (in particular, liquefied natural gas) is being used on ocean-going vessels with NOx emissions levels at the IMO Tier 3 emissions standard.

Note: The following information (shown in italics) was provided by Sempra Energy Utilities.

There is a global trend towards the use of liquefied natural gas (LNG) as a propulsion fuel in ocean going vessels driven by a combination of factors which include projected natural gas price advantage[3] over bunker fuel as IMO fuel sulfur reduction regulations kick in. Coincidentally a synergy exists between natural gas as a marine transport fuel and NOx emissions. OGV classed LNG engines are currently commercially available that emit NOx at rates as much as 54% lower than IMO Tier 3 regulations. This is an additional driver for the adoption of natural gas by marine fleets servicing North America. In the U.S., positive movement towards LNG exists foremost in the Pacific Northwest[4] and Caribbean[5] where fleets servicing domestic North American ECA trade routes out of these ports have made commitments to introduce LNG fueled vessels. Fuel suppliers have stepped forward to introduce LNG bunkering infrastructure to meet demand.

Globally, there is a strong association between the existence of LNG fueling infrastructure and the use of LNG powered ships, the highest concentration occurring in Northern Europe, where IMO fuel sulfur regulations and existing natural gas import facilities have stimulated the adoption and deployment of natural gas ship propulsion technology (Figure B-1). In the Pacific Rim, there is evidence that Asian ports are either planning or proposing the installation of LNG bunkering infrastructure. LNG bunkering exists in Incheon, South Korea and Gaolan, China (Figure B-2). For example, Korea's Ministry of Trade, Industry & Energy (MOTI) signed an agreement with 50 organizations to advance the development of LNG fueled shipping and bunkering infrastructure, [6] State-owned shipyards in China are laying plans for the building of 20 LNG ready very large ore

[3] "Cost and Benefits of LNG as a Ship Fuel for Container Vessels," Germanisher Lloyd, MAN

[4] Totem Ocean Trailer Express (TOTE), Matson and Pasha Hawaii have all indicated they will operate LNG fueled vessels out of the Port of Tacoma; Washington State Ferries is investigating operating their Seattle fleet on LNG, fueling at Port of Tacoma.

[5] TOTE and Crowley Maritime have indicated they will operate an LNG powered fleet out of the Port of Jacksonville.

[6] "Ulsan Plans LNG-Fuelled Ship-Building Dominance," NGV Global News, July 19, 2015, http://www.ngvglobal.com/blog/ulsan-plans-lng-fuelled-ship-building-dominance-0719#more-36375, accessed July 2015.

carriers (Valemax) for charter to Vale, Brazil[7] *and the Port of Singapore issued its first Request for Proposal for interested parties to apply for LNG bunker supplier license in July 2015.* [8] *Table B-1 describes the current state of Pacific Rim Ports that have the most advanced plans for installing LNG infrastructure. Evaluation of shipping line schedules indicate that the Ports of Los Angeles and Long Beach are on ship trade routes that include the ports of Seattle, Busan and Singapore.* [9]

All of these factors are indicative of an opportunity for Southern California to reduce regional NOx, however a mechanism would be required to attract these vessels to the region, namely the ability to refuel vessels at the regional ports. If LNG powered ships are attracted to Southern California, a higher proportion of newest technology IMO Tier 3 vessels would service the region, displacing older, higher emitting ships. Furthermore, a mechanism for incentivizing the construction of ships that utilize the lowest NOx emission technologies has the potential to yield even more NOx reductions.

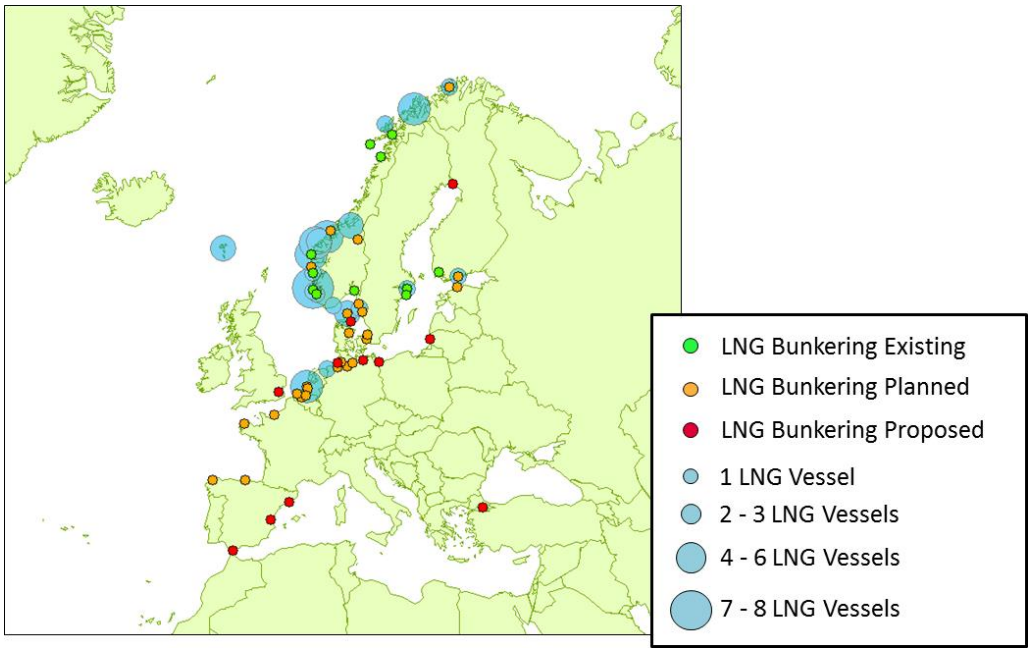


FIGURE B-1

European LNG ship deployment correlated with existing LNG bunkering

[7] "LNG-ready Stumbling Block as Cosco Pushes for Priority," TradeWinds, Volume 26, Number 28, July 17, 2015, p. 3.

[8] "Port of Singapore Issues RFP for LNG Bunkering," NGV Global News, July 30, 2015, http://www.ngvglobal.com/blog/port-of-singapore-issues-rfp-for-lng-bunkering-0730#more-36432, accessed July 30, 2015.

[9] COSCO Container Lines Americas, HPSX, MD1, PSW2, http://www.cosco-usa.com/fpdb/Services/schedules.aspx; accessed July 22, 2015.

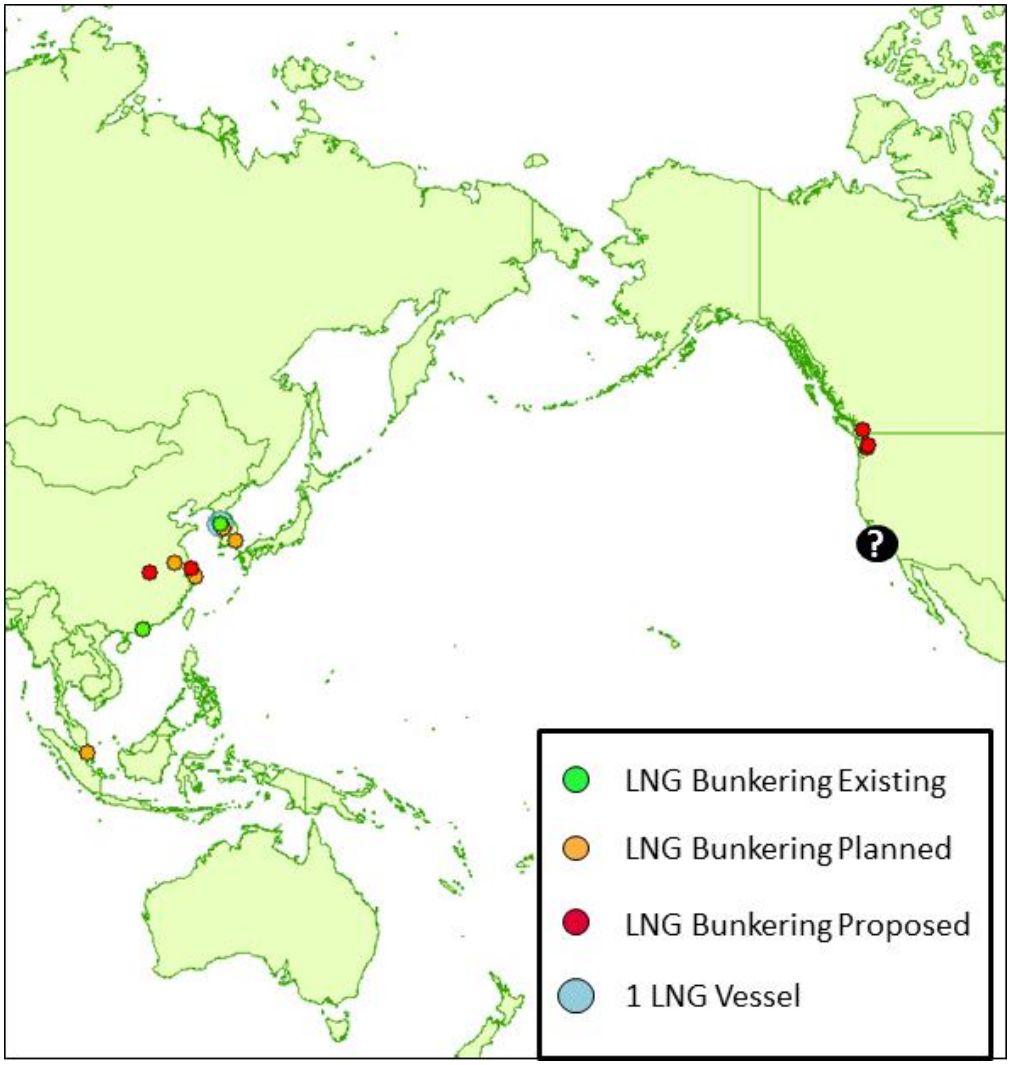


FIGURE B-2

Emerging Pacific Rim LNG bunkering sites.

TABLE B-1

Pacific Rim ports' activity in establishing LNG bunkering facilities.

Country	***City LNG Bunkering Status***		
	Existing	***Planned***	***Proposed***
China	*Gaolan*	*Nanjing* *Zhoushan*	*Wuhan* *Shanghai*
South Korea	*Incheon*	*Busan* *Pyeongtaek*	-
Singapore	-	*Singapore*	-
Canada	-	-	*Vancouver*
U.S.A.	-	-	*Tacoma*

IMO standards require 30% improvement in vessel fuel efficiency by 2025 as a means of reducing greenhouse gas emissions from ocean-going vessels. Several alternative technologies besides heat recovery systems mentioned above can contribute to that goal including the use of fuel cells, wind power, hull coatings, and propeller optimization. Vessel trip optimization and vessel speed reduction also contribute to reduced fuel consumption and emissions.

Ocean-going vessels also have auxiliary engine emissions which have similar technology solutions as propulsion engines. In addition, the CARB At-Berth Regulation requires certain vessels to use shorepower for shipboard power requirements while at berth. However, boiler emissions may still occur. As such, the use of emissions capture systems can capture boiler emissions as well as auxiliary engine emissions. Two companies are demonstrating emissions capture systems at the Ports of Los Angeles and Long Beach. The systems have the potential to capture over 90% of the NOx, SOx, and PM emissions from vessels while at berth. In addition, both companies are constructing the emissions capture system on barges to provide the flexibility of moving the systems to vessels as they call at different berths.

Commercial Harbor Craft

Commercial harbor craft used in goods movement related activities include barges, crew and supply boats, dredges, tow/push boats, tug boats, and workboats. The boats operate primarily at

the Ports of Los Angeles and Long Beach. Commercial harbor craft have long useful life and turnover to newer engines or boats is slow. Most commercial harbor craft have engines less than 800 horsepower, for which the most stringent emissions standard is Tier 3 (5.4 g/bhp-hr) for Category 1 and 2 marine engines. Engines greater than 800 horsepower (found almost exclusively in tugs and tow boats) are subject to the Tier 4 standard (1.3 g/bhp-hr) for Category 1 and 2 marine engines, which may need SCR and possibly a DPF. Promising alternative technologies include fuel cells and hybrid-diesel or hybrid-natural gas engines. Hybrid vessels have been shown to reduce emissions by around 30%. Fuel cells and battery systems have been demonstrated in a few commercial vessels.

Cargo Handling Equipment

Cargo handling equipment includes specialized container handling equipment (top-picks, side picks, rubber tired gantry cranes, etc), yard trucks, and conventional material handling equipment (excavators, loaders, forklifts.etc). Engines used in new cargo handling equipment must meet Tier 4 emission standards, the most stringent off-road diesel engine standard which generally requires use of DPF and SCR after treatment systems to reach 0.3 g/bhp-hr NOx. Lower emission technologies include diesel-electric hybrid engines and battery electric systems which are being deployed in demonstration projects for yard trucks, forklifts, and cranes.

Commercial Aircraft

Air cargo is carried in dedicated freight aircraft and also in passenger aircraft. CARB estimates that 13% of commercial aircraft emissions are related to air cargo. Technology improvements in air cargo movement will depend on technological advances for aircraft. These advances will include progressively lower NOx emissions and fuel consumption through improved jet engine combustor, turbine, and air frame designs. The improvements are driven by international and U.S. EPA emission standards for aircraft engines. Research supporting these improvements is guided by the Federal Aviation Administration (FAA) Continuous Lower Energy, Emissions, and Noise (CLEEN) Program. In efforts to reduce fuel consumption, many airports provide landside electrical power to run the auxiliary power units (APUs) on aircraft. In addition, several airlines are testing biofuels to reduce particulate, GHG emissions, and potentially, NOx emissions. Fuel cell technologies are also being investigated for auxiliary power as are wing and airframe designs to improve flight efficiency.

EFFICIENCY MEASURES

The regional goods movement system has a number of inefficiencies involving multiple handling stages, and rail or road congestion. The benefits from reducing these inefficiencies vary by

emission source category and specific improvements include trip reduction, reduced queuing time, fewer intermodal transfers, and better utilization of logistics resources.

Multiple Transfers of Goods

On-dock rail capability at the ports is an example of reducing intermodal transfers. Rather than unloading cargo containers from ocean-going vessels, trucking it to an intermodal facility, and then loading onto rail cars, the rail cars would be loaded directly at the docks. This eliminates the need for the container to be loaded onto a truck and transferred to the nearby railyards. Effective use of on-dock rail depends on proper staging of rail cars and containers.

Choke Points

There are a number of choke points in the transportation network that cause travel delays and increased emissions. The 2012 SCAG Regional Transportation Plan contains a list of road and rail improvements that increase capacity or provide alternate routes at specific sites throughout the South Coast Air Basin. These include grade separations of rail/road crossings, double/triple tracks for selected mainline rail segments, bridge improvements, and dedicated truck lanes with limited access.

Operational Changes

Operational changes include such measures as off-peak hours of operation, automated cargo handling, internet-aided trip planning/congestion avoidance, and platooning (close-coupled convoys of trucks) to reduce wind drag on individual trucks. The effect of these changes is relatively small per vehicle but can have a significant effect on basinwide emissions if implemented on a system-wide basis. As trucks enter the ports and intermodal yards, automated gate systems can improve truck movement and reduce idling.

Category-Specific Efficiency Strategies

Besides the operational efficiency strategies discussed above, there are additional emissions source category-specific strategies that could be considered. For example, trip/queuing reduction through better coordination/scheduling of drayage trucks with staged cargo container handling can also reduce criteria pollutant and greenhouse gas emissions.

Other emissions source category-specific examples include the use of larger container vessels and longer train consists (i.e., lineups). New ocean-going container vessels are being constructed with a capacity to transport a larger number of container resulting in fewer vessel trips. As mentioned earlier, in order to reduce fuel costs, shippers have formed partnerships to share ocean-going

vessels resulting in fewer number of vessel calls. The Class I railroads have been specifying larger horsepower locomotives to move longer consists, resulting in a smaller number of train trips.

Greater use of wide-span electric gantry cranes can potentially reduce the number of yard tractor movements and use of other cargo handling equipment while improving container movement efficiency.

The Ports of Los Angeles and Long Beach implemented a policy to allow harbor craft to dock at or near the berths that they plan to be operating the next day instead of having to travel back to their home base. Recognition of the emissions related and fuel related activities from all sources can potentially provide further emission reduction.

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Off-Road Equipment

2016 AQMP WHITE PAPER

OCTOBER 2015

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INTRODUCTION

Purpose and Objective

Despite the significant progress made in reducing emissions that has resulted in substantial improvements in air quality, additional emission reductions will be necessary to attain state and federal ambient air quality standards for ozone and fine particulate matter in the South Coast Air Basin. This white paper is intended to assist the public, stakeholders, and the SCAQMD in understanding key facts and policy issues related to the development of the 2016 South Coast Air Quality Management Plan (AQMP). The paper includes information regarding criteria pollutant emissions that are associated with the off-road equipment sector, which includes a wide variety of equipment ranging from smaller equipment such as residential and commercial lawn and garden equipment, to larger equipment such as industrial and commercial equipment, transportation refrigeration units, cargo handling equipment, airport ground support equipment, and construction and mining equipment. In addition, there is equipment used in various activities such as portable engines that are included in this sector. For the purposes of this white paper, the focus will be on the largest emission source categories in this sector. In addition, cargo handling equipment is discussed in the Goods Movement White Paper.

To illuminate policy choices relevant to the AQMP, the paper provides a couple of emission reduction scenarios to illustrate the need for additional emission reductions within this sector to support attainment of the state and federal ozone and particulate matter standards. The emission reduction scenarios highlight emission source categories where emission reductions could potentially be achieved more readily compared to other emission source categories in this sector. In addition, if some emissions source categories are able to go beyond the overall emission reduction target needed for attainment of the air quality standard, the additional reductions would help compensate for other emissions source categories where reductions are more challenging to achieve. The scenarios do not reflect any control strategies or suggest any control approach. As such, this paper does not propose specific rules or other control measures, but provides information to assist in crafting control measures as part of the 2016 AQMP development process. This paper does discuss the potential for achieving additional emission reductions through greater deployment of cleaner equipment that has emission levels below the emission standards established in existing state and federal regulations, advanced emission controls technologies, use of alternative and renewable fuels, and the use of operational efficiency measures.

In a separate effort, the SCAQMD staff has been working with the California Air Resources Board (CARB) and the Southern California Association of Governments (SCAG) to prepare updated

emissions inventories for the attainment demonstration of the federal ozone and fine particulate air quality standards. However, the new emission inventories were not available to perform the analyses described above. Therefore, in order to develop this white paper to help illuminate policy choices in the development of the 2016 AQMP, the emission inventories from the 2012 AQMP are used to perform the analyses described above. The initial observations and recommendations in this white paper are relevant regardless if a newer set of emissions inventories are used since the analyses examine the relative differences between the various emissions reduction scenarios since it is not the intent of this white paper to propose specific emissions control levels to meet federal air quality standards. That objective is part of the overall development of the 2016 AQMP.

Document Outline

This white paper provides background information on the base year and future year volatile organic compounds (VOC) and oxides of nitrogen (NOx) emissions inventories associated with the various off-road equipment emissions source categories. The following sections present brief descriptions of the associated air quality impacts, emission reduction progress, attainment challenges, and connections to climate change programs. Emission reduction scenario analyses were conducted to examine the range of emission reductions that could occur for each source category to help meet the ozone air quality standards by 2023 and 2032. The results of the scenario analysis are presented with initial observations of the issues/questions raised from the analysis. In addition, operational efficiencies are discussed. Finally, recommendations are provided to help frame the discussions in the development of the 2016 AQMP.

A discussion of current regulatory programs and other planning efforts is provided in Appendix A. Information on potential emission reduction technologies and efficiency measures is discussed in Appendix B.

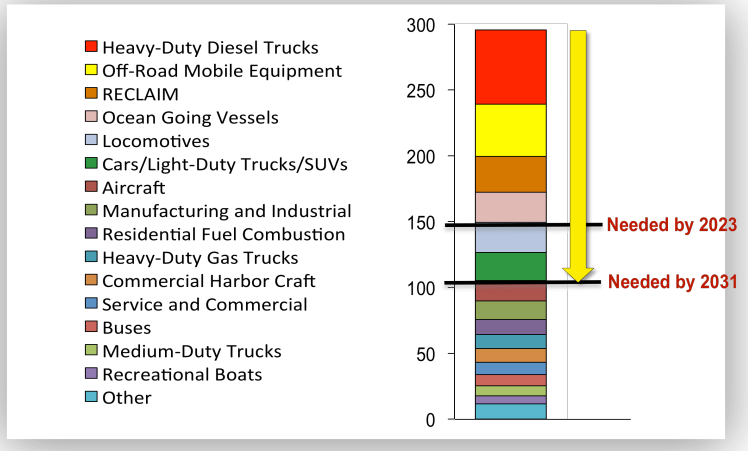
BACKGROUND

The South Coast Air Quality Management District (SCAQMD or District) consists of an area of approximately 10,743 square miles consisting of the South Coast Air Basin, and the Riverside County portion of the Salton Sea Air Basin (SSAB) known as the Coachella Valley Planning Area. The South Coast Air Basin, which is a subregion of the District's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The region is inhabited by more than 16 million people, representing about half of California's population. In addition, the SCAQMD region is projected to

grow to approximately 18 million people by 2030, and this growth is expected to occur primarily in Riverside and San Bernardino Counties. This situation is expected to lead to a greater imbalance of jobs and housing in the region, increasing transportation mobility and air quality challenges because of increased travel demand requirements and economic growth.

Attainment Challenge

Meeting U.S. Environmental Protection Agency (EPA) national ambient air quality standards for ozone and fine particulate matter will require additional NOx emission reductions in the South Coast Air Basin. Meeting state standards will be even more challenging. Preliminary ozone air quality analysis currently underway in the development of the 2016 AQMP indicates that NOx emissions will need to be reduced by approximately 50 percent in 2023 and 65 percent in 2031 (beyond projected 2023 baseline emissions). Note that the percentages will likely change slightly as the emission inventories are updated with more recent economic and demographic forecast information from the Southern California Association of Governments (SCAG) as part of the development of the 2016 AQMP. Figure 1 shows graphically the overall NOx emission reductions needed to attain the 8-hour ozone air quality standards in 2023 and 2031 and the major NOx emission sources contributing to the ozone air quality problem. This is especially challenging given that among the largest contributors to NOx emissions are mobile sources that are primarily regulated by the state and/or federal governments. The off-road equipment sector is the second largest contributor to total NOx emissions. Since many types of off-road equipment have already achieved over a 90% reduction in NOx emissions, attainment of the ozone standards will require wide-scale deployment of not only new equipment meeting the tightest tailpipe emissions standards, but also commercialization and deployment of technologies that achieve zero- or near-zero emissions.



(Source: Preliminary Draft 2023 Baseline NOx Emissions Inventory, July 2015)

FIGURE 1

Needed NOx Emission Reductions to Achieve
Federal 8-Hour Ozone Ambient Air Quality Standards

Climate Challenge

The SCAQMD Governing Board (Board) has recognized the nexus between technologies that minimize climate impacts and technologies that reduce criteria pollutant emissions, since many of the same technologies simultaneously address both of these challenges. As such, the SCAQMD Governing Board has developed policies and guiding principles which include the coordinated development of criteria air pollutant strategies that have co-benefits in reducing greenhouse gas emissions to make the most efficient use of limited resources and the time needed to deploy the necessary cleaner technologies. In September 2011, the Board adopted the SCAQMD Air Quality-Related Energy Policy. This policy was developed to integrate air quality, energy issues, and climate change in a coordinated manner. Various policies and actions were identified as part of this effort, some of which would affect off-road equipment emission sources. These include policies to promote zero- and near-zero emission technologies to the fullest extent feasible. Action items include studies to identify measures that reduce emissions from the off-road equipment sector, including incentivizing the early introduction of zero- and near-zero emission measures and identification of potential new funding mechanisms to support widespread penetration of such technologies within the off-road equipment sector.

Clearly, aggressive and coordinated technology development and deployment efforts are needed for off-road equipment over the next eight to twenty years to meet ozone ambient air quality standards in 2023 and 2032, as well as greenhouse gas reduction goals between 2020 and 2050. To this end, in 2012, the SCAQMD, California Air Resources Board (CARB), and San Joaquin Valley Unified Air Pollution Control District jointly prepared a document titled: "Vision for Clean Air: A Framework for Air Quality and Climate Planning." This document evaluated various technology scenarios in the off-road equipment sector that provide direction on future control strategies to concurrently achieve criteria pollutant standards and climate change goals. Major conclusions from that effort are that significant changes in technologies are needed to more widely deploy hybrid and significantly cleaner combustion equipment.

OFF-ROAD EQUIPMENT RELATED EMISSIONS SOURCE CATEGORIES

Table 1 shows the major emission source categories in the off-road equipment sector. The off-road equipment sector includes airport ground support equipment, construction and mining equipment, industrial and commercial equipment, oil drilling/workover equipment, transportation refrigeration units (TRUs), lawn/garden equipment, cargo handling equipment, and other miscellaneous portable equipment including military tactical equipment. Cargo handling equipment is addressed in the Goods Movement White Paper. Off-road equipment typically operates on gasoline or diesel fuel. Some commercial and industrial equipment operate on alternative fuels such as propane or natural gas. Other equipment operates on electricity such as lawn and garden equipment and airport ground support equipment.

TABLE 1

Off-Road Equipment Emission Source Categories

Emissions Source Categories	Examples
Airport Ground Support Equipment	Tugs, Baggage Handling, Food Service and Maintenance Trucks
Construction/Mining	Tractors, Bulldozers, Excavators, Off-Road Trucks
Cargo Handling Equipment	Yard Tractors, Side Picks, Top Picks, Cranes
Commercial	Generators, Compressors, Pumps

TABLE 1 (concluded)

Off-Road Equipment Emission Source Categories

Industrial	Forklifts, Aerial Lifts, Sweepers
Lawn and Garden Equipment (Commercial and Residential)	Lawn Mowers, Edgers, Trimmers, Blowers, Chainsaws
Transportation Refrigeration Units	Refrigerated Containers, Trucks, Truck Trailers, Railcars
Oil Drilling Equipment	Oil Drilling Rigs, Workover Rigs (mobile)
Miscellaneous	Portable Generators, Military Tactical Equipment

Air Quality Impacts of Off-Road Equipment Sources

The adoption and implementation of control strategies specific to the off-road equipment sector have resulted in significant emissions reductions. However, additional emission reductions are needed in order to achieve federal ambient air quality standards for ozone and fine particulate matter.

NOTE: For the purposes of this white paper, the emissions inventories provided in this section and the subsequent sections are from the 2012 AQMP. The 2016 AQMP will contain updated emission inventories for use in demonstrating attainment of the federal ozone and fine particulate air quality standards.

Figures 2 and 3 show the VOC and NOx emissions in tons/day from the off-road equipment sector and their contribution to the total emissions for 2014, 2023, and 2032. For 2014, off-road equipment sources contribute approximately 11 and 13% to the total VOC and NOx emissions inventory. The percent contribution from off-road equipment sources to total VOC and NOx emissions in 2032 is 9% for VOC and 13% for NOx. The largest contributor to VOC emissions among the off-road equipment categories is the lawn and garden equipment category.

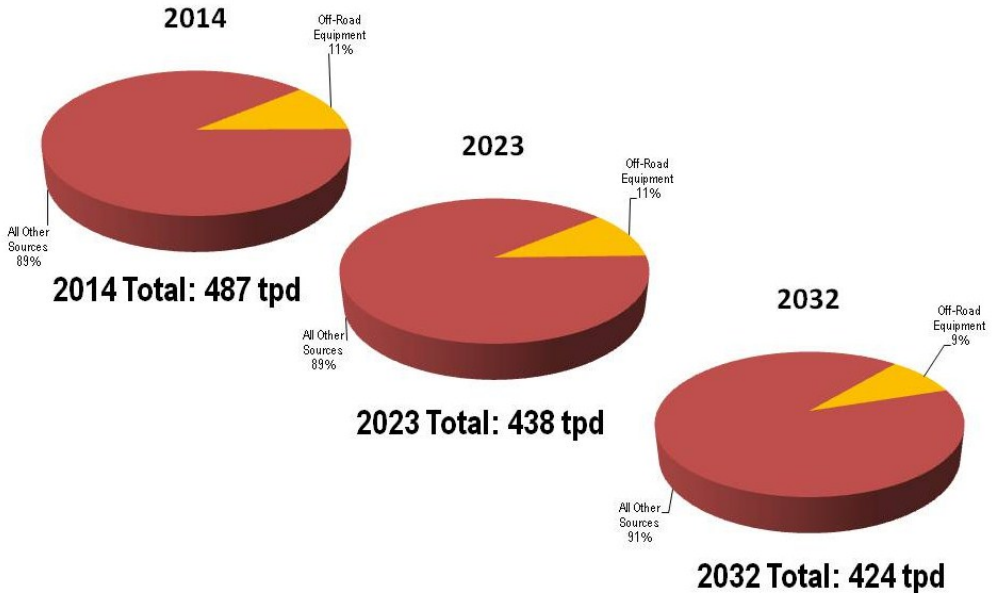


FIGURE 2

Off-Road Equipment Sector VOC Emissions Contribution to the Total VOC Emissions for 2014, 2023, and 2032 (Source: 2012 AQMP)

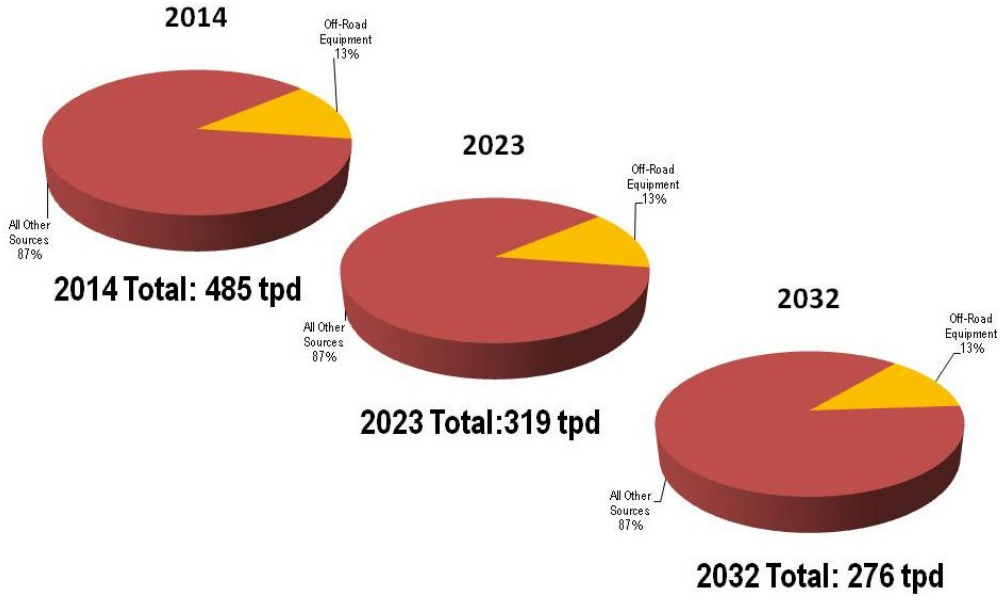


FIGURE 3

Off-Road Equipment Sector NOx Emissions Contribution to the Total NOx Emissions for 2014, 2023, and 2032 (Source: 2012 AQMP)

Tables 2, 3, and 4 provide VOC and NOx emissions and the equipment population for the various emissions source categories in the off-road equipment sector for calendar years 2014, 2023, and 2032, respectively.

TABLE 2

VOC and NOx Emissions from Emission Sources in the Off-Road Equipment Sector for Calendar Year 2014 (Source: 2012 AQMP)

Source Category	Population	VOC (tons/day)	NOx (tons/day)
Construction and Mining	86,607	3.45	25.54
Commercial	219,190	7.84	11.41
Industrial	34,070	1.97	10.01
Transportation Refrigeration Units	51,553	0.51	5.07
Cargo Handling Equipment	3,365	0.33	3.39
Lawn and Garden	6,801,314	38.50	4.62
Airport Ground Support Equipment	4,559	0.56	2.67
Oil Drilling Equipment	519	0.13	1.43
Other (Generators, Military Tactical Equipment)	521	0.02	0.26
Total	**7,201,698**	**53.31**	**64.40**

TABLE 3

VOC and NOx Emissions from Emission Sources in the Off-Road Equipment Sector for Calendar Year 2023 (Source: 2012 AQMP)

Source Category	Population	VOC (tons/day)	NOx (tons/day)
Construction and Mining	103,259	2.59	15.11
Commercial	225,228	5.32	6.79
Industrial	48,958	1.58	7.55
Transportation Refrigeration Units	59,690	0.44	4.05
Cargo Handling Equipment	5,697	0.42	2.23
Lawn and Garden	7,638,328	35.97	4.82
Airport Ground Support Equipment	6,349	0.40	1.41
Oil Drilling and Equipment	494	0.08	0.73
Other (Generators, Military Tactical Equipment)	522	0.01	0.11
Total	**8,088,525**	**46.81**	**42.80**

TABLE 4

VOC and NOx Emissions from Emission Sources in the Off-Road Equipment Sector for Calendar Year 2032 (Source: 2012 AQMP)

Source Category	Population	VOC (tons/day)	NOx (tons/day)
Construction and Mining	111,213	1.86	8.35
Commercial	235,261	3.75	5.09
Industrial	53,007	1.10	6.37
Transportation Refrigeration Units	73,577	0.64	4.87
Cargo Handling Equipment	6,521	0.61	2.37
Lawn and Garden	8,612,866	29.25	6.44
Airport Ground Support Equipment	5,986	0.30	0.99
Oil Drilling and Equipment	416	0.10	0.92
Other (Generators, Military Tactical Equipment)	522	0.00	0.03
Total	**9,099,369**	**37.61**	**35.43**

Emissions Reduction Progress to Date

As shown in Figure 4, off-road equipment emissions of VOC, NOx, and PM have experienced reductions of from 73%, 58%, and 68% from 2002 levels. These reductions have primarily relied upon development and commercialization of technologies that control emissions from internal combustion engines and accelerated equipment turnover resulting from CARB fleet rules for diesel-fueled equipment. Some categories (industrial, transportation refrigeration units, and airport ground support equipment) have also had turnover to zero- or partially zero-emission equipment. While directly emitted PM emissions affect PM air quality and are associated with local air toxic exposure, directly emitted PM emissions do not have a direct impact on ozone formation. However, NOx and VOC emissions are precursors to both ozone and fine particulates.

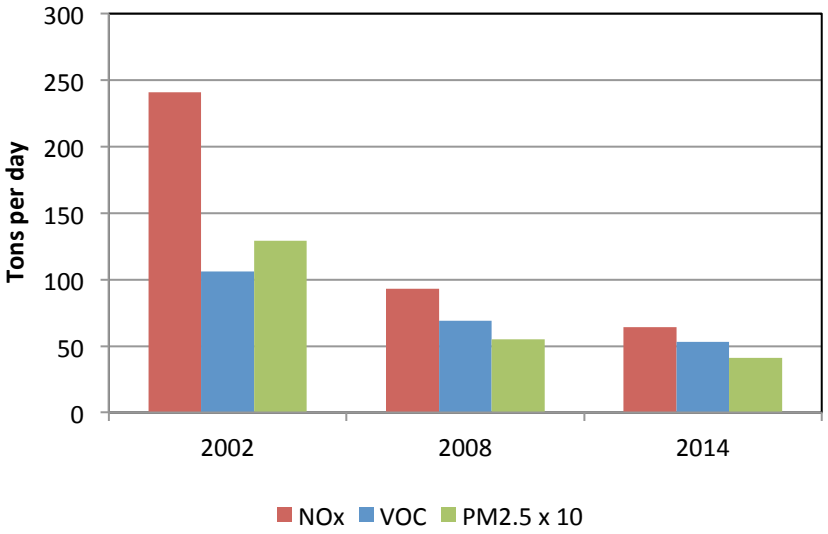


FIGURE 4

Off-Road Equipment Emissions in the South Coast Air Basin (Source: 2007 AQMP (for 2002) and 2012 AQMP (for 2008 and 2014))

The off-road equipment NOx and VOC emissions provided in Tables 2, 3, and 4 are shown graphically in Figures 5 and 6 for 2014, 2023, and 2032 calendar years to illustrate the projected trend in NOx and VOC emissions due to the impact of regulatory programs for the various off-road equipment categories. Regulatory programs include a combination of command and control programs, such as more stringent emission standards applicable to original equipment manufacturers and in-use compliance programs applicable to equipment/fleet owners, as well as monetary incentive programs that promote the market penetration of lower-emitting vehicles and equipment. These emission reductions have occurred despite the general increase in the population of off-road equipment over time, as described in Tables 2 through 4.

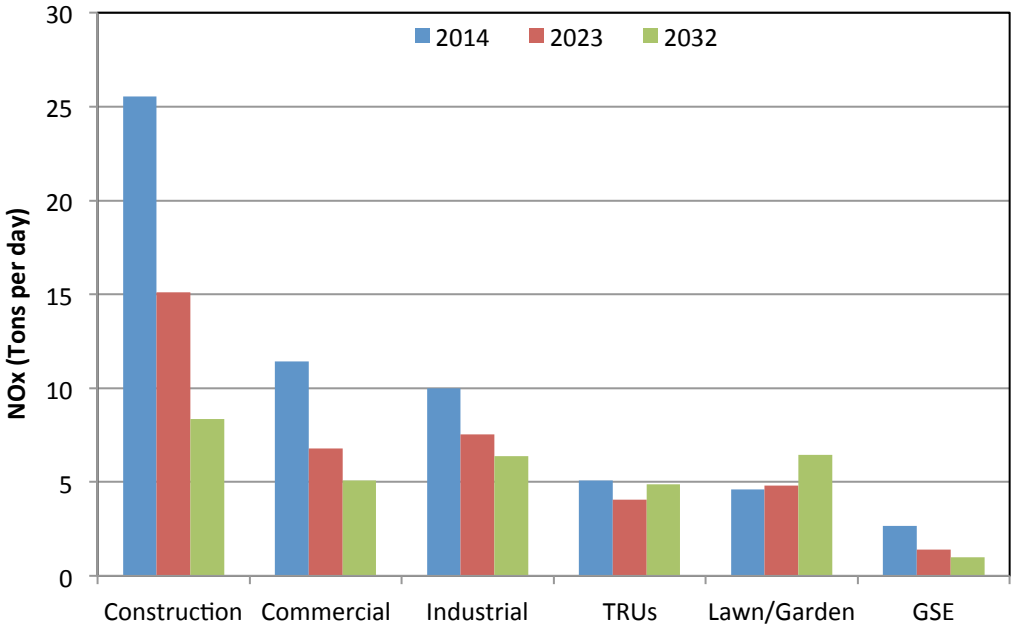


FIGURE 5

NOx Emissions for Specific Off-Road Equipment Source Categories (TRUs – Transportation Refrigeration Units; GSE – Airport Ground Support Equipment)
(Source: 2012 AQMP)

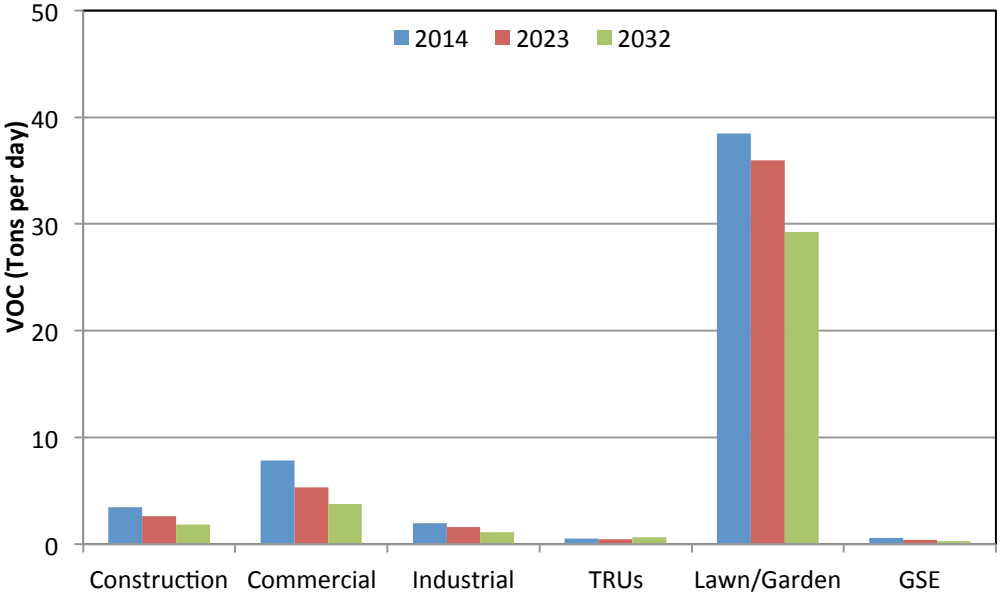


FIGURE 6

VOC Emissions for Specific Off-Road Equipment Emission Source Categories (Source: 2012 AQMP)

NOx EMISSION REDUCTION SCENARIOS

NOx emission reduction scenarios were developed to illustrate the amount of NOx emission reductions that may be necessary across the various emissions source categories in the off-road equipment sector to achieve regional NOx carrying capacities for criteria pollutants and their precursors in attainment deadline years. The scenarios are intended to help provide perspective on the challenging task to achieve necessary emission reductions in compressed timeframes to meet air quality attainment standards. The scenarios do not represent any specific strategies to meet the emission reductions associated with the various scenarios. Specific strategies will be developed as part of the 2016 AQMP development process.

As noted in the beginning of this white paper, the emissions inventories used for the emissions reduction scenarios are from the 2012 AQMP. The 2012 AQMP calls for 65 and 75 percent reduction in NOx emissions to attain the federal 8-hr ozone air quality standards in 2023 and 2032, respectively. However, preliminary analysis as part of the development of the 2016 AQMP indicates that the needed NOx emission reductions are approximately 50 and 65 percent for 2023 and 2031, respectively. The initial observations and recommendations would not change due to differences in the emissions inventories since the analysis are based on relative changes among the various emissions source categories.

For the two attainment years 2023 and 2032, two scenarios were developed and analyzed. The two scenarios are:

- Equal Share Reduction in NOx
  Under this scenario, all of the off-road equipment source category baseline emissions are reduced by 65% for 2023 and 75% for 2032 (from the 2023 baseline emissions).
- 100 Percent Existing Standards
  Under this scenario, all off-road equipment NOx emissions are assumed to be at the greatest level of control based on current exhaust emissions standards.

Tables 5 and 6 provide the results of the emissions analysis for each scenario for 2023 and 2032, respectively.

TABLE 5

Remaining NOx Emissions (tons/day) in 2023

(Baseline and Equal Share Emissions from the 2012 AQMP)

Source	Baseline	Percent of Equipment at Most Stringent Level of Existing Standard (%)	Equal Share	100% Existing Standards
Construction and Mining	15.11	81	5.29	4.43
Commercial Equipment	6.79	86	2.38	4.70
Industrial Equipments	7.55	85	2.65	6.84
Lawn and Garden Equipment	4.82	87	1.69	3.95
Transportation Refrigeration Units	4.05	97	1.42	4.01
Airport Ground Support Equipment	1.41	83	0.49	0.94
Oil Drilling/Workover Equipment	0.73	68	0.26	0.15
Total	**40.46**	**--**	**14.18**	**25.02**

TABLE 6

Remaining NOx Emissions (tons/day) in 2032

(Baseline and Equal Share Emissions from the 2012 AQMP)

Source	Baseline	Percent of Equipment at Most Stringent Level of Existing Standard (%)	Equal Share	100% Existing Standards
Construction and Mining	8.35	94	2.34	4.41
Commercial Equipment	5.09	99	1.43	5.09
Industrial Equipments	6.37	97	1.78	6.05
Lawn and Garden Equipment	6.44	98	1.81	6.19
Transportation Refrigeration Units	4.87	100	1.36	4.87
Airport Ground Support Equipment	0.99	96	0.28	0.86
Oil Drilling/Workover Equipment	0.92	82	0.26	0.35
Total	**33.03**	**--**	**9.26**	**27.82**

Equal Share Reduction in NOx Scenario

For the 2023 attainment year, an overall 65% NOx reduction for all source categories in the South Coast Air Basin was determined in the 2012 AQMP beyond already adopted rules to be needed for attainment of the 80 ppb federal 8-hour ozone air quality standard. This is reflected in a straight 65% reduction across all off-road equipment source categories, resulting in an overall decrease of NOx emissions from 40.46 tons/day to 14.18 tons/day (Table 5).

For the 2032 attainment year, an overall 75% NOx reduction in all source categories based on 2023 baseline emission inventories was determined to be needed for attainment of the 75 ppb Federal 8-hour ozone standard. This is reflected in a straight 75% reduction across all off-road equipment sources as applied to 2023 baseline emission inventories, and adjusted by the 2032 baseline emissions to reflect growth. The calculation was performed in this manner to provide the incremental emission reductions by source category in "2023 currency" necessary to meet the more stringent Federal 8-hour ozone air quality standard in 2032. The total remaining NOx emissions are 9.26 tons/day from the baseline NOx emissions of 33.03 tons/day (Table 6).

100 Percent Existing Standards

This scenario assumes all equipment meet existing adopted emission standards. For each category in the off-road equipment sector, this scenario assumes that all equipment meet the highest level of controls (or the cleanest exhaust emission standards) for NOx. For example, construction and mining equipment and commercial and industrial equipment are assumed to be at 100% Tier 4 NOx emissions levels. The total NOx emissions were reduced from 40.46 tons/day to 25.02 tons/day in 2023, and 33.03 tons/day to 27.82 tons/day in 2032 (Tables 5 and 6). In addition to the emission changes for the two scenarios, Tables 5 and 6 show the percentage of the equipment population that are projected to be at the highest level of control (based on existing emission standards) in the baseline emissions for 2023 and 2032. As shown in Tables 5 and 6, significant numbers of equipment are projected to be at the highest level of control. As such, having the remaining equipment at the highest level of control does not provide sufficient NOx emission reductions to meet the "equal share" target levels.

INITIAL OBSERVATIONS

Emission Reduction Scenarios

The emission reduction scenario analysis provides insights into the development of control strategies needed to attain the federal 8-hour ozone air quality standards in 2023 and 2032. Some of the initial observations are provided below.

- The analysis conducted for this white paper focuses on specific emissions source categories related to the off-road equipment sector. As such, any analysis performed does not imply that the federal ozone air quality standards will be attained without further reduction from all emission source categories that contribute to the ozone air quality problem. That analysis will be conducted as part of the development of the 2016 AQMP. However, the scenarios analyzed as part of this white paper provide information on areas to focus on for the development of the 2016 AQMP.

- If all off-road equipment were turned over to meet the lowest emissions standards established in current U.S. EPA, and CARB exhaust emission standards, the off-road equipment sector will not achieve the 65% or 75% "equal share" NOx emissions reduction needed to attain the federal ozone air quality standards.

- Construction and mining equipment remain the largest contributor to the total off-equipment NOx emissions inventory.

- In general, almost all off-road equipment will be operating at the most stringent existing U.S. EPA exhaust emission standards in the early 2020s (as shown in Tables 5 and 6). By 2032, off-road equipment in nearly all emission source categories is at the highest level of emissions control. As such, further emission reductions in these emission categories can potentially be achieved through a combination of regulatory actions such as new emission standards, accelerated research and demonstration of new control technologies or advanced zero-emission technologies, and incentives programs.

- There is a general recognition that not all emission sources will be able to achieve an "equal share" reduction in NOx emissions for a variety of reasons, including, but not limited to, availability of cleaner technologies, cost-effectiveness, sheer number of equipment, and the timeframe to turn over older equipment to meet air quality standards.

- Accelerated deployment of commercially available zero-emission equipment in the off-road equipment sector will be needed to help meet the "equal share" reduction levels in 2023 and 2032.

- If the off-road equipment sector does not achieve the needed NOx reductions, emission sources in other sectors must achieve greater NOx reductions to make up the difference. Conversely, if emission sources other than the off-road equipment sector do not achieve needed NOx reductions, there will be a need for the off-road equipment sector to achieve greater levels of NOx reductions to make up the difference.

- While significant emission reductions have occurred in this sector, new exhaust emission standards need to be established. Given the low pollutant levels of such standards, innovative approaches will be needed in setting them and in maximizing the deployment of zero- and near-zero emission equipment.

- The most effective set of strategies will consist of a combination of accelerated advanced technology deployment, incentive programs to accelerate replacement of older off-road equipment, infrastructure enhancements, and funding incentives. Regarding funding incentives, there is a need to develop funding mechanisms that will allow operators complying with the lowest emissions standards to help recoup their investments when considering acquisition of near-zero or zero-emission equipment.

Advanced Technologies

The following are observations on the availability of zero- and near-zero emission technologies for the off-road equipment sector. For some sectors, if zero- or near-zero technologies are not feasible, cleaner combustion technologies are needed. In addition, advancing cleaner fuels and renewable fuels will help reduce criteria pollutant and greenhouse gas emissions.

- Many of the equipment used in the off-road equipment sector have long remaining useful lives. As such, new acquisitions should be at the cleanest levels of emissions and there is a need to commercialize near-zero and zero-emission technologies as early as possible.

- Zero-emission off-road equipment is currently commercially available for smaller equipment. However, there is a need to conduct research and demonstration programs for larger off-road equipment.

- To the extent that a large number of airport ground support equipment are already operating on electricity, hybridization and alternative fuels will have a significant role in reducing emissions further from airport ground support equipment.

Efficiency Measures

While greater penetration of zero- and near-zero emission technologies are needed to attain air quality standards, best practices to reduce fuel costs and increase operational efficiencies will play an important role to help meet air quality standards. Based on discussions with the Off-Road Equipment White Paper Working Group, some initial observations are:

- Operational efficiency enhancements can be made relative to industry best practices to reduce fuel costs and improve operational efficiencies in the delivery of goods.

- Intelligent transportation systems (ITS) and connected vehicles/equipment (i.e., equipped for wireless communication) can potentially provide additional environmental benefits not only in improving operational efficiencies and fuel savings, but also reduced criteria pollutant and greenhouse gas emissions.

- Potential criteria pollutant emission reductions resulting from implementing operational efficiency strategies should be quantified to the greatest extent possible and recognized as part of the development of the 2016 AQMP.

RECOMMENDATIONS

The emission reduction scenario analysis for the off-road equipment sector (Tables 5 and 6) shows a need for greater penetration of zero- and near-zero emission technologies in order to attain air quality standards. Given the long remaining useful life of off-road emission sources, existing funding programs, such as the Carl Moyer Program, Federal Aviation Administration Voluntary Airport Low Emission (VALE) Program, and the SCAQMD Lawnmower and Commercial Leaf Blower Exchange Programs, will be beneficial to help accelerate deployment of zero- and near-zero emission technologies. The following are some key recommendations to consider during the development of the 2016 AQMP.

Technology-Related and Equipment Deployment Recommendations

There is a need to develop new off-road engines and equipment that will be at zero- and near-zero emission levels. Implementing the following recommendations will help accelerate deployment of cleaner off-road equipment.

- Further research, demonstration, and deployment programs need to be initiated to develop cleaner off-road engines. Funding for such programs needs to be identified as early as possible to foster the research and demonstration programs.

- The U.S. EPA and CARB need to establish as soon as possible new NOx emissions standards for off-road engines that can potentially achieve significantly cleaner than current off-road engine exhaust emissions standards. As part of this effort, new certification test procedures should be developed for off-road engines that take into account hybridization that provides for zero-emission operational load hours or zero-emission miles.

- Sustained incentive programs (monetary and non-monetary) are needed for operators to deploy the cleanest equipment in the South Coast Air Basin. As part of this effort, research and demonstration projects should be initiated to develop new engines meeting the lower emission standards.

- Sustained public funding assistance will benefit all emission source categories in the off-road equipment sector to maximize deployment of zero- and near-zero emission technologies.

- New mechanisms must be developed to significantly increase deployment of zero- and near-zero technology equipment. Such mechanisms may take the form of regulations or monetary and non-monetary incentives.

- Renewable fuels may potentially provide criteria pollutant emission reduction benefits along with greenhouse gas emissions benefits. The use of renewable fuels should be supported, such as renewable gasoline, renewable diesel, renewable natural gas, and other biofuels, to help reduce fine particulate emissions and to some extent NOx emissions. [Note: The reader is referred to the Energy Outlook White Paper for further discussions of renewable fuels and infrastructure development.]

Operational Efficiency Recommendations

Operational efficiency improvements currently in practice and new strategies to further reduce fuel costs need to be quantified in terms of criteria pollutant emission benefits as part of the 2016 AQMP. The following recommendations can potentially help to further reduce criteria pollutant emissions and greenhouse gas emissions.

- Work with stakeholders in the off-road equipment sector to develop industry best practice examples for others to implement where appropriate.

- Work with stakeholders to identify technologies that help improve operations at construction and mining sites, warehouse distribution centers, and ports, rail, and intermodal yards where off-road equipment (in addition to cargo handling equipment) are used, that provide criteria pollutant emission reduction co-benefits.

- Develop methodologies to quantify emission reductions from the implementation of best practices. Such quantification methodologies can be used in the 2016 AQMP and future AQMPs as well as CEQA for purposes of tracking and reporting criteria pollutant and greenhouse gas emission reduction benefits.

The following recommendations were provided at the June 26, 2015 meeting of the Off-Road Equipment White Paper Working Group.

- As new incentive programs are developed, administration of the programs should be streamlined as much as possible in recognition that many fleets, especially smaller fleets, do not have sufficient resources to manage the projects.

- As new emissions inventories are being developed, there is a need to reflect the most up-to-date information regarding activity and future year projections.

- Given that there may be multiple compliance requirements from different regulations that may affect the same piece of equipment, there is a desire that the regulations be as consistent as possible.

- Similar to the desire for regulatory consistency, there is a desire that the various incentive programs have a consistent set of provisions.

- Quantifying the emission benefits from operational efficiency strategies will be challenging. There is a need to develop a process to evaluate strategies for each vocation.

APPENDIX A

CURRENT EMISSION CONTROL PROGRAMS

CURRENT EMISSION CONTROL PROGRAMS

Current regulatory programs affecting the off-road equipment sector are provided in this appendix.

OFF-ROAD EQUIPMENT SECTOR EMISSION SOURCES

Off-road equipment emission sources addressed in this paper include diesel and spark ignition equipment in the construction and mining, commercial/portable, industrial, transportation refrigeration units (TRU), lawn/garden, and airport ground support equipment (GSE) source categories. Emission control programs include U.S. EPA and CARB exhaust emission standards for new diesel and spark ignition engines as well as CARB in-use equipment regulations. In-use regulations require accelerated turnover of older engines to newer lower emission engines and have been established by CARB for the following types of equipment: diesel-fueled self-propelled mobile equipment greater than 25hp, spark ignition forklifts and certain other industrial equipment greater than 25hp, portable equipment, and TRUs. The U.S. Federal Aviation Administration (FAA) provides grants under the Voluntary Airport Low Emission (VALE) Program to airports to finance low emission vehicles, refueling and recharging stations, gate electrification, and other airport air quality improvements to help meet air quality standards. In addition, the SCAQMD provides incentives for repowering or replacing construction equipment through the Carl Moyer and Surplus Off-Road Opt-In for NOx (SOON) programs and replacing residential lawn mowers with electric mowers through the Lawn Mower Exchange Program.

Diesel Construction and Industrial Equipment

In January 2015, the final stage of the Tier 4 off-road (or non-road) engine exhaust emission standards became effective and nearly all newly manufactured engines will be Tier 4 compliant. Most new equipment in 2015 and later will be built with Tier 4 engines. However, due to the long useful life of construction and industrial equipment, some older equipment including uncontrolled Tier 0 equipment will remain in service for many years. To require replacement, repower, or retirement of older equipment, CARB adopted the Regulation for In-Use Off-Road Diesel-Fueled Fleets. This regulation required registration and labeling of diesel-fueled engines 25hp and larger, established fleet average emission targets in 2014 and future years, and required mandatory turnover of old equipment if fleets do not meet the emission targets. The regulation provides later implementation schedules for small fleets. The implementation schedule is fully implemented by 2023 for large and medium fleets and 2028 for small fleets. The final emission targets are

equivalent to an average of Interim Tier 4 standards. However, the regulation allows for some older engines to remain in the fleet including equipment with Tier 0 engines.

Large Spark Ignition Equipment

Large spark ignition (LSI) engines are defined as engines equal or larger than 25hp or 19kw in maximum power rating. CARB adopted off-road engine emission standards for LSI engines and the Large Spark Ignition Fleet Regulation, which established recordkeeping requirements and fleet average emissions targets for industrial LSI forklifts, and non-forklift LSI fleets (e.g., sweepers/scrubbers, industrial tugs, and airport ground support equipment). Fleets with three or fewer pieces of regulated LSI equipment are exempt from the regulation. The rule accelerated turnover of regulated LSI and encouraged introduction of electric forklifts as they could be counted in the fleet average as zero emission. New engine exhaust emission standards were fully implemented in 2010 and fleet average requirements were fully implemented in 2013. The fleet emission standards are approximately midway between the 2007 and 2010 standards and the regulation allows some pre-2010 engines to remain in the fleet.

Transportation Refrigeration Units

Transportation refrigeration units (TRU) are small refrigeration units mounted on trucks, trailers, containers, and railcars to provide refrigerated or frozen storage of perishable goods. CARB adopted emission standards for diesel and spark ignition engines less than 25 hp. These standards were fully implemented by 2010 for spark ignition engines and 2013 for diesel engines. TRUs are powered primarily by diesel engines which emit diesel particulate matter (PM). CARB adopted the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate in 2004 with amendments in 2011. The TRU regulation applies to TRUs that operate in California and established registration and reporting requirements and an accelerated turnover schedule such that in-use TRUs had to be repowered, retrofitted or replaced after seven years. TRUs that do not operate in California and transit through the state to other destinations are exempt from the regulation. The mandatory turnover schedule ends in 2019, seven years after 2012, which is the last year that non-Tier 4 TRU engines were manufactured. By 2020, essentially all TRUs that operate in California will be Tier 4 final compliant.

Portable Equipment

Portable equipment includes pumps, generators, compressors, and other specialized construction and industrial portable equipment. Portable equipment is mounted on trucks, trailers, containers, and skids and the engine powering the equipment does not also propel the equipment. CARB adopted emission standards for diesel and spark ignition engines less than 25 hp (small off-road

engine standards) and 25hp and above (large engine standards). These standards were fully implemented by 2010 for spark ignition engines and 2015 for diesel engines. Small portable equipment is usually powered by spark ignition engines, but most portable equipment over 25hp is powered by diesel engines. Portable engines may have long remaining useful lives. CARB adopted the Portable Diesel-Fueled Engines Regulation in 2010 and the regulation became effective in February 2011. The portable engine regulation provides that at the time of registration of an engine subject to the regulation that the engine meets the most stringent emission standards in effect at the time of the registration application. The regulation applies to diesel-fueled portable equipment with engines rated at 50hp and higher and established registration, recordkeeping, and reporting requirements.

Lawn and Garden Equipment

This source category includes equipment used by both professional gardeners and homeowners. As a result, it is the largest category in terms of number of equipment and includes a diverse population of engine sizes, fuel types, and handheld, portable, and self-propelled equipment. CARB adopted regulations establishing exhaust emission standards for diesel and spark ignition engines less than 25 hp (Small Off-Road Engines). Engines with 25 hp and above are subject to the LSI Regulation discussed above. In addition, CARB adopted evaporative emission standards for small off-road engines in 2004. These standards were fully implemented by 2010 for spark ignition engines and 2015 for diesel engines. There are no emission control programs specifically applied to lawn and garden equipment. Portable lawn and garden equipment with diesel-fueled engines equal or greater than 50 hp are subject to the Portable Diesel-Fueled Engines Regulation. Riding mowers and other self-propelled mobile equipment with diesel-fueled engines equal or greater than 25 hp are subject to the Regulation for In-Use Off-Road Diesel-Fueled Fleets.

Ground Support Equipment

Ground service equipment (GSE) move and load baggage, tow aircraft, and provide electrical power, engine starting, air conditioning, fueling, maintenance, food service, and lavatory service for aircraft at airports. Due to their specialized design and use, GSEs have long useful lives. As a group, GSE largely comprise off-road types of equipment fueled by either gasoline or diesel. Diesel fueled GSE are subject to the Regulation for In-Use Off-Road Diesel-Fueled Fleets. Spark ignition forklifts and certain other equipment are subject to the Off-Road Large Spark-Ignition Fleet Regulation. In addition, zero emission GSEs are commercially available and grid power is used for some aircraft support functions (auxiliary power, fueling) previously provided by diesel-fueled mobile equipment.

Incentive Programs

Given the wide variety of off-road equipment, there are several funding programs that apply to various off-road equipment types. The SCAQMD administers several incentive programs to repower, retrofit, or replace off-road equipment.

The Carl Moyer Memorial Air Quality Standards Attainment Program provides funding based on cost-effectiveness criteria proportional to the emission reduction benefit of projects to repower, retrofit, or replace equipment. The Carl Moyer Program can fund projects for diesel and spark ignition equipment that are not required for compliance with in-use fleet rules.

The SCAQMD has been implementing the Surplus Off-Road Opt-In for NOx (SOON) provision of the CARB In-Use Off-Road Diesel-Fueled Fleet Regulation. The SOON program provides funding to operators subject to the regulation for projects to repower or replace Tier 0 and Tier 1 diesel construction and industrial equipment including ground support equipment.

As mentioned earlier, the U.S. FAA provides grants under the VALE Program to airports for the replacement of ground support equipment. In addition, the SCAQMD may receive U.S EPA funds for emission reduction projects for off-road equipment and ground support equipment.

The SCAQMD has been providing funding for zero-emission lawnmowers as part of the residential and commercial lawnmower exchange program. The exchange program provides a new electric lawn mower at a substantial discount in exchange for an older working gasoline-powered mower, which is scrapped. In addition, the SCAQMD conducts a commercial leaf blower exchange program to replace older gasoline-powered leaf blower with new leaf blowers that meet existing emission standards or cleaner.

APPENDIX B

POTENTIAL EMISSION REDUCTION TECHNOLOGIES AND EFFICIENCY MEASURES

POTENTIAL EMISSION REDUCTION TECHNOLOGIES AND EFFICIENCY MEASURES

Discussions on emission control technologies that have led to criteria pollutant emission reductions in the off-road equipment sector historically and the potential technologies to further reduce emissions including greater deployment of zero-emission and near-zero emission advanced technologies are provided in this Appendix. In addition, operational efficiency measures will have an important role in reducing criteria pollutant and greenhouse gas emissions.

OVERVIEW - TYPES OF CONTROL TECHNOLOGIES AND EFFICIENCY MEASURES

The following sections summarize some of the control technologies that can potentially further reduce criteria pollutant combustion emissions. Specific control technologies by emissions source are provided in the next section.

Cleaner Combustion Engines

Cleaner combustion engines may use advanced engine designs, improved engine management controls, or aftertreatment control systems. Most of the cleaner combustion technologies were developed for on-road engines and were adapted to off-road engines. The current off-road diesel emission standards for 75 to 750 hp engines (Tier 4 final) require high pressure common rail fuel injection, multi-stage turbochargers with charge air cooling, cooled EGR, selective catalytic reduction (SCR), and diesel particulate filters to reach NOx and PM emission levels of 0.3 g/bhp-hr and 0.01 g/bhp-hr, respectively. Tier 4 represents a 90% reduction from Tier 3 standards and even higher reduction from less stringent standards. However, cleaner combustion engines are needed to reach future ozone air quality standards.

Research is now being conducted to further reduce NOx levels of current diesel and natural gas-powered heavy-duty on-road vehicles to near-zero levels, specifically targeting a 90 percent NOx reduction from the current level of 0.2 g/bhp-hr. This research is being conducted separately by CARB under a contract with Southwest Research Institute. Under funding from the SCAQMD, California Energy Commission, and Southern California Gas Company, several natural gas engine manufacturers are developing next-generation natural gas engines to meet a 0.02 g/bhp-hr exhaust emissions level in the next several years. CARB research efforts focus on the development of emission control technologies for both diesel and natural gas engines, and SCAQMD's research solely focuses on natural gas engine technology at this time. Further improvements in engine and

aftertreatment control technologies will be investigated as part of these research projects. It may be possible to extrapolate the results of this research for application with off-road equipment applications.

The following sections provide an overview of technologies that can further reduce criteria pollutant emissions.

Aftertreatment Emissions Control Technologies

Aftertreatment technologies to reduce NOx and particulate emissions include oxidation or three-way catalysts, selective catalytic reduction (SCR) systems, exhaust gas recirculation, and diesel particulate filters. These technologies may be retrofitted to in-use engines where technically feasible or may be incorporated in certified engines as originally manufactured.

Diesel oxidation catalysts do not reduce NOx, but can reduce hydrocarbons by 50% and particulates by 20 to 25%. Three-way catalysts for spark ignition engines can reduce hydrocarbon, carbon monoxide, and NOx by 90%, but are not effective on particulates.

SCR systems can reduce NOx by 90% using a reductant such as urea, commercially available as Diesel Exhaust Fluid, and in some cases, can provide moderate reductions in particulate emissions. However, SCR performance and efficiency is highly dependent on the exhaust temperature. In-use measurements of NOx emissions from heavy-duty vehicles found higher levels of NOx emissions from diesel vehicles when the vehicles operate in shorter trips where the exhaust temperatures are below the level needed for the SCR system to work effectively. There are ongoing investigations to address this performance issue.

Diesel particulate filters do not reduce NOx, but can reduce particulate emissions by more than 90% by mass and, depending on design, may also reduce hydrocarbons.

Aftertreatment systems do not generally reduce CO2 emissions and in some instances, may increase CO2 emissions due primarily to increased fuel usage.

Exhaust Gas Recirculation

Exhaust gas recirculation (EGR) is another technology that reduces NOx emissions. EGR works by recirculating a portion of an engine's exhaust gas back to the engine cylinders. The presence of exhaust gas in the engine cylinders reduces the fraction of cylinder volume available for combustion, thus reducing combustion temperature and corresponding NOx formation. The EGR valve sits between the exhaust and intake manifolds on a vehicle engine and regulates the amount of spent exhaust gas that is mixed into the intake stream. Diesel engines relied on EGR to reduce

NOx to meet NOx emissions standards prior to 2010. Since 2010, almost all on-road diesel engines rely on SCR to meet the 2010 on-road heavy-duty exhaust NOx emissions standard as discussed above. Alternative fueled engines, which are typically spark ignited engines, also rely on EGR to reduce NOx. "Supercooled" EGR systems have been developed to meet 2010 NOx emissions standards for most alternative fueled engines.

The use of EGR systems may lead to greater fuel use. Engine manufacturers have been combining other engine technologies or modifying engine performance to address potential increase in fuel usage.

Engine Modifications

Engine modifications are performed on heavy-duty engines and change the calibration, configuration, or operation of an existing engine. Modifications may include addition of dual fuel systems, engine overhaul kits (injectors, fuel pumps, cylinder heads, turbochargers, manifolds, etc.) that reduce emissions or reprogrammed computers that reduce emissions. The emission reduction of these changes varies depending on the technology and original engine design. More advanced engine modifications such as variable valve timing and homogeneous combustion compression ignition can provide additional NOx reductions.

Alternative Fuels

Alternative fuels include dedicated natural gas, high pressure direct injection and dual fuel systems (diesel ignition with natural gas), propane, and hydrogen. These fuels have the potential to significantly reduce NOx emissions. In-use emissions measurements of NOx emissions from modern diesel and natural gas engines generally show NOx emissions levels from engines running on alternative fuels to be half as much as their diesel engine counterparts. In addition, these fuels generally reduce particulate and CO2 exhaust emissions compared to exhaust emissions from diesel engines. Alternative fuels are used in smaller industrial equipment such as forklifts. In addition, there is a commercially available LNG powered mining truck.

Hybrid Systems

Hybrid systems include a smaller than typical engine with an electric motor and energy storage system such as batteries, capacitors, or hydraulic systems. Some hybrid systems may use diesel-electric drive for energy savings rather than energy storage devices. These systems often have a high fraction of idling or low power operation where engine accessory loads (hydraulic pumps, air compressors, air conditioning, etc) are parasitic loads and can be replaced by electric motors. Hybrid systems provide emission reductions of criteria and GHG emissions of 20-30% when used in applications with opportunities for energy recovery such as loaders or cranes. Energy savings up to

10% have been reported for diesel-electric bulldozers. Hybrid systems have been commercialized for loaders (batteries), excavators (capacitors), and bulldozers (diesel-electric). Currently, Caterpillar offers a diesel-electric dozer that reduces fuel usage and meets interim Tier 4 emission standards. CO2 emission reductions would be proportional to the fuel savings. Criteria pollutant emission reduction would be expected as co-benefits.

Plug-in Hybrid Systems

Plug-in hybrid systems are similar to conventional electric hybrid systems, but can recharge batteries using grid power. Plug-in hybrid systems can achieve greater fuel savings and emission reductions than conventional hybrids but require access to grid power when not being used. Plug-in hybrid technology is commercialized in light-duty on-road vehicles and in demonstration projects for heavy-duty trucks.

Fuel Cells

Fuel cells reduce criteria and GHG emissions 100% at point of use. Fuel cell systems may include battery storage for load transients and peaking power. Most on-road fuel cells use hydrogen as fuel and react it with oxygen in the air. Similar systems are being evaluated as range extenders for electric off-road equipment. Fuel cell powered equipment can be used where battery electric equipment does not have access to grid power. Fuel cell powered vehicles and trucks are currently in development and being demonstrated in on-road applications. Smaller fuel cell powered forklifts are commercially available for use in applications where conventional and alternative fueled forklifts cannot be used such as the food service industry. Fuel cell technologies are under development for other off-road equipment such as airport ground support equipment and transportation refrigeration units.

Battery Electric

Battery powered equipment also reduces criteria and GHG emissions 100% at point of use. Battery powered equipment is recharged from grid power. Battery systems have been commercialized for lawn and garden equipment as well as industrial equipment such as forklifts, aerial lifts, and sweepers as well as certain airport ground support equipment. The SCAQMD is conducting research and demonstration of larger commercial zero-emission lawn and garden equipment.

Technology Combination

There are opportunities for combining technologies to gain greater emission reductions. For example, natural gas plug-in hybrids combine the low emissions of natural gas engines, the energy savings of hybrids, and grid power for battery charging.

Efficiency Measures

Efficiency measures include improved vehicle-to-vehicle and vehicle-to-infrastructure communications. These technologies are intended to reduce queuing or wait times and inefficient utilization of resources, which will reduce emissions and energy consumption. Caterpillar has a commercial offering for the Cat Connect system using GPS positioning and machine guidance technology to improve efficiency of graders and dozers so that less machine and operator time is required for a given job. This increase in machine productivity can reduce energy consumption per job up to 50% with criteria pollutant and GHG reductions as co-benefits.

CONTROL TECHNOLOGY APPLICATION BY EMISSIONS SOURCE CATEGORY

Construction/Mining and Commercial Equipment.

Engines used in new equipment must meet the current, most stringent U.S. EPA nonroad (or off-road) Tier 4 Final exhaust emission standards, which generally requires use of SCR and DPF aftertreatment systems to reach 0.3 g/bhp-hr NOx and 0.01 g/bhp-hr PM. Short term reductions can best be obtained by incentivizing turn-over of Tier 0 and Tier 1 equipment to Tier 4 Final equipment. The emission reduction from Tier 0 or Tier 1 to Tier 4 Final is over 95% for NOx and over 80% for VOC.

Since many pieces of diesel powered equipment are subject to the CARB In-Use Off-Road Diesel-Fueled Fleets Regulation, longer term NOx emission reductions will require widespread adoption of near-zero and zero emission systems for mobile construction and commercial (portable) equipment. Mobile construction equipment is best suited to cleaner combustion engines and hybrid systems. Alternative fuels such as natural gas will facilitate reaching near-zero emissions with combustion engines. Commercial equipment also needs cleaner combustion engines as well as zero-emission systems such as fuel cells, particularly for portable equipment with relatively constant loads such as generators, pumps, and fans.

Industrial Equipment

Industrial equipment is generally used inside or adjacent to buildings. Approximately 70% of the industrial equipment population operates with spark-ignition engines. Due to the relatively short life of most industrial equipment, the fleet will be turned over to the lowest current standards by 2023. The LSI engine certification regulation includes lower optional standards, which could be incentivized or mandated to reduce LSI fleet emissions approximately 80% (0.6 to 0.1 g/bhp-hr) if fully implemented.

Industrial equipment is also uniquely suited to zero-emission technologies such as batteries and fuel cells since the equipment generally operates at fixed facilities. Battery-electric versions of most types of industrial equipment are already commercialized. Fuel cell powered forklifts are also commercialized and other fuel cell powered industrial equipment is in development.

Transportation Refrigeration Units

Almost all TRUs are powered by diesel engines. By 2023, the TRU regulation will result in turnover of the regulated fleet to Tier 4 final engines. Further reductions will require new lower emission standards or replacing engine powered TRUs with zero emission technologies. Plug-in TRUs are currently commercialized such that the TRUs can be plugged in while parked at warehouses and the engine only operates when the TRU is in transit. Other zero-emission technologies are being investigated including fuel cells and cryogenic cooling using liquid nitrogen or CO2.

Lawn and Garden

This category includes a small number of high-use commercial equipment and a large number of low-use residential equipment. Residential equipment is almost exclusively powered by small spark ignition engines less than 25 hp. This equipment can be replaced with battery electric equipment through incentive programs such as the SCAQMD lawn mower exchange program. Commercial equipment includes the full range of small handheld equipment up to large riding mowers and small tractors. Commercial equipment, although representing approximately 11% of the population, produces 53% of the NOx emissions from the lawn and garden source category. Reductions in emissions are best obtained by incentivizing replacement of commercial equipment with the cleanest available equipment and, where feasible, with zero-emission equipment.

Ground Support Equipment

Ground service equipment (GSE) move and load baggage, tow aircraft, and provide electrical power, engine starting, air conditioning, fuel, food, and lavatory service for aircraft at airports. Due to their specialized design and use, GSEs have long useful lives. Most GSEs can be electrified to operate in battery electric configurations. In addition, new GSEs are available in diesel, propane, and natural gas configurations meeting Tier 4 emissions standards. Diesel engines will generally use EGR, SCR, and DPFs to meet Tier 4 emission standards. Natural gas and propane engines will generally use EGR, three-way catalysts, and fuel injection to meet current LSI standards. Ground support equipment generally runs for short periods under load and is then shut off. Plug-in hybrid systems can provide NOx emission reductions proportional to the percent of time running in all electric mode and maintain mission critical availability. Alternative fuels and biofuels can also provide NOx and GHG reductions that vary by fuel type.

Los Angeles World Airports reported that in its 2013 GSE inventory, 37% of the GSEs at Los Angeles International Airport operate on electricity, 16% operate on natural gas, and 47% operate on conventional diesel fuel. Since GSEs remain on airport property and generally in a given terminal area, converting the 63% of combustion equipment to plug-in hybrid systems could potentially achieve near-zero emission levels since the equipment would be recharged with grid power.

EFFICIENCY MEASURES

The benefits from reducing operational inefficiencies such as work/equipment scheduling and improving equipment/operator productivity vary by emission source category and equipment type and function. Specific benefits include fewer machine and labor hours per job resulting in more efficient utilization of off-road equipment, lower fuel consumption, and reduced GHG and criteria pollutant emissions.

Operational changes include such measures as automated package and goods handling at warehouse distribution centers that eliminate the use of conventionally fueled equipment, GPS-aided construction and mining equipment during grading operations, and more efficient routing of airline services. As an example, airlines are continually evaluating air flights to fill as many seats as possible on each flight. Such actions may result in fewer flights and in turn, result in fewer emissions and lower fuel use not only for aircraft activity, but also reduce the use of landside ground support equipment usage. Such best practices will be explored further as part of the 2016 AQMP.

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Joshua Cunningham, Holger Sdun – California Air Resources Board
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Joe Hower – ENVIRON
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Ben Machol, Cara Gillen – U.S. EPA Region 9
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Barbara Spoonhour – WRCOG
Carla Walecka – Realtors Committee on Air Quality

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RESIDENTIAL AND COMMERCIAL ENERGY WHITE PAPER

I. Introduction

Purpose and Objective

To attain the federal ozone and $PM_{2.5}$ standards, significant NOx reductions are needed within the Basin. California has a long history in implementing energy efficiency, conservation, and distributed generation programs, and these programs are an integral part in achieving AB 32 targets. Reducing, managing, and changing the way energy is used in the commercial and residential sectors provides needed emission reductions, and reduced energy costs. Governor Jerry Brown recently highlighted these benefits in his 2015 inaugural speech by establishing new targets to double energy efficiency within existing buildings, reduce petroleum use by 50%, and increase renewable power generation to 50% by 2030. Additionally, the U.S. EPA recognizes the emission reduction potential of efficiency and renewable energy programs and in 2012, released a roadmap to including them within state implementation plans for criteria pollutants[1]. The Residential and Commercial Energy workgroup has been assembled to assist SCAQMD staff in the development of this white paper that evaluates the existing and emerging energy programs in the residential and commercial sectors to determine how NOx reduction co-benefits can be better quantified and captured in the 2016 AQMP. Additionally, this review identifies actions the SCAQMD may pursue as part of the 2016 AQMP to encourage and incentivize renewable energy use and emission reduction efforts in these sectors.

II. Background

Overview of Residential and Commercial Sector in the Basin

The South Coast Basin (Basin) is home to approximately 17 million residents, 44% of the population in California, who reside in close to 6 million housing units and utilize commercial space for shopping, entertainment, and places of employment. Structures making up the residential and commercial spaces within the Basin differ widely in their periods of construction, size, purpose, and locations within different climate zones. These factors, along with income variations, regulations, ordinances, economic sectors, and tenant or owner occupancy result in differences in the amount of energy, water and other resources needed to support these structures. The consumption of energy within the residential and commercial sectors is a direct and indirect source of criteria pollutants and greenhouse gas emissions. These emissions can be reduced through energy savings measures that include efficiency, conservation, and distributed generation. California has policies in place that support agency and utility efforts that provide resources, technologies, and financial support to help minimize energy consumption in residential and commercial structures. Additional policies are

being developed to reduce water consumption in the residential and commercial sectors. The energy/water nexus within Southern California has long been evident in the infrastructure of conveyance, treatment, distribution, and wastewater treatment[4]. Reduced water consumption is an immediate need within California which is in the midst of the worst unbroken drought interval in the past millennium[5].

Despite California's stringent building energy standards, high potential remains for improving energy efficiency within existing buildings. For instance, over 64% of the residential structures in Southern California were constructed before the 1979 California Title 24 building energy standards were enacted (Figure 1). Despite the many potential benefits from undertaking energy savings measures and the availability of multiple financial assistance programs, there remain many barriers to overcome. One of these barriers is increasing efficiencies within rental and leased properties where tenants are often responsible for utility costs (Figure 2). Some of these barriers have been reduced through regulations that require energy savings measures be employed within new construction, building retrofits, appliance energy standards, and incentive programs that help lower the capital cost barriers.

Undertaking energy efficiency and distributed generation projects provide numerous other economic benefits beyond reduced energy costs, such as providing local employment opportunities. Within California, the organization Next 10 estimates that 196,000 people were employed within California's Core Clean Economy in 2012[2]. These measures also provide economic benefits to residential and commercial property owners by increasing property values and improving community appearance through updated structural attributes such as energy efficient windows.

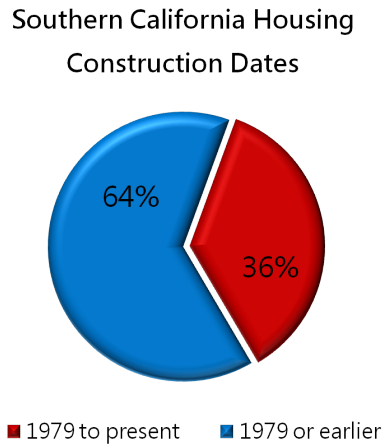


FIGURE 1

Housing units constructed in the Orange, Los Angeles, Riverside, and San Bernardino counties before and after California Title 24 building standards were implemented (U.S. Census Bureau/ AmericanFactfinder)

Smart energy measures have beneficial cascading effects when viewed holistically from the supply side to the end users. Efficiency measures in place in California have already reduced the need to build 12,000 MW of generating capacity and have been beneficial during peak electrical load periods[3].

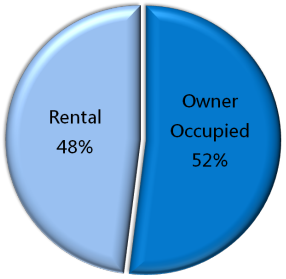


FIGURE 2

Among the four counties within the Basin almost half of the residential units are rental properties (U.S. Census Bureau/AmericanFactFinder)

III. Residential and Commercial Energy Usage

Residential and commercial energy needs are met primarily by utility-provided natural gas and electricity. Within Southern California energy consumption from the combined residential and commercial sectors resulted in 29% of the energy used within the Basin in 2008 (Figure 3). The milder climate, heavy reliance on transportation in Southern California, and existing California energy policies together result in the residential and commercial sectors accounting for less of the overall energy consumed in the Basin as compared to the rest of California and the nation.

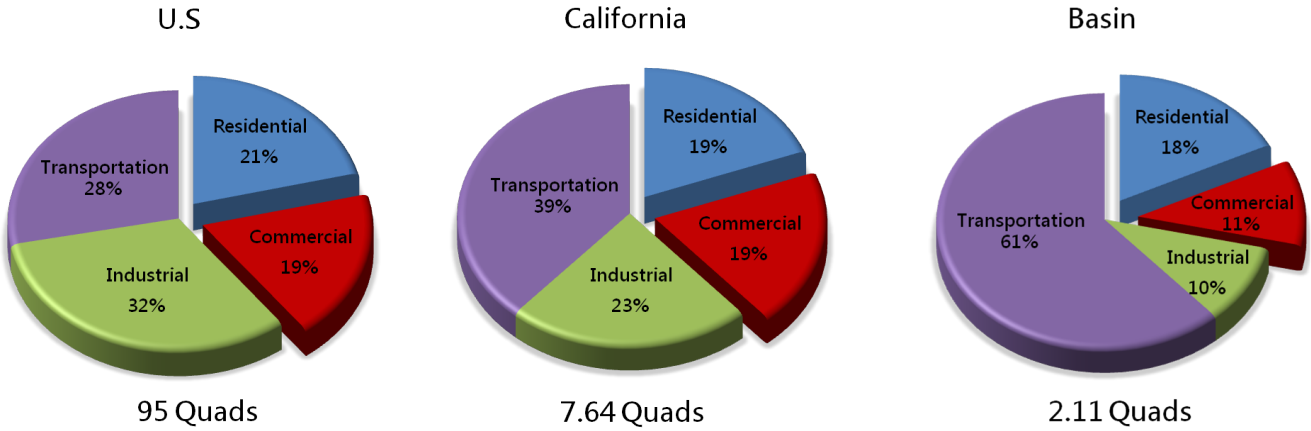


FIGURE 3

Relative energy consumption by sector, U.S and California data for year 2012; Basin data for year 2008 (2012 AQMP).
Note: Quad = one quadrillion British Thermal Units (BTUs)

Within the Basin the residential and commercial sectors account for over 71% of the electricity consumption and over 64% of the natural gas consumption (Figure 4).

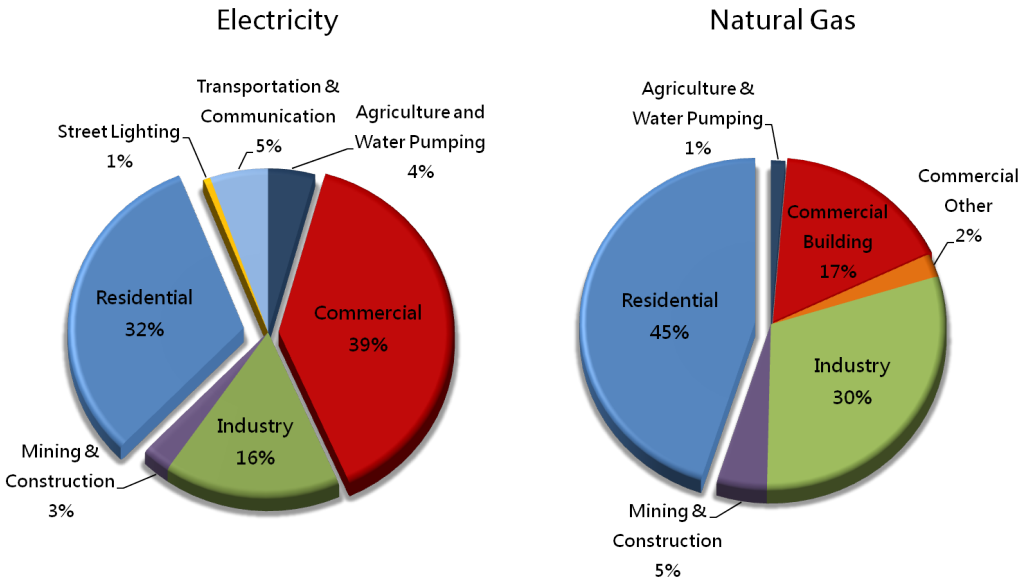


FIGURE 4

Southern California electricity and natural gas consumption by economic sector in 2013 (Electricity data for Basin utilities; natural gas covers SoCalGas territory; CEC Energy Almanac)

Commercial Sector:

The commercial sector is the largest electricity consumer within the Basin. Office spaces are the largest consumers of electricity in the commercial sector with electric vehicles currently consuming the least amount (Figure 5). In contrast, office spaces are among the lowest natural gas consumers, with restaurants having the highest usage.

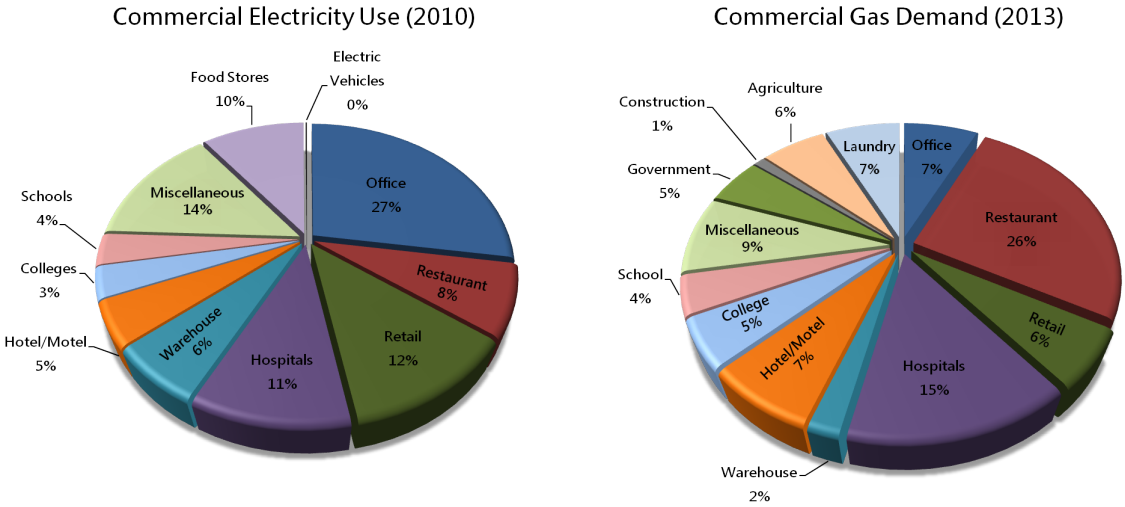


FIGURE 5

Distribution of electricity and natural gas demand by commercial business type for Southern California utilities in 2010 and 2013 (CEC California Energy Demand Forecast; NG Forecast Report).

As shown in Figure 6, electricity consumption in the commercial sector is predicted to increase by 16% by 2023, with natural gas consumption increasing by a minor 1.7% by 2025. The relatively small increase in natural gas consumption is a result of efficiency efforts in building and appliance standards in place within California. The largest predicted percent change within the commercial electricity sectors by 2023 is increased usage attributed to higher market penetration of electric vehicles (56 to 206 GWh by 2023)[24]. The large projected increase in electric vehicle energy usage within the commercial sector links the transportation sector with electricity demand, a new development since historically; transportation sector energy needs have not been reliant on the electrical sector. However, the trend will provide needed emission reductions from the transportation sectors.

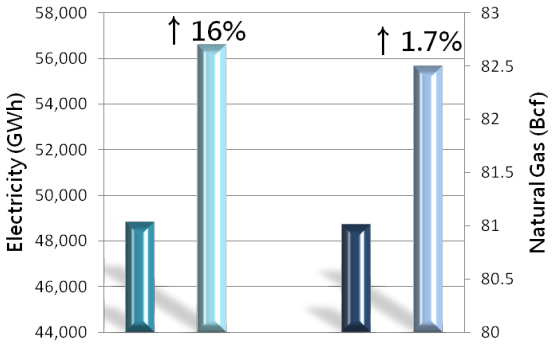


FIGURE 6

Predicted electricity and natural gas consumption increases within the Southern California commercial sector (California Energy Demand 2014-2023, NG Forecast Report).

Residential Sector:

The residential sector is the largest consumer of natural gas and second largest consumer of electricity within the Basin. In California, the average annual household electricity consumption is 6,300 kWh, and the average annual natural gas consumption is 350 therms. The largest uses of natural gas in the residential sector within California are for water heating and space heating. Appliances and lighting account for the most electricity consumption in residential settings.

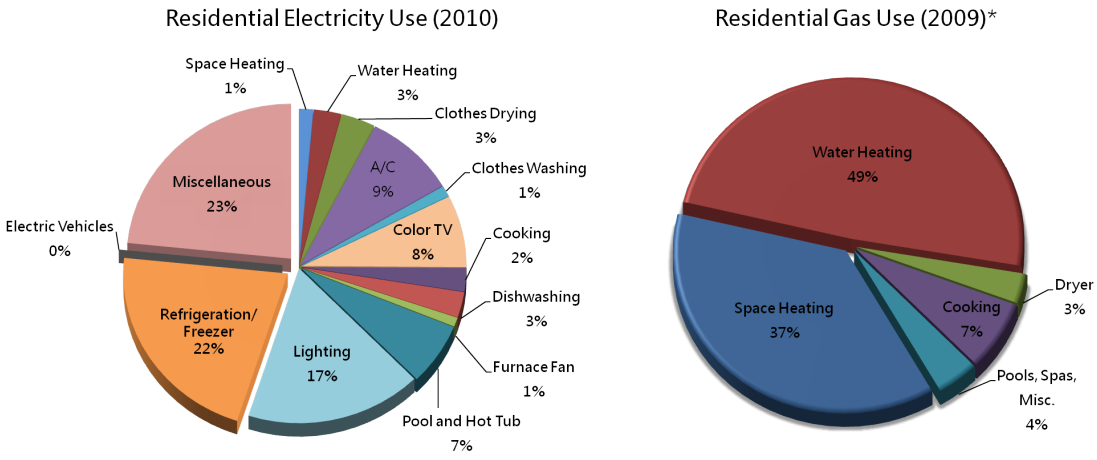


FIGURE 7

Electricity and natural gas consumption in the residential sector by end use; residential natural gas use is average for California. Residential electricity includes Basin electrical utilities. (CEC California Energy Demand 2014-2024; KEMA Appliance Saturation Survey).

It is estimated the residential demand for natural gas will decline 4.2% between 2013 and 2025 as a result of building and appliance efficiency programs currently in place (Figure 8). Electricity consumption is predicted to increase by 25% between 2010 and 2023. The largest electricity consumption will continue to be within the miscellaneous category. However, similar to the commercial sector the largest categorical percentage increase is predicted to be for residential electric vehicle charging (1.4 to 2,100 GWh by 2023)[24]. Overall, net decreases in electricity consumption by 2023 are estimated to occur within lighting, water heating, refrigeration, and televisions while all other categories are predicted to have electricity consumption increases.

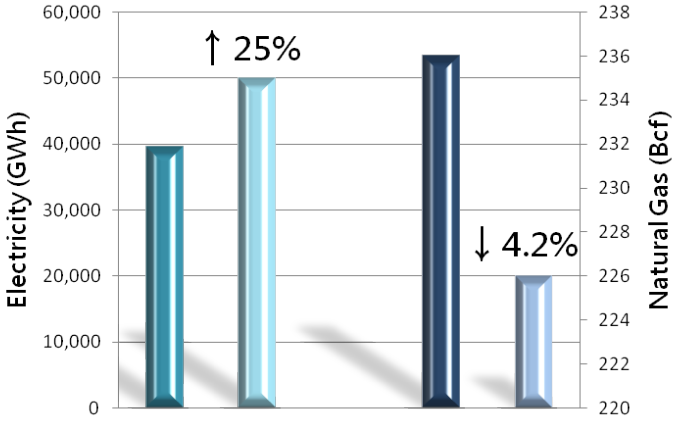


FIGURE 8

Estimated electricity consumption increase and natural gas consumption decrease within the southern California residential sector (CEC California Energy Demand 2014-2023, NG Forecast Report).

IV. Emissions

Based on 2012 AQMP emissions inventory projections, the residential and commercial sectors together directly emitted 29.3 tons per day of NOx and 8.5 tons per day of $PM_{2.5}$ in the Basin in 2014 (Table 1). The 2012 AQMP baseline inventory projections for emissions from the residential and commercial sector in 2023 and 2030 will become 8% of the overall NOx inventory as reductions are achieved in other sectors. The majority of NOx sources within the residential and commercial sectors are from water heating and space heating; the residential sector has higher PM2.5 direct emissions resulting from residential wood burning.

TABLE 1

2012 AQMP Emissions Inventory for Residential and Commercial Sectors

YEAR	2014	2023	2030	2014	2023	2030
	Residential (tons/day, % of total Inventory)			*Commercial (tons/day, % of Inventory)*		
NOx	19.79 (3.9%)	15.58 (4.7%)	13.45 (4.6%)	9.53 (1.9%)	9.17 (2.8%)	9.60 (3.3%)
VOC	8.61 (1.9%)	8.59 (2.1%)	8.57 (2.1%)	4.47 (1.0%)	4.42 (1.1%)	4.60 (1.1%)
PM2.5	7.15 (10.2%)	7.12 (10.1%)	7.09 (9.7%)	1.37 (2.0%)	1.39 (2%)	1.45 (2%)

Source: *2012 Air Quality Management Plan – Appendix III*

These emission estimates do not include non-combustion emissions resulting from residential or commercial cooking, upstream emissions occurring at power plants, or those resulting from support services such as water transport and treatment, waste hauling, construction, landscaping services, and material deliveries. Additionally, the 2012 AQMP inventory did not include projections for recent efficiency targets established by Governor Brown or the recent net zero energy targets under California's Title 24-Building Energy Efficiency Standards. In Section II, the residential and commercial sectors are shown to account for 71% of the electricity consumption. A rough estimate of the NOx emissions resulting from upstream power plants providing electricity to the residential and commercial sectors is an additional 1.4 tons of NOx per day. The total NOx emissions from in-Basin power plants are currently nearly 2 tons per day and are not expected to increase dramatically due to other emissions regulations and implementation of new renewable generation technologies.

V. Current Practices and Barriers to Implementation

Current Practices:

Generally, within the residential and commercial sectors, undertaking energy measures occurs through categorized efforts involving efficiency, conservation, onsite generation, and demand management.

Decisions made to implement one or more of the energy measures within those categories are often not arrived at through strategic assessments that implement the least costly measures to achieve the greatest energy savings. For instance, many homeowners have neighbors that installed solar, and there are door-to-door outreach efforts by solar companies promoting the benefits of adding generation. Many homeowners decide to add solar generation before considering less costly but potentially more beneficial efficiency efforts such as adding insulation. Undertaking strategic efficiency efforts prior to adding generation capacity can provide a more cost effective approach to energy savings. In reality, energy saving measure decisions are not often made through a thoughtful cost benefit analysis and may be influenced by the following:

- Immediate Needs: Energy savings decisions are often made on the immediate need for equipment or appliances.
- Perceptions: Common perceptions benefit certain individual activities, technologies, or measures that often result in them being popular choices.
- Outreach Efforts: Businesses selling products through retail chains, mailings, and door to door efforts influence behavior on implementing measures. Available incentive programs are often a highlight of business sales pitches.
- Competitive Efforts: Businesses may undertake energy savings measures to reduce energy costs, reduce exposure to energy volatility, highlight sustainability efforts, and increase property value.

Barriers to Implementing Energy Savings Measures and Renewable Generation:

The benefits that energy and water savings measures provide in addition to available incentives should result in rapid and widespread implementation. However, there are a multitude of barriers as to why owners of residential and commercial buildings do not implement water and energy savings measures. These barriers, in part, include[6,7,8]:

- Lack of Awareness: Residents and businesses are often occupied with other issues than reviewing energy consumption or the benefits energy-saving measures may provide.
- Lack of Information: Those that would like to reduce energy consumption often lack information on how to best initiate the effort. Is it better to undertake efficiency projects relative to adding generation? What measures are available and appropriate to implement first? What incentives and programs are available and are they aligned with my efficiency needs? How are benefits quantified? Who do I trust to provide correct information and reasonable costs?
- Difficulty in Measuring Success: Once energy savings measures are implemented it is often difficult to evaluate, measure, and verify the savings.
- Utility Rate Designs: Complex and changing rate designs make it difficult to quantify benefits of reduced energy usage.
- Lack of Responsibility: Building owners who lease or rent residential and commercial spaces often do not feel obligated to reduce energy usage since tenants typically do not pay the utility bills.
- Lack of Capital: The initial capital cost of undertaking energy saving measures is either not available or is competing with other priorities for limited funds.

VI. Existing Programs, Regulations, and Financing Mechanisms

The Warren-Alquist Act of 1974 established the California Energy Commission (CEC) and has moved energy consumption within the residential and commercial energy sectors from a business-as-usual path to an innovative approach, establishing a positive reinforcement cycle of increasingly strengthened energy standards that lead to new technologies, manufacturing processes, building materials and techniques[3,9]. California has led the nation and the world in aggressively developing and implementing energy conservation regulations, incentives, and market innovations. What is termed the "California Effect" or "Rosenfeld Curve", is the level of per-capita energy consumption in California since the early 1980's, whereas the rest of the nation has seen increases in per-capita consumption in energy as the use of electronic devices has increased significantly at residences and workplaces (Figure 9).

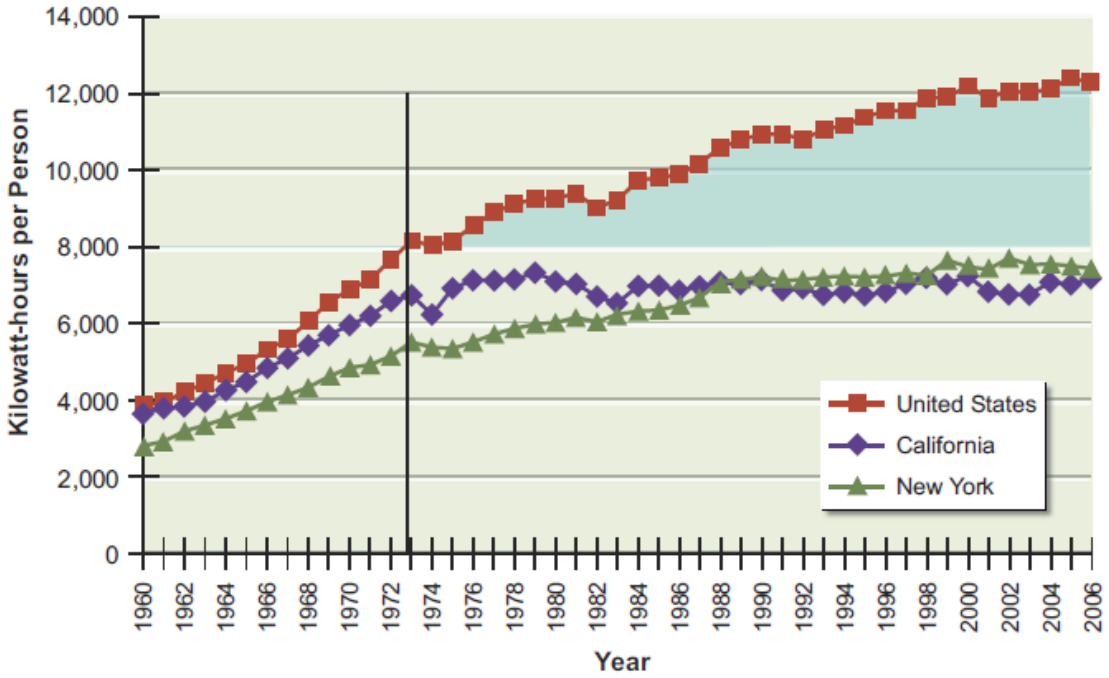


FIGURE 9

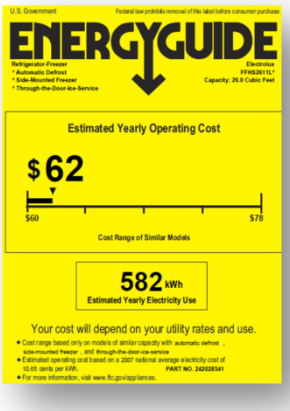
Per capita electricity consumption levels have remained relatively flat in California and New York, partially as a result of California energy policies in place[21].

Regulations and Policies:

In 1982 the California Public Utilities Commission removed a potential economic incentive for utilities to oppose efficiency efforts by decoupling electricity sales from revenues. This decoupling led to pathways for energy efficiency, distributed generation, combined heat and power applications, and demand-side management to be considered what are termed 'preferred resources' in managing energy needs within California[9]. Implementing 'preferred resources' (i.e. alternatives to fossil fuel fired generation) is an important component of the CEC's long-term energy procurement planning and has resulted in the establishment of many different types of incentives to promote these priority resources.

The earliest and most recognizable residential and commercial energy programs within California were the Title 20 appliance efficiency standards adopted in 1976, followed by the building efficiency standards in Title 24 adopted in 1978. The implementation of the Title 20 efficiency standards has saved consumers over $75 billion in electricity and natural gas costs. These two programs are still in effect within California and currently work in conjunction with federally established appliance and building efficiency programs, such as the EPA Energy STAR building and DOE appliance standards (EnergyGuide label). Generally the most stringent energy building codes and appliance standards have been first adopted in California. As the CEC further couples renewable

power, efficiency, energy management, and new technologies into future Title 24 codes, the path has been set to achieve net zero energy use in new residential construction by 2020 and net zero energy use in commercial construction by 2030.



Incentive/Rebate Programs:

In 2014, over $1.4 billion in ratepayer funded programs were administered by the CPUC through utilities towards efforts that help develop preferred resources. These programs provide incentives and rebates for measures that include insulation, energy audits, shade trees, solar panels, low-flow showerheads, turf replacement, adding demand-response capabilities, and load shifting technologies. Additional incentives to promote energy savings measures include offering tax incentives. The Database of State Incentives for Renewables & Efficiency (DSIRE) developed and maintained by the North Carolina Clean Energy Technology Center provides a comprehensive list of available incentives by zip code (www.dsireusa.org).

Financing and Funding Mechanisms:

As identified earlier, the lack of funds for initial capital costs is often a reason many owners of residences and commercial buildings do not undertake energy saving measures, even though a project can later have partial cost recovery through available tax incentives and/or rebate programs. Currently there are multiple financing mechanisms and purchase agreements available for different types of projects. Some of these current mechanisms include:

- On-Bill Financing: Energy measures are financed through utilities and loans are added to customers' utility bills[10].
- California Clean Energy Jobs Act (Prop. 39): Provides roughly $550 million yearly to improve energy efficiency and expand clean energy generation in California Schools.
- Property Assessment Clean Energy (PACE) financing: Provides loans that get repaid through property tax assessments to fund approved energy savings measures or new generation.
- Power Purchase Agreement (PPA): Under PPAs, the solar installation company provides, installs, and retains ownership of the equipment that generates electricity, which the user purchases at a predetermined rate. Due to the declining costs of solar panel equipment and the incentives available to third parties that own and maintain the equipment, electricity costs through the PPA are generally less than the higher-tiered rates charged to residential users.
- Power Efficiency Agreements (PEA): This is a relatively new financing technique that allows a third party to install an energy saving project that is financed through expected future energy cost savings.

VII. Achieving Greater Penetration of Energy Efficiency

Existing buildings in the residential and commercial sector generally do not meet the current Title 24 building codes and thus offer significant opportunities for energy savings. This in part is being addressed under AB 758-Comprehensive Energy Efficiency in Existing Buildings, which requires the CEC to develop an action plan to achieve cost-effective energy savings within existing residential and nonresidential buildings[11]. Reducing energy consumption within existing buildings is particularly difficult with rental and leased properties[12]. It is usually not apparent that it is in the property owner's best interest to undertake energy savings measures when the tenants pay utility energy costs. Under AB#1103, tenants leasing commercial buildings will have a better understanding of the previous energy costs since these must be disclosed; nonresidential buildings must disclose their past energy use to a prospective buyer, a prospective lessee, or a lender financing the building. There currently is not a program in place requiring past energy disclosures from residential structures.

Energy usage within the residential sector shows a correlation with household income. Many of the rebates and financing programs require property ownership and upfront capital[13]. Income qualified programs are available such as the federally funded Weatherization Assistance Program (WAP) and ratepayer funded Energy Savings Assistance Program (ESAP). Both programs provide energy assistance measures at no or very low cost to lower income households. One of the drawbacks of these two programs has been the requirement to own the residence or have property owners consent for the programs to be implemented[14].

Incorporating non-energy benefits into energy savings programs may provide more of a motivating factor to utilize existing programs. A recent UCLA study showed a study group of Los Angeles residents were least motivated to undertake energy saving measures when they were linked to reduced energy costs; a more significant motivator was to link energy saving efforts with reduced emissions. Therefore coupling energy savings with the amounts of emissions reduced may provide additional motivation to implement energy savings measures. Emission benefits could also be included on appliance energy efficiency labels.

Turning energy savings into a competitive game or contest that uses existing incentives and resources provides a novel tool for achieving reduced energy usage[15]. Within the California Cool Communities Challenge, city governments and residents compete against each other in reducing energy usage. At the end of the competition the city with the highest points not only receives bragging rights for winning the competition, but also a portion of $100,000 in prize money. Currently the Cool Communities Challenge tracks energy savings and estimates the GHG reductions from energy-saving activities; benefits may further be extended to include criteria pollutant emission reductions along with water conservation[16]. Energy savings contests could be further extended to California schools with support from Prop 39 (California Clean Energy Jobs Act) funding.

Lastly, bringing together efficiency projects and/or renewable energy through aggregated procurements can provide reduced rates and help with the technical difficulties in implementing these projects. The costs can be reduced through larger purchases and customers working together by developers avoiding significant customer

acquisition expenses, streamlining construction scheduling at multiple sites, bulk equipment purchases and enticing more competitive bids with a larger pool of customers. An example of aggregated purchases was undertaken with cities and counties in Silicon Valley joining together to purchase 31 MW of solar panel systems at 180 sites.

Net Zero Energy Home of the Near Future

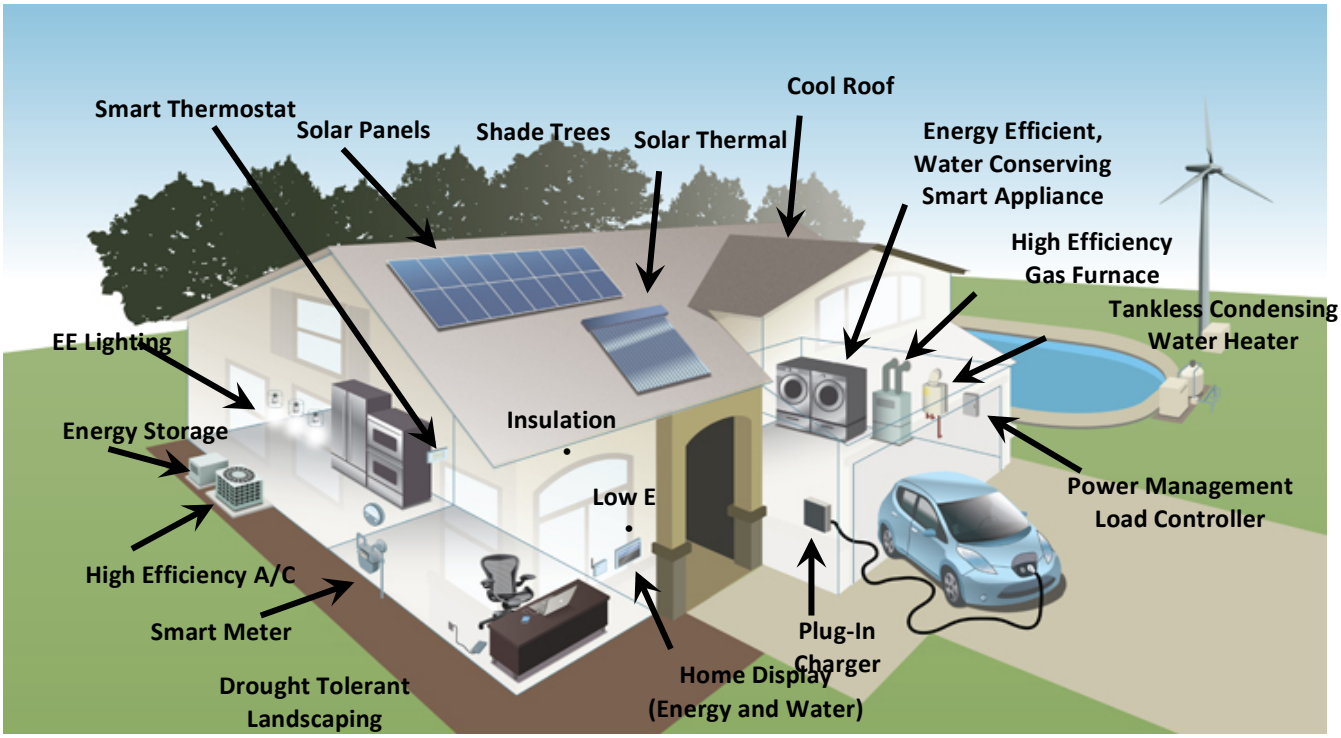


FIGURE 10

Building materials, grid connected distributed generation, power management, and low water use will help move residential construction toward the CEC goal that all new homes are net zero energy beginning in 2020 (adapted from San Diego Gas & Electric).

VIII. Technology Assessment

New technologies are helping California move forward in establishing net zero energy usage in new construction, implementing higher renewable portfolio standards, providing climate resilience, and reducing air emissions.

Distributed Generation

California is currently leading the nation in installed renewable generation capacity with over 4,000 MW of installed solar, over 6,000 MW of installed wind capacity, and 1,200 MW of biomass generating capacity accounting for 15% of the total generation capacity within the state as of 2013[17]. Policies and incentives helped

initiate the market for renewable generation systems; more recently, rapidly declining costs, increased electrical utility rates, and innovative financing mechanisms have greatly increased installations.

Rooftop photovoltaic (PV) systems are currently the most popular generation technology being installed at residential and commercial buildings. Generating efficiencies for solar panels over the years have been increasing from around 10% solar energy conversion to over 40% with new panel technologies[18]. New solar panel designs are also being coupled with solar thermal systems to reduce rooftop space needed for both systems. Fuel cell energy systems are being implemented within residential and commercial settings that can provide power as well as waste heat for use in building hot water and/or space heating needs[19].

Energy Flexibility

Rooftop photovoltaic systems may no longer be considered an emerging technology due to the large number of installations occurring. The current primary motivation behind the decision to install these systems is to help avoid the highest tiers on electricity rate structures. The installation of PV systems within commercial buildings does not generally provide large utility savings for larger commercial buildings due to power demand charges that are in effect into the evening hours. Power demand charges on commercial users are typically based on the highest 15 minutes of power usage (kW) over a billing period. Utilities usually apply the highest demand charge rates during the summer months when electricity consumption is the highest. PV system generation is also intermittent and thus can be destabilizing to the electrical grid. Currently, these systems need to be coupled with other flexible generation capacity such as fossil peaking units, which has created some excess generation capacity.

To address generation intermittency, demand charges, and help provide capabilities to participate in demand-response events; new technologies and rate structures are being implemented. Among these technologies is energy storage at residential and commercial buildings which provides a flexible resource that can be coupled with generation, load management needs, and utility rates. Usage of battery storage systems can reduce the vulnerability from intermittency associated with onsite renewable generation, reduce demand charges through peak shaving, provide energy arbitrage capabilities (i.e. storing energy purchased at off-peak times and selling or using it on-peak), and provide utility grid services support.

There are different types of storage technologies, including batteries (chemical), thermal, and pumped water (hydro) (Figure 10). Some of the stationary battery systems utilize electric vehicle batteries as a second-life application. Battery systems coupled with solar PV help reduce utility power demand charges by filling in generation intermittency and help reducing utility demand charges (peak shaving). In large commercial applications, thermal storage is widely used to chill water or create ice during periods of off-peak electricity rates, that is later used to cool buildings during peak demand charge periods. Smaller applications are being developed for the residential sector that has ice storage capabilities next to air conditioning compressors. New storage technologies are being developed that utilize compressed air and flywheels.

In the residential and commercial sectors, new load management technologies will enable residents to optimize their energy consumption and cost relative to utility rate structures that include real-time pricing, time-of-use rates, and demand management needs. These technologies include using Home and Area Network (HAN) devices that utilize the Internet of Things, connecting smart appliances, thermostats, irrigation controllers with user habits, the weather, and utility prices[8]. Additionally, use of newer lower energy manufacturing processes such as using photochemical or electron beam curing processes other than traditional heated methods can provide significant paybacks in long term energy savings[25].

Building Materials and Lighting

New building materials and methods provide the greatest potential reduction in energy consumption within residential and commercial buildings, along with providing some of the fastest paybacks through cost savings. As shown in Figure 7, space heating and cooling are the largest sources of energy consumption. Adding insulation and ensuring ducting is properly sealed does not require emerging technologies and is often the least expensive measure to reduce building-energy consumption. Coupling insulation with energy efficient windows, envelope sealing and using building materials with high thermal mass helps reduce the need for larger heating and cooling systems. Additionally, as Southern California's warmer climate causes air conditioning to be a larger energy load, incorporating cool roofs, fenestration systems, and trees that shade buildings helps reduce the cooling demand of the buildings occupied spaces.

Cool roofs reduce the heat loads going into buildings through increasing the reflectance of the rooftop and/or incorporate roofing materials that have high thermal emittance. This not only helps reduce air conditioning needs of interior spaces, but also can reduce outside temperatures and lower the urban heat island effect. Lowering outside temperatures and using less energy to cool interior spaces reduces criteria and greenhouse gas pollutants[20].

One of the largest advances in efficiency technology has been in lighting. Lighting traditionally has been with incandescent filament bulbs with a total system efficiency of less than 2%, considering the chemical energy being converted to electricity at a power plant then being delivered to light an incandescent bulb[22]. Advances in high efficiency lighting technologies include fluorescent and light emitting diodes along with advances in luminaires that provide lighting in the right places and lighting controls[21,22]. Lower tech developments in daytime interior lighting have been solar light tubes, skylights, and daylight redirecting films on windows that allow for natural daytime lighting within interior spaces through insulated spaces[23].

Cross Sector Coupling

With new technologies and efficiency tools being rapidly adopted in the residential and commercial sectors, the traditional utility business model of adding power plant capacity to meet demand is rapidly changing. With buildings being capable of adding generation and providing energy flexibility, we can reduce the need for new generation capacity and allow for more efficiently utilizing existing energy infrastructure. This coupling and improved management of energy supply and demand will need to include new transportation technologies

that use electric, natural gas, and fuel cell vehicle technologies. The interconnection of energy use between residential, commercial and transportation sectors is increasing rapidly as a result of the alternatively powered transportation technologies that are being rapidly developed and deployed.

IX. Scenario Analysis

Two scenarios are presented here that account for updates to energy savings targets since the 2012 AQMP inventory was developed. The emissions from the 2012 AQMP presented earlier in Table 1, on page 6, do not currently account for increased efficiency targets set in place under Title 24, within the CEC's Integrated Energy Planning Report (IEPR), and recent efficiency improvements in appliances. Using energy demand reductions estimated by the State from these efforts, an expected 25% decline in energy consumption within the residential and commercial sectors will occur as a result of current targets in place (Scenario 1); a 50% decline is expected, with current targets plus the Governor's new proposal (Scenario 2) (http://www.arb.ca.gov/html/fact_sheets/2030_energyefficiency.pdf). A linear implementation of these scenarios is assumed along with a linear and proportional reduction in criteria pollutants as a result of reduced energy usage.

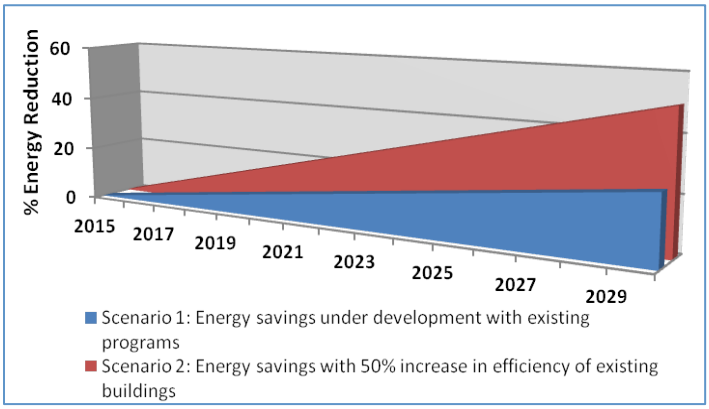


FIGURE 12

Two scenarios that account for updated energy savings targets

Using the existing efficiency and energy programs set in place, the NOx emissions within the residential and commercial sectors might be expected to decline by 3 to 5 tpd in 2023 and 2030 respectively as shown in Table 2. With the new targets set by the Governor a decline of 7 to 11 tpd of NOx might result by 2023 and 2030.

TABLE 2

NOx Reductions That May Result From Updated State Energy Targets as of 2015

YEAR	2014	2023	2030	2014	2023	2030
	Residential (tons/day)			*Commercial (tons/day)*		
2012 AQMP	19.79	15.58	13.45	9.53	9.17	9.60
Scenario 1 (25% by 2030)	-	13.6	10.1	-	8.0	7.2
Scenario 2 (50% by 2030)	-	11.4	6.7	-	6.7	4.8

X. Findings and Recommendations for the 2016 AQMP

Southern California is facing challenges in providing capacity and infrastructure for water, energy, and transportation. Traditional development patterns and policies may not be appropriate for the future. Fortunately, many policies, programs, and technologies have been and continue to be implemented in California and within the Basin to alleviate resource challenges and accommodate an increasing population. Additionally to increase resilience against persistent drought conditions, a changing climate, and to address looming air quality attainment deadlines, more needs to be done sooner.

As part of the 2016 AQMP development, staff is recommending the inclusion of the following actions:

- *General*
  - Develop a control measure in the 2016 AQMP to recognize emission reduction potentials from energy saving programs that are implemented locally, statewide, and nationally;
  - In consultation with state energy agencies and utilities, develop a tracking mechanism for timely quantification of SIP creditable emission reductions from energy efficiency and distributed generation programs within the residential and commercial sectors;
  - Work with appropriate agencies to augment the current appliance labeling programs to include air quality benefits of using higher efficiency models (e.g., Over one year energy savings from this appliance can power a certain amount of EVs or zero emission miles, or an equivalent emission reduction rating system);
  - Monitor implementation of AB#1103 and effectiveness of energy disclosures for prospective tenants leasing commercial buildings. Review the need and support for legislation requiring energy use disclosures for residential rental properties;
  - Identify ways to help incentivize and implement energy saving measures with building owners who lease or rent commercial and/or residential spaces;

- Provide technical assistance along with other agencies to compile methodologies and best practice guidelines to retrofit existing buildings towards net zero energy consumption;
- Sponsor energy savings competitions or campaigns at schools and promote student youth participation in energy saving practices (e.g., financial awards to winning schools);
- Include energy efficiency in the District's outreach and education materials to enhance awareness of energy saving opportunities; and
- Help expand Property-Assessed Clean Energy (PACE) programs into existing commercial buildings and multi-unit dwellings. Further review additional ways to incentivize additional energy saving measures, including but not limited to, tax credits or low-interest loan programs;

- *Electricity*:
  - Work with electrical utilities and state agencies to make rate structures transparent and easier to understand so consumers can make informed energy choices, including alternatively fueled vehicle choices; and
  - Work with stakeholders to develop incentive programs for solar installations and other renewable distributed generation systems that are zero or near-zero emitting for existing buildings.

- *Natural Gas*: While SCAQMD has adopted the most stringent NOx emission regulations for new residential and commercial natural gas-fired water heaters and space heaters in the nation, residential natural gas combustion related NOx emissions remain a significant source of emissions, ranked second highest among stationary NOx emission sources. Energy efficiency is an effective means to augment SCAQMD existing regulations to bring about further NOx reductions.
  - Where SCAQMD funding is available, provide financial incentives to promote energy efficient equipment/appliances beyond regulatory requirements or to accelerate equipment/appliance replacements that are targeted towards maximizing criteria and greenhouse gas emission reductions. These incentive programs can be in conjunction with or an augmentation to the existing utility programs; and
  - Consider and promote equipment energy efficiency in future SCAQMD regulatory or incentive programs.

REFERENCES:

1. EPA, Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans, 2012; EPA-456/D-12-001a.
2. Next 10, *California Green Innovation Index*, 6th edition, 2014.
3. Rosenfeld and Poskanzer, *A Graph is Worth a Thousand Gigawatt-Hours: How California Came to Lead the United States in Energy Efficiency*, innovations, 2009.
4. CEC, *California's Water-Energy Relationship*, 2005.
5. Griffin and Anchukaitis, Geophys. Res. Lett. 10. 1002/2014.
6. EPA, *Discussion of Consumer Perspectives on Regulation of Energy Efficiency Investments - A Resource of the National Action Plan for Energy Efficiency*, Sept. 2009 (www.epa.gov/eeactionplan).
7. McKinsey & Co., *Unlocking Energy Efficiency in the U.S. Economy*, 2009.
8. IEA, *More Data, Less Energy: Making Network Standby More Efficient in Billions of Connected Devices*, 2014.
9. 2003 Energy Action Plan (http://www.energy.ca.gov/energy_action_plan/index.html).
10. Zhang, S., *On-Bill Financing: Encouraging Energy Efficiency*, C2ES, August, 2013.
11. CEC, *Draft - California Existing Buildings Energy Efficiency Action Plan,* March 2015 (http://www.energy.ca.gov/ab758/documents/)
12. Lucas, D.; *Evaluating the Slow Adoption of Energy Efficient Investments: Are Renters Less Likely to Have Energy Efficient Appliances?*, National Bureau of Economic Research, June 2010.
13. IEA, *Evaluating the Co-Benefits of Low-Income Energy Efficiency Programs*, June 2011
14. E2e, *Are the Non-Monetary Costs of Energy Efficiency Investments Large? Understanding Low Take-up of a Free Energy Efficiency Program*, January 2015.
15. ACEEE, *Gamified Energy Efficiency*, Feb. 2015.
16. Cool California City Challenge, https://coolclimate.berkeley.edu/challenge/index.php?type=login .
17. CEC Tracking Progress : http://www.energy.ca.gov/renewables/tracking_progress/
18. NREL; http://www.nrel.gov/news/press/2014/15436.html, (2014).
19. Bloomberg Businessweek, *Powering Your Home with a Box of Hydrogen*, January 19-25, 2015.
20. Levinson *et al., Inclusion of Cool Roofs in Nonresidential Title 24 Prescriptive Requirements*, Energy Policy 33 (2005) 151-170.
21. Distributed Generation, *Flipping the Switch*, March/April 2012
22. National Academy of Sciences, *Real Prospects for Energy Efficiency in the United States*, 2010.
23. Wall Street Journal, *Finally: Sunlight in the Office Cubicle*, March 3, 2015
24. CEC, California Energy Demand 2014-2024 Final Forecast: Volume 2; January 2014 (www.energyalmanac.ca.gov/electricity/electricity_stats/index.html)
25. SCAQMD Rule 1130, Appendix D "Sustainability Advantages of Ultraviolet and Electron Beam Curing".

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SOUTH COAST
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A Business Case for Clean Air Strategies

2016 AQMP WHITE PAPER

OCTOBER 2015

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1. Introduction

The South Coast Air Basin is one of only two "extreme" non-attainment areas in the nation that have not reached the federal eight-hour ozone standards. Ground-level ozone, or smog, forms when volatile organic compounds (VOC) photochemically react with nitrogen oxides (NOx) in the presence of sunlight. Encompassing a major swath of Southern California, the South Coast Air Basin is among the most densely populated areas nationwide, with about 13 million cars, trucks, and other vehicles operating on its extensive network of highways and roads.[1] The amount of pollutants produced by modern urban life and industrial activities, combined with Southern California's year-round sunny weather, all contribute to the high concentrations of ground-level ozone in the area. Ozone exposure can cause immediate, adverse effects on the respiratory system and result in various symptoms such as coughing, throat irritation, chest pain, and shortness of breath. It can also inflame the lining of the lungs, and for asthma patients, it may increase the number and severity of attacks. Long-term impacts of frequent exposure to ozone may lead to permanent lung damage and increase the risk of premature death.

Due to a myriad of factors, including advancements in transportation and pollution control technologies, it is expected that air pollutant emissions will continue to decline over the coming decades. However, SCAQMD staff projects that deeper reductions of NOx emissions are necessary in the South Coast Air Basin. To reach the 1997 standard of 80 parts per billion (ppb) by the attainment deadline, NOx emissions will have to be reduced by approximately 50 percent from the projected baseline level in 2023. To reach the more stringent 2008 standard of 75 ppb, an additional 15-percent reduction will be needed from the projected baseline level in 2032.[2]

According to SCAQMD staff's estimates, about 60 percent[3] of the region's NOx emissions in 2032 will come from the sectors of passenger transportation and goods movement, the latter of which includes emission-

[1] According to estimates provided by the California Department of Motor Vehicles, there were a total of 13.7 million registered vehicles in Los Angeles, Orange, Riverside, and San Bernardino counties for the period of January 1 to December 31, 2013. (https://www.dmv.ca.gov/portal/wcm/connect/add5eb07-c676-40b4-98b5-8011b059260a/est_fees_pd_by_county.pdf?MOD=AJPERES, accessed February 18, 2015.) The South Coast Air Basin covers all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties; therefore, the total number of vehicles would have been somewhat smaller.

[2] Figures are based on preliminary analysis for the 2016 Air Quality Management Plan (AQMP). The baseline projection assumes a specific set of growth factors and that no additional clean air programs and regulations would be introduced.

[3] Based on emission projections in the 2012 AQMP.

producing sources such as heavy-duty trucks, marine vessels, commercial harbor craft, cargo handling equipment, and freight locomotives. Therefore, in order to attain upcoming federal air quality standards, significant investments will need to be made to develop and deploy advanced technologies, including those with zero and near zero emissions. At the same time, passenger transportation and goods movement sectors together offer over 260,000 jobs, or 4.3 percent of total private industry employment, in the SCAQMD region.[4] During the recent economic recession, the warehousing and storage industry–which belongs to the broader goods movement sector–was particularly resilient. Between 2007 and 2012, it experienced nearly 50 percent of job growth in the otherwise hard-hit counties of Riverside and San Bernardino.[5]

Given the importance of passenger transportation and goods movement sectors to the regional economy, SCAQMD staff is faced with the challenge of remaining sensitive to the business sector's needs while at the same time implementing control strategies and programs that will ensure the Basin reaches federal air quality standards. Anticipating the need for zero or near zero emission technologies, SCAQMD is exploring potential means to maximize emission control strategies that have a "business case" for implementation. A business case could exist where a technology, fuel, or other strategy reduces emissions and also improves energy efficiency, reduces fuel or maintenance costs, creates new job opportunities, or has other cost savings and economic benefits. To this end, this white paper seeks to develop planning concepts for control measures and related programs (e.g., incentive or financing programs) to be included in the 2016 Air Quality Management Plan (AQMP) that, to the extent possible, create a business case for deployment of needed technologies and efficiency measures. The working group discussions, and consequently this white paper, have placed particular emphasis on mobile source emission reductions. However, most of the proposed concepts for AQMP control strategies and related programs are also applicable to stationary sources, and a companion white paper regarding Industrial Facility Modernization further explores business cases for stationary sources.

To actively involve stakeholders from the early stages of AQMP development, SCAQMD staff organized ten working groups, one for each of the 2016 AQMP white papers that aim to provide a policy framework and guidance for the formulation of upcoming control measures and programs. Staff solicited volunteer participation among the 2016 AQMP Advisory Group members who were also asked to recommend technical experts in relevant fields. Moreover, all working group meetings are open to the public.

[4] Figures are based on the 2014 fourth quarter Quarterly Census of Employment and Wages (QCEW) data for industries classified under the North American Industry Classification System (NAICS): 48-49–transportation and warehousing, and 541614–process and logistics consulting services; and for Los Angeles, Orange, Riverside, and San Bernardino counties.

[5] Based on historical QCEW data. The warehousing and storage industry is classified under NAICS 493.

The "A Business Case for Clean Air Strategies" white paper working group conducted a total of five meetings between June 2014 and March 2015. At the very first meeting, the participating stakeholders shared two premises that are consistent with the SCAQMD staff's evaluation:

1) Within the constraint of given air quality attainment deadlines, it is unlikely that all affected industries would have a business case regardless of the design of AQMP control measures and related programs.
2) The upcoming AQMP will most likely produce the largest impact on the goods movement sector, which consists largely of transportation and logistics industries.

In addition to open discussions and exchanges through the working group process, this white paper benefited greatly from stakeholder presentations of industry-specific case studies. The presentations covered various topics, including future opportunities enabled by technology advancement, successes and failures, and lessons learned from past experiences, all of which are instructive as to how business cases may be achieved under different circumstances. Section 2 of this white paper will discuss potential means to create a business case, based on lessons learned from the five industry case studies. In Section 3, other lessons from additional stakeholder comments will be discussed and supplemented by a number of examples researched by SCAQMD staff. Section 4 focuses on how to leverage incentive programs to create a business case. Building on the findings and recommendations from the working group process and staff research, Section 5 then develops the principal planning concepts to support the creation of business cases within clean air planning and programs. Section 6 discusses the next steps for AQMP development.

2. Potential Means to Create a Business Case: Five Key Lessons from Industry Case Studies

This section summarizes five case studies that were presented by various stakeholders from the private sector. These case studies are all based on actual business experiences, which offer valuable lessons that will aid the SCAQMD in the development of the 2016 AQMP.

a. Understand Industry Structure and Small Business Needs for Technology Adoption

The California Trucking Association provided an overview of the state's trucking industry and recommended a list of important factors to be taken into account to craft clean air strategies that can potentially create a business case. Below is a summary:[6]

- *The majority of California trucking operators are small businesses:* Commercial truckers in California are extremely diversified in their fleet size and operation type. In 2006, more than half of California-registered trucks belonged to fleets with five or fewer trucks, including one third being solo operators. Certain niche markets, such as drayage trucks operating at the Ports of Los Angeles and Long Beach, have an even larger presence of small trucking operators.
- *Small, local truckers tend to use pre-owned equipment:* New trucks are typically purchased by large national fleets or other high-mileage operations;[7] once the odometer hits 500,000 miles, the used truck is then traded in for sale in the secondary market or shifted to a company's local operation. Some "niche" operators (e.g., drayage, construction, seasonal agriculture) may buy from the tertiary market.
- *Fuel-neutral policy designs are recommended to preserve fleet turnover model:* Two fuel-neutral policies were specifically recommended: first, enact a cap on fleet age/mileage to accelerate the retirement of older trucks with higher emissions while preserving the existing fleet turnover model;[8] second, incentivize early adoption of zero or near zero emissions transportation technologies that otherwise cannot be achieved through normal fleet turnover due to high prices. It was argued that such policy design can better provide businesses with certainty on equipment life and minimize stranded assets.
- *Rules need to be adequately enforced and amendments should be avoided shortly after a rule goes into effect:* Policymakers must avoid inadequate enforcement and making amendments, especially those that would loosen rule stringency, shortly after the original compliance deadline. Otherwise, businesses that adhere to the rule requirements and the original rule compliance schedule may suffer from unfair competition for having made substantial investments to come into rule compliance.

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[6] Slides for this presentation are available at http://www.aqmd.gov/docs/default-source/Agendas/aqmp/white-paper-working-groups/business-case-ca-trucking-10312014.pdf?sfvrsn=2.

[7] High-mileage operations typically refer to those that accumulate more than 100,000 miles a year.

[8] According to SCAQMD staff estimates using the EMFAC 2011 model, the average age of heavy-duty trucks in the SCAB region is about 11 years, with many trucks, especially those in the light heavy-duty categories, being utilized well beyond the expected life of 12 years.

b. Targeted Incentives Can Cost-Effectively Accelerate Advanced Technology Adoption

The Southern California Gas Company provided a comprehensive overview of the development and prospect of low-emitting natural gas technologies. The presentation also reported the preliminary findings from an ongoing study that quantitatively analyzed the emission reduction potential of providing financial incentives for the purchase of natural gas vehicles. The lessons learned are summarized below:[9]

- *Conventional natural gas heavy-duty trucks are financially viable:* The price advantage of natural gas over conventional fuels can drive natural gas technology adoption by the heavy-duty trucking sector. The adoption can be further accelerated by near-term and consistent financial and other incentives that shorten the payback period. In the meantime, the infrastructure of natural gas fueling stations has also improved in design that is lowering costs.
- *Near zero emission natural gas heavy-duty trucks will soon be technologically feasible:* The SCAQMD and the Southern California Gas Company have supported natural gas technology developers and engine manufacturers with their research, development, and deployment (RD&D) programs. Technological advancements for on-road heavy-duty natural gas engines are expected to achieve a 0.02 grams/bhp-hr level of NOx emissions between 2015 and 2023. Moreover, the anticipated advancements in compressed natural gas (CNG) storage technologies can potentially have a large impact on design, and thus costs, for both heavy- and light-duty vehicles.
- *Increased financial incentives can encourage early adoption of near zero emission natural gas technologies:* The company's economic analysis indicated that additional financial incentives ($10,000 or less per vehicle) can shift conventional natural gas technology purchases to near zero emission natural gas technology purchases. Among all categories of heavy-duty trucks, financial incentives provided to the heavy-heavy-duty trucks will be the most cost-effective in terms of NOx emission reductions, due to their use in high mileage operations.

c. Stakeholder Involvement and Financial Assistance Are Necessary for Industry-Wide Technology Adoption

Burrtec Waste Industries, Inc. presented the waste management industry's conversion to natural gas vehicles, following the 2010 amendments to SCAQMD Rule 1193 – Clean On-Road Residential and Commercial Refuse

[9] Slides for the presentations are available at http://www.aqmd.gov/docs/default-source/Agendas/aqmp/white-paper-working-groups/business-case-socalgas-pres-final.pdf?sfvrsn=2.

Collection Vehicles. This rule requires public solid waste collection fleet operators with 15 or more solid waste collection vehicles, and private fleet operators that provide solid waste collection services to governmental agencies, to acquire alternative-fuel refuse collection heavy-duty vehicles when procuring or leasing these vehicles for use by or for governmental agencies in the SCAQMD region. The lessons learned from the industry's experience are summarized below:[10]

- *Both large and small businesses have to be involved in the rule-making process; moreover, the affordability for smaller fleets to finance capital costs needs to be carefully considered:* Today, almost all waste management trucks in the region, whether belonging to large or small fleets, are powered by natural gas.[11] The "phase-in" rule implementation schedule–which allowed more time for small fleets to come into compliance–and financial incentives (e.g., the Carl Moyer Program[12]) have made it possible for small- and medium-sized companies to finance the upfront capital costs.
- *A unique business model (i.e., exclusive franchise) provides greater certainty of returns to capital investment:* A typical contract between a private solid waste collection fleet operator and a governmental agency is an exclusive ten-year franchise. The nature of such contracts, in addition to the persistently lower price of natural gas relative to diesel, ensured that the capital costs of fleet conversion would be sufficiently paid back within the contract lifetime. Moreover, a solid waste collection fleet consists mostly of route trucks with long[13] expected equipment lifetimes, which also allows for a longer pay-back period than that of higher-mileage trucking operations.
- *Public funds are potentially needed to help build the infrastructure for an industry-wide adoption of needed transportation technologies:* The waste management industry's conversion to low-emission technologies also involved building fueling infrastructure, since there were few natural gas fueling stations in the initial stage of transition. Companies such as Burrtec had to obtain public funds to afford necessary installation of natural gas fueling stations. Government funds also promoted infrastructure at "network nodes," such as landfill and transfer stations that provide public access to natural gas fueling stations.

[10] Slides for this presentation are available at http://www.aqmd.gov/docs/default-source/Agendas/aqmp/white-paper-working-groups/burrtec-bus-case-31115.pdf?sfvrsn=2

[11] Electric vehicles were not considered as a technically viable option due to a list of battery-related limitations, including the pure weight of the battery pack.

[12] The Carl Moyer Memorial Air Quality Standards Attainment Program provides grant funding for cleaner-than-required engines and equipment. The grants are funded by the State of California and administered by local air districts including the SCAQMD.

[13] According to Chuck Tobin, Development Director of Burrtec Waste Industries, Inc., a solid waste collection truck is functional as long as its chassis remains in a good condition; other parts of the truck are replaceable.

- *Government support, such as facilitating information flow about the needed technologies, can help individual businesses choose the best fitting technology*: During the Rule 1193 process, many solid waste collection operators were faced with technical challenges, including the choice between different engine technologies. At the SCAQMD's request, engine manufacturers provided technology demonstrations so that the affected businesses could be better informed and choose the technology that would best fit their operational needs.

d. Learn From Early Adopters of Clean Air Technologies

Frito-Lay North America Inc. shared their successful experience of building a fuel-efficient fleet and identified the challenges and hurdles in their implementation process. Below is a summary:[14]

- *Corporate vision to build the most fuel-efficient fleet in America catalyzed the early voluntary adoption of alternative transportation technologies:* Senior management at Frito-Lay promoted the "Green Vision" to transform North America's seventh largest fleet. With 280 all-electric trucks and 333 CNG tractors, it has reduced the use of traditional fuel by 20 percent to date and is on track to reach their 50 percent target by 2020.
- *Alternative fuel vehicles are a viable fleet option:* The CNG tractor is financially viable on its own. It currently provides 40-50 percent fuel cost savings compared to diesel and has a payback period of 2-3 years, which is significantly shorter than the time the company keeps the equipment. For all-electric trucks with zero emissions, however, public grants were needed to shorten the payback time on the initial capital investment despite the significantly lower operating and maintenance (O&M) costs for the vehicles *per se*. In the near future, government incentives for electric vehicles are expected to continue to be needed.
- *Multi-dimensional approach helps manage operational challenges:* The key to success is to 1) ensure that new technologies are well integrated into business operations, which includes understanding equipment capabilities, improving fueling/charging capacity, and having reliable maintenance; 2) engaging drivers and technicians throughout the transition by offering training, site preparation, program leadership, and frequent communication via meetings, calls, and sign boards.

[14] Slides for this presentation are available at http://www.aqmd.gov/docs/default-source/Agendas/aqmp/white-paper-working-groups/agenda-no-2---frito-lay-march-11-2015---scaqmd.pdf?sfvrsn=2.

e. One Size Doesn't Fit All, and Infrastructure Is Needed to Expand Technology Adoption

United Parcel Service (UPS) Inc. is the world's largest package delivery company with a fleet of more than 100,000 ground vehicles worldwide. The company shared their experience experimenting with a wide array of alternative fuels and technologies in building up their "green fleet." Similar to Frito-Lay's experience, UPS also found it important to provide technology training for drivers and other personnel and to fully understand the key operational variables that can be very different from operating a conventional fleet. The additional lessons learned from the UPS experience are summarized below:[15]

- *Current alternative fuel technologies have attributes that are suitable for different business operations:* By the end of 2015, UPS will have about 7,800 vehicles in operation worldwide that are powered by alternative fuel technologies, including natural gas, hydraulic hybrid, propane, hybrid electric, plug-in electric, and fuel cells. Among them, about 1,200 will be operating in California alone, mostly in the package fleet. Since the attributes of current alternative fuel technologies are varied, only compressed and liquefied natural gas (CNG and LNG) technologies have been found sufficiently mature and suitable for tractor operations currently. Concerning electric vehicles, they are very sensitive to slope and weight of load, thus resulting in a very different energy use pattern that a fleet operator must be aware of and take into account.
- *Infrastructure can be a challenge in green fleet expansion:* UPS stated that the alternative fuel vehicles can have, at most, a five-year payback period to be financially feasible for its fleet operations; importantly, this pay-back period is calculated assuming that the necessary infrastructure is already in place. UPS has temporarily saturated the nation's LNG fueling infrastructure, which presents an important constraint on its LNG fleet expansion. Without suitable fueling infrastructure, natural gas vehicle fleets can also suffer from "range anxiety," an issue that is more often associated with limited battery capacity among electric vehicles. For plug-in electric vehicles (PEVs), the infrastructure issue can be more complicated. In addition to the number and condition of charging stations, the existing grid capacity in smaller towns may not be able to accommodate a large fleet of PEVs.
- *Partnership with other stakeholders is crucial to find a better way forward:* UPS works with manufacturers, government agencies, and nonprofit organizations to advance new fuel technologies and find less expensive, cleaner-burning domestic fuels that are better for the environment and more sustainable than conventional diesel. UPS emphasized that, to promote alternative fuel technologies,

[15] Slides for this presentation are available at http://www.aqmd.gov/docs/default-source/Agendas/aqmp/white-paper-working-groups/ups-bus-case-31115.pdf?sfvrsn=2.

more businesses and interested parties need to be involved to help increase the market demand for the vehicles. Financial incentives and other types of regulatory programs help with this process.

3. Potential Means to Create a Business Case: Other Lessons from Additional Stakeholder Comments and Examples

This section begins by summarizing the valuable comments and suggestions provided by other participating stakeholders on what is necessary to create a business case for clean air strategies.[16] Stakeholder comments are supplemented by additional examples researched by SCAQMD staff where applicable.

a. Provide Regulatory Certainty to Minimize Long-term Business Investment Risks

In addition to cost-effectiveness, regulatory certainty needs to be another important factor in the evaluation of AQMP control measures and related programs. Specifically, SCAQMD staff and stakeholders need to work together to carefully examine credible projections of zero and near zero emission technologies, evaluate and compare their technical applicability and financial viability for commercial adoption, while keeping in mind the global business environment and how it may impact the financial capacity of the affected industries.

Regulatory certainty is also affected by the ease of rule compliance and enforcement. The ability to adequately enforce air regulations should be an important consideration, as lack of enforcement could hurt business profits by creating competitive disadvantages for those who have made investments to comply with the regulation. It was additionally suggested that clean air strategies should involve minimal red tape, such as better streamlining the permitting process, which can also reduce staff time and other resources needed for rule enforcement. The SCAQMD has enacted and amended rules that reward low-emission sources with a streamlined permitting process or permit exemption (e.g., Rules 219 and 222) and will continue to evaluate the expansion of such programs to incentivize emission reductions.

[16] Many stakeholders also expressed concerns regarding the SCAQMD's socioeconomic analysis and the need to reform the California Environmental Quality Act. These issues are being or have been separately addressed by the SCAQMD and will not be repeated in this white paper. Additionally, following the 2014 recommendations from Abt Associates, an extensive socioeconomic analysis will be conducted in the upcoming AQMP to address regional macroeconomic impacts.

b. Maximize Compliance Flexibility within the Constraint of Air Quality Attainment

By allowing individual businesses to choose from a menu of permissible actions to come into compliance, flexible air regulations have a greater potential for improving air quality while minimizing overall compliance costs, and possibly create economic benefits for some businesses that can identify innovative solutions to cost-effectively lower pollutant emissions. It was also suggested that the SCAQMD look into a more flexible use of emission reduction credits and potentially allow for conversion of credits that are created from different sources so that, for example, a company that generates a large amount of stationary source credits can use or sell its credits for mobile source emission reductions and vice versa.[17]

c. Seek Support and Funding from Outside the Region

A case was made that, since mobile source emissions partly originate from outside the SCAB region, individuals and businesses within the region should not bear the sole responsibility for and incur all costs of emission reductions. It was suggested that outside funds (e.g., federal grants and the California Greenhouse Gas Reduction Fund) should be appropriately channeled to the SCAB region to assist the region and its businesses in achieving the emission reduction targets. These funds can come in the form of financial incentives, grants, and subsidies.

d. Offer Financial Incentives for Both Technology Development and Adoption

It was emphasized that financial incentives are necessary not only for technology adoption, but equally importantly, for research and development (R&D) activities to develop and enhance zero and near zero emission technologies. Moreover, the stakeholders cautioned that, in order to make incentive programs work, it is necessary to identify the best practices, learn from past successes and failures, and ensure that they do not attach unnecessary and/or impractical contingencies that work to discourage the use of these incentive programs.

[17] Currently, the application of emission reduction credits is generally restricted within the origin source category. The Rule 2202 program is an exception: those employers who are subject to the rule are allowed to use stationary source credits to reduce mobile source emissions produced by the daily commutes of their employees.

e. Make Public Grants Available for Necessary New Technology Adoption and Promote Voluntary Technology Adoption by Small Businesses

New technologies are not always costly if one takes a long-term view. Often, they have higher upfront capital costs, but offer a continuous stream of cost-savings when in operation. When new technologies are commercially available and deemed necessary for clean air objectives, public grants may be necessary for certain sectors or some segments of an industry (e.g., small businesses) which have limited financial capacity and resources to invest in the new technologies.

- *Transit agencies continue to leverage federal, state, and local funds to develop alternative fuel fleets:* Several major transit authorities in Southern California, including the Los Angeles County Metropolitan Transit Authority (LA Metro), utilized public funds from federal, state, and local sources to convert all buses from petroleum to CNG fuel over the past decade. Not only did grants help mitigate the upfront costs of adopting cleaner technologies, they also enabled the transit agency to cut operational costs, due to the lower fuel price, as well as participate in R&D activities that improved design and lowered costs even further. Today, the over 2,000 CNG buses run by LA Metro will continue to lead to cost savings and reduced emissions over the long term. Agencies are now following the same model for deploying Zero Emission Buses (ZEBs) by using funds from California's cap and trade program.
- *Public grants were provided for professional wet cleaning systems to phase out perchloroethylene (perc):* In addition to the initial capital costs involved in replacing perc machines, operation of a wet cleaning machine requires learning time and is more labor intensive. Therefore, since the 2002 amendments to Rule 1421, the SCAQMD has provided grants of up to $10,000 to each owner/operator of dry cleaners to install professional wet cleaning systems (and $20,000 is offered for the more costly carbon dioxide machines). The State of California offers an additional $10,000 to replace a perc machine with a wet cleaning machine or another non-toxic and non-smog forming alternative. Moreover, compared to perc machines, a professional wet cleaning system offers operational benefits, such as potential energy savings, and allows dry cleaners located in more affluent areas to charge higher prices for providing environmentally friendly services.[18]
- *Public grant programs can incentivize small businesses to voluntarily adopt clean technologies and/or practices to reduce stationary-source emissions:* With funds from the U.S. EPA's Targeted Air Shed Grant Program, the SCAQMD has successfully administered grant programs that are targeted to assist small

[18] Based on phone interviews conducted by SCAQMD staff in April 2015.

businesses within or close to environmental justice (EJ) communities to voluntarily reduce their stationary-source emissions. Specifically, grants were made available to auto repair shops and auto refinishing shops within certain EJ areas in the City of San Bernardino and Boyle Heights. The purpose of these grants was to shorten the payback period of purchasing clean, low-emission capital equipment (aqueous brake cleaning system for auto repair shops and laser paint targeting system for auto refinishing shops) and/or to assist employee training for applying emission-reducing techniques.

f. Promote Efficiency-Enhancing Low-Emission Technologies

Another potential means of supporting a business case is to promote technologies that can achieve emission reductions, and at the same time, are more efficient and can lead to cost-savings per unit of throughput.

- *High Volume Low Pressure (HVLP) spray guns reduce paint usage and VOC emissions at the same time:* HVLP spray guns were created to meet the spray equipment transfer efficiency requirements of a multitude of categories including automotive, metal, wood, and marine coatings. A conventional spray gun applies about 33 percent of the atomized coating to the substrate, with the rest released into atmosphere. In comparison, the HVLP technology has a transfer efficiency of 65 percent or higher, thus reducing the amount of paint needed while lowering VOC emissions. Importantly, the cost of an HVLP spray gun is comparable to purchasing conventional ones; moreover, the earlier drawback of a slower application rate has been largely mitigated by technology advancement, particularly the availability of hybrid spray guns.

4. Beyond Initial Equipment Purchase Subsidies: Other Ways to Incentivize Clean Air Actions in the Private Sector

In the case studies and examples summarized above, it is recognized that targeted financial incentives that offset initial capital costs of equipment purchases can accelerate and broaden the adoption of zero and near zero emission technologies. However, public assistance that directly subsidizes equipment purchases is not the only route. The following examples demonstrate how various types of incentives can be used to promote clean air actions in the business community.

a. Creative Incentive Programs Can Promote Technology Adoption Via Market Mechanisms

SCAQMD staff has identified two examples where smart uses of market mechanisms can reduce air pollutant emissions with minimal public funds. Albeit fiscally desirable, this approach may however have limited applications as both cases involve public authorities that manage crucial transportation infrastructure.

- *Cargo owners incentivized to work with "clean" truck operators:* As part of the Clean Air Action Plan (CAAP) at the Ports of Los Angeles and Long Beach, the Clean Air Trucks program exempts cargo owners from paying the Clean Truck Fee ($35 per container) when they use truckers operating with alternative fuel equipment or "clean" diesel trucks.[19] According to the progress report published at the end of 2012, all diesel trucks calling at the Ports had 2007 or newer model year engines, and 8 percent of the entire fleet was powered by natural gas. Moreover, the collected fees have enabled the Ports to offer financial assistance to truckers for the purchase of cleaner trucks.
- *'Privileged' use of infrastructure incentivizes clean technology adoption:* A freight corridor is currently being evaluated as a component of an alternative for the Interstate Highway 710 Corridor Project, which extends from the Ports of Long Beach and Los Angeles to the Pomona Freeway (SR-60), an 18-mile major trucking artery. The project alternative would expand I-710 to include four lanes designated exclusively for trucks with zero tailpipe emissions, which are expected to significantly reduce traffic congestion for these trucks, thus increasing their operational efficiency with less travel time. According to preliminary estimates made by the project team, the monetized time savings over a payback period of five years is projected to be large enough to substantially offset the price premium of zero emission trucks.

b. Small Operational Changes Can Be Incentivized to Reduce Emissions

In addition to adopting new technologies and purchasing new or retrofitting equipment, some of the emission reductions that are needed for the upcoming air quality standard deadlines can be achieved by small operational changes that have low marginal costs. Financial incentives can be targeted to offset these costs to induce emission-reducing changes.

[19] The "clean" diesel trucks need to meet or exceed the U.S. EPA's 2007 engine standard. However, cargo owners may not be exempted from the Clean Truck Fee if the "clean" trucks are purchased with Clean Truck Program funds. For details, see http://www.portoflosangeles.org/ctp/CTP_Clean_Truck_Fee.pdf (accessed June 16, 2015).

- *Ports of Los Angeles and Long Beach Incentivize Voluntary Speed Reduction to Reduce Emissions of Multiple Pollutants:* The Ports' Voluntary Speed Reduction program, a component of the Clean Air Action Plan, offers reduced dockage rates and environmental awards for ocean-going vessel operators who voluntarily reduce their speed to 12 knots within 20-40 nautical miles out from Port Fermin. More than 90 percent of all vessels calling at the Ports currently participate in the program, thus leading to substantial emission reductions of multiple pollutants.

c. Clean Technology R&D Incentives Reduce Investment Risks, Lower New Technology Cost Premiums, and Potentially Create Jobs

As already stated by many of the stakeholders, incentive programs will play a pivotal role in encouraging and promoting clean technology R&D efforts. These programs serve two major purposes. First, they have the potential to expedite technology advancement by reducing the upfront investment costs, and if the research efforts do not come to fruition, minimizing potential investment loss. Second, they can bring down the price premium needed for R&D cost recovery, thus potentially increasing the scale of early technology adoption.

- *Public grants can help demonstrate and eventually commercialize emerging electric truck technology:* The California Energy Commission and the SCAQMD co-funded a demonstration project of battery-electric heavy-duty trucks developed by Transportation Power, Inc. (TransPower). The funding enabled the technology developer and manufacturer to test its pilot truck in real-world conditions for nearly a year and use the experience to further enhance technology and incorporate more advanced components. By the end of 2015, the technologies and components will have been used in an expanded demonstration project of at least 20 medium- and heavy-duty electric trucks, and they are also being applied to other types of heavy-duty vehicles, including off-road yard tractors and school buses. Recent testing of these electric trucks, conducted by University of California, Riverside, projected that the combined fuel and maintenance savings can significantly outweigh the higher upfront equipment cost.
- *Public R&D incentives spur private investment in zero emission vehicle (ZEV) infrastructure:* Newport Beach based FirstElement Fuel Inc. received nearly $28 million from the California Energy Commission's Alternative and Renewable Fuel and Vehicle Technology Program to construct publicly available hydrogen refueling stations across the state. Encouraged by the state's commitment to developing a consumer market for ZEVs, Toyota and Honda supplied FirstElement Fuel with millions more in additional infrastructure funding. This example illustrates how R&D incentives can mitigate risk and send signals to private businesses and investors to enter the market.

Importantly, R&D grants and incentives have the potential to create jobs related to advanced technology manufacturing and also in businesses that will support infrastructure building and maintenance. According to TransPower's estimate, for example, commercial manufacturing of 2,500 electric Class 8 trucks per year is expected to create a total of 1,500 new jobs. Moreover, the example of TransPower also demonstrates how the SCAQMD may leverage outside funding to potentially reduce mobile source emissions from international trade passing through the Ports. The SCAQMD obtained the grant funding from U.S. EPA Region 9's Clean Air and Technology Innovation (CATI) Program.

5. 2016 AQMP Planning Concepts to Support a Business Case

This section lays out the principal planning concepts that will guide the development of the 2016 AQMP, based on the potential means that have been identified to help create a business case for clean air strategies. Many of the concepts proposed in this section are consistent with the set of criteria used for evaluating control measures used in the 2012 AQMP. These include cost-effectiveness, technological feasibility, and the potential for reduced emissions. It's also important that these concepts be legal and enforceable, acceptable to the public, and help the Basin reach future emissions goals.

a. Prioritize Business Case Strategies

To the extent possible, the 2016 AQMP will prioritize implementation of strategies that have the potential to create a business case. This is consistent with the existing approach of cost-effectiveness ranking of control measures, as the business case strategies will be designed to generate economic benefits, such as lower capital, fuel, or other operation and maintenance costs and improvements in energy efficiency. These benefits are anticipated to offset overall compliance costs for at least some of the affected industries.

b. Maximize Flexibility with Multiple Pathways to Compliance

The 2016 AQMP will, to the extent practicable, maximize compliance flexibility for businesses by allowing multiple pathways to achieve an emission reduction target. Given that each facility approaches cost decisions differently, more flexibility enables businesses to choose an approach that makes the most economic sense for compliance. Moreover, regulatory flexibility encourages voluntary actions that can result in implementation that goes above and beyond the policy target.

c. Maintain a Technology-Neutral Approach

Acknowledging that different fuel technologies may be more suitable for different types of business operations, the 2016 AQMP will maintain a technology-neutral approach in the design of control measures and related programs to the extent practicable. A technology-neutral approach, where practicable, will allow businesses to select and diversify their energy sources, thus allowing compliance flexibility to buffer the effect of energy price fluctuations. Diversity in fuel choices can spur innovation and trigger cost reductions as more technology developers compete. Moreover, given that businesses located in the Basin often compete with out-of-state firms not subject to the same regulations, the SCAQMD will advocate for national performance standards to level the playing field.

d. Ensure a Fair Share of Emission Reduction Obligations and Broad Stakeholder Involvement

The 2016 AQMP will identify ways to more fairly distribute emission reduction and funding obligations by, for example, seeking interstate collaboration, as well as federal and international support to reduce emissions from sources in interstate and international commerce. In addition, the 2016 AQMP will also make a good faith effort to fairly distribute emission reduction obligations among the sources of pollution within the region. This will require broad stakeholder involvement; therefore, the 2016 AQMP and the ensuing rule-making activities will further utilize the agency's public outreach and consensus building efforts to actively involve the broadest possible base of potential stakeholders.

e. Avoid Stranded Assets By Utilizing Strategies That Can Potentially Enhance Operational Efficiency While Reducing Emissions

Within the constraint of given air quality attainment deadlines, the 2016 AQMP will minimize the need to replace equipment that has a remaining useful life consistent with the industry standard. To the extent possible, the 2016 AQMP will make every effort to first explore the emission reduction potential of strategies that can possibly enhance operational efficiency on the existing equipment, while maintaining the current level of throughput. These strategies may include, for example, promotion of best management practices and full utilization of information and data acquisition technologies to monitor and optimize operations.

f. Propose Targeted Incentive, Financing, and Funding Programs for Business Operators

In cases where equipment replacement and procurement are needed, the 2016 AQMP will propose financing and funding programs with public grants, through private collaborators, or via public-private partnerships. These programs will be specifically designed to assist equipment operators with overcoming the economic

"gaps" in achieving a business case (e.g., high up-front capital costs and long payback periods). The 2016 AQMP will also propose targeted incentive programs to accelerate voluntary early adoption of zero and near zero emission technologies as well as to speed up voluntary retirement of old equipment with high emission rates. The incentives will provide direct financial benefits or indirect, non-monetary benefits with economic values. For example, the SCAQMD may consider seeking public-private partnerships with truck manufacturers and other public agencies to establish a conditional incentive program that limits its participation to small truckers. The design of such a program could offer price discounts/financial assistance to purchase zero and near zero emissions vehicles on the condition that the previously used "dirty" truck is scrapped. The amount of financial incentives can be determined in a way that is proportional to a weighted index of the scrapped truck's emissions of air pollutants and its market value.

g. Propose Targeted Public Grants and Explore Innovative Financing Tools for Technology Developers and Infrastructure Providers

Due to their inherently high investment risks, early stage research, development, and deployment as well as long-term infrastructure planning usually have to rely heavily on public grants or angel investments. To potentially increase technological feasibility, the 2016 AQMP will propose to focus public RD&D funding and incentives on technologies and fuels with the potential to reduce capital or O&M costs, and/or the potential to address multiple needs (e.g., criteria pollutants, local toxics, energy security, greenhouse gas, etc.) with single investments. A similar proposal will also be made to spur infrastructure investment to support zero and near zero emission technologies, either by lowering investment risks or ensuring a financially sustainable level of market demand. Moreover, the 2016 AQMP will explore innovative financing tools, such as impact investment bonds, that have been used for projects where institutions and organizations traditionally have difficulties recruiting private investors and have shown success in promoting cross-sector collaboration to achieve socially or environmentally desirable outcomes. Cross-sector collaboration is now at a significant level, as noted in the White House's announcement in June that the private and nonprofit sectors have committed over $4 billion to the development of clean energy technologies. In addition, several Executive Actions were announced that would create an impact investing center at the U.S. Department of Energy, allow the U.S. Treasury Department to provide assistance to charitable foundations investing in clean energy technologies, and improving the U.S. Small Business Administration's financing options for early stage technology development. [20]

[20] https://www.whitehouse.gov/the-press-office/2015/06/16/fact-sheet-obama-administration-announces-more-4-billion-private-sector

h. Pay Close Attention to the Unique Needs of Small Businesses

SCAQMD staff is fully aware of the importance of small businesses in supporting the regional economy and creating jobs. Therefore, the 2016 AQMP and the ensuing rule making activities will continue, and enhance where needed, the ongoing practice of paying close attention to the unique needs of small businesses and establishing small business assistance programs as applicable. As small businesses tend to hold on to equipment for a longer-than-average amount of time (e.g., small truckers), the 2016 AQMP will carefully evaluate the industry structure of affected sectors and their equipment usage pattern to avoid stranded assets, within the constraint of attaining air quality standards by the given deadlines. When proposing incentives and other financing/funding programs, consideration will also be given to the relatively limited financial capacity of small business operators.

i. Minimize Resources Required for Compliance and Enforcement

In anticipation that the 2016 AQMP may propose that all or a portion of the goods movement sector begin or expand the adoption of zero or near zero emission technologies, the SCAQMD will make every effort to help ensure full information flow between businesses and the technology developers/equipment manufacturers to minimize the resources spent on trial and error. This can be potentially achieved by, for example, providing venues for technology demonstration and assisting with information dissemination. The 2016 AQMP and the ensuing rule-making activities will also, to the extent possible, minimize administrative burdens required for regulated facilities to come into compliance and for the SCAQMD to enforce regulations. This will work toward the goal of minimizing inadvertent costs to business due to possible competitive disadvantages created by inadequate enforcement.

j. Facilitate Job Training and Job Creation Associated with Low-Emission Technologies

One important lesson provided by the large fleets that have adopted low-emission transportation technologies is that driver and technician training is critical in successfully adopting new advanced technologies. Therefore, the 2016 AQMP will explore the possibility of multi-sector collaboration to support job training associated with zero and near zero emission technologies in order to facilitate and accelerate broader adoption of advanced technologies. In addition, the 2016 AQMP will also explore feasible ways to facilitate the placement of new/relocated businesses developing, manufacturing, or employing zero and near zero emission technologies, with the aim of creating well-paid advanced technology jobs in this region.

6. Next Steps

As mentioned at the beginning of this white paper, SCAQMD staff is committed to prioritizing, when possible, measures where a business case can be made for deployment of needed technologies and efficiency measures when developing the 2016 AQMP. The principal planning concepts will be used to guide the development of control measures and related programs. Moreover, SCAQMD staff will also develop an evaluation matrix, to be included in the 2016 AQMP, to monitor and assess whether and to what degree these concepts have been integrated into the proposed clean air strategies to support a business case for clean air strategies.

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Energy Outlook

2016 AQMP WHITE PAPER

OCTOBER 2015

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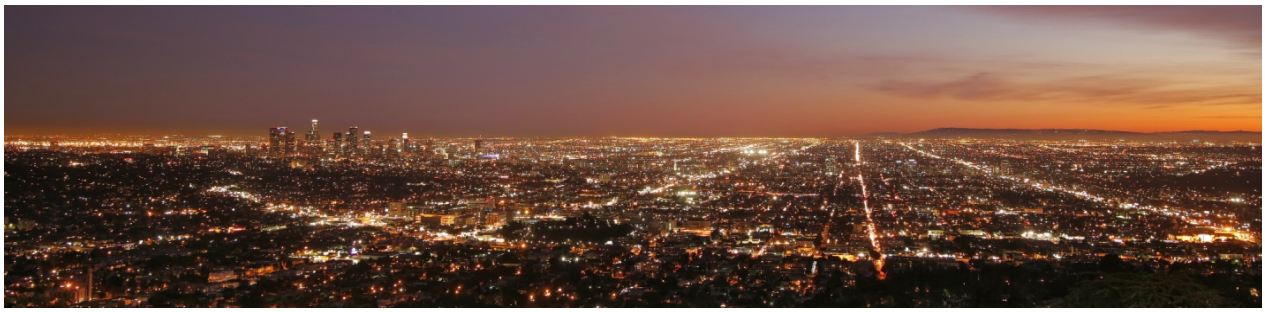


I. Purpose

In order to attain federal ambient air quality standards for ozone and $PM_{2.5}$ in the South Coast Air Basin (Basin), and to achieve the state's GHG reduction targets, transformational changes regarding how we select and use energy resources are essential. The Energy Outlook White Paper Workgroup was assembled to assist staff in the development of a white paper that provides insight and analysis on a range of topics that impact the energy sector and air quality within the Basin. The range of topics and analysis, in part, cover:

- Review of the energy resource choices within the AQMP planning horizon;
- Identification of potential demand, supply, and infrastructure needs for energy sectors based on existing and proposed regulations, policies, and programs;
- Review of emerging technologies that impact efficiency and reliability;
- Scenario analysis based on input from other working groups for various energy sectors;
- Energy infrastructure; and
- Recommended actions for coordinated efforts among the public agencies, fuel providers, and consumers for the scenarios analyzed.

II. Background

The 2016 Air Quality Management plan will largely focus on a NOx heavy reduction strategy to achieve the 2023 and 2031 federal ozone standard deadlines in the Basin. Additional but limited reductions of VOCs are needed to help achieve the federal ozone standards, and reductions of both NOx and VOCs will reduce levels of fine particulate matter being formed within the atmosphere. In addition to reducing these criteria pollutants, significant reductions in greenhouse gas (GHG) emissions are needed to achieve the State GHG targets, and to develop pathways for others in the nation and the world to limit atmospheric levels of GHGs below thresholds that lessen the potential for catastrophic climate change impacts.

Within California, many different policies, regulations, market-based mechanisms and incentives are in place and/or are being implemented that impact the types of energy supplied and used, how energy is used, and the

emissions associated with energy generation and use. Policies and regulations previously enacted for air quality improvement have had an impact on the types of energy supplied and used in the Basin. As an example, the amount of coal use for electricity production in California has declined from a peak of 1,363 tons in 1993 to 539 tons in 2012[1]. This partially is a result of the Emission Performance Standard established by SB 1368 in 2006, which does not allow an increase in generating capacity of a facility that exceeds 1,100 lbs. CO2 per MWh[2]. Similar GHG emissions limits are being implemented under the EPA's Clean Power Plan and will result in fuel switching of several coal power plants nationally. The sources of energy in California will continue to change as a result of the rapid development of new technologies and renewables, needs to protect public health from air pollution, and initiatives such as Governor Brown's new targets to reduce fossil fuel usage by 50%, increase renewable power generation to 50%, and increase efficiency within existing buildings 50% by 2030.

The energy supply and consumption pathways for California in 2008 are shown in Figure 1. These energy pathways show a clear split of energy supply vs. end use, with liquid petroleum fuels primarily used in transportation, whereas, stationary non-transportation end uses utilize gaseous, solid, nuclear, and renewable energy sources. These historical energy flows have relatively little energy crossover between the stationary and

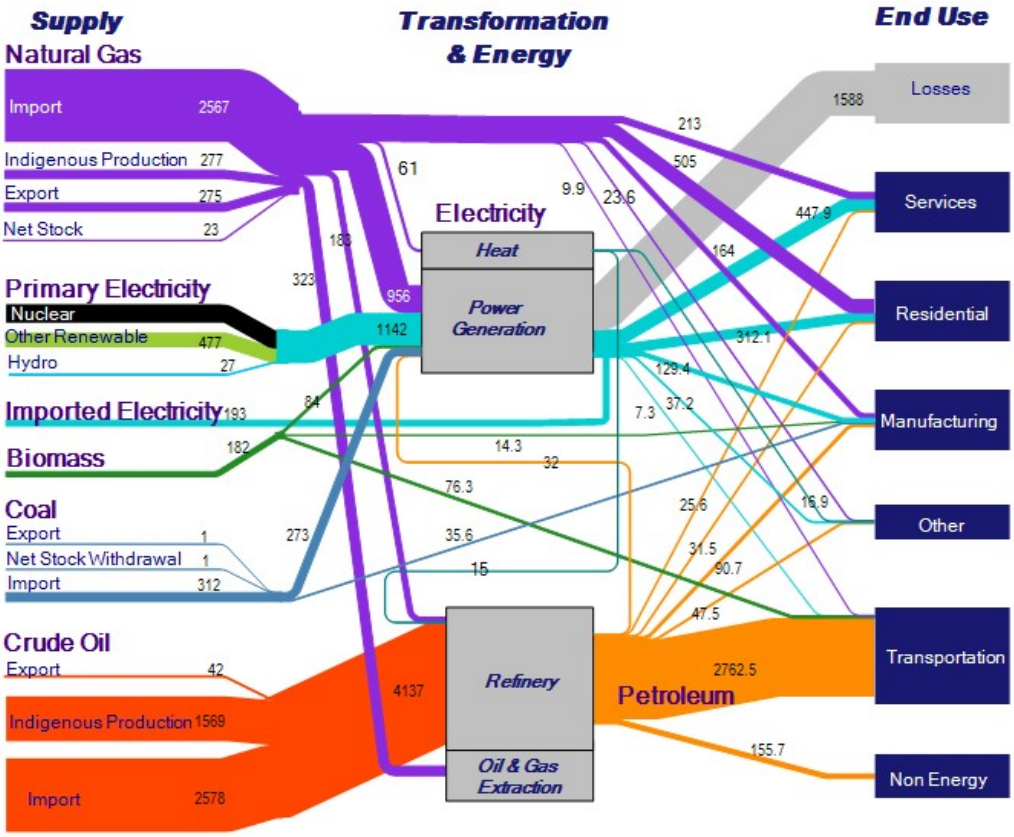


FIGURE 1

2008 California Energy Flow in Trillion BTUs[3].

transportation sectors. Newer technologies, declining renewable energy costs, changing and volatile fossil energy prices, along with newly implemented policies and regulations are resulting in the traditionally separated transportation and stationary energy sectors becoming more integrated and economically coupled. The changes in energy supply and the increase in cross sector energy demand will create benefits and potential costs for the use of each energy type along with potential impacts on criteria pollutant, toxic, and GHG emissions.

Additionally, the energy losses within the overall energy system are high. Energy losses relating to power generation are shown in Figure 1 to be 62% of the total primary energy used to generate electricity (not including losses associated with imported electricity generation). These losses are a result of inefficiencies within technologies to generate energy that result in waste heat. Also shown in Figure 1, the difference between energy inputs into the refinery sector and petroleum outputs result in 25% losses in energy also as a result of waste heat production. Not shown in Figure 1 are the significant energy losses that occur within the stationary and transportation end uses of electricity, natural gas, and petroleum. Within the transportation sector these losses are typically around 80% to the heat losses associated with the widespread use of internal combustion drive train technologies[4].

New renewable energy policies, implementation of new technologies and the enhanced energy efficiency efforts being undertaken in California are driven, in part, by the need for significant reductions in greenhouse gases and will also result in significant criteria pollutant reductions. Since NOx emissions largely do not have a naturally occurring source in the Basin, except for biomass burning sources, the entire inventory of NOx emissions is the direct result of combustion sources and the properties of the fuel and end use technologies. Additionally, a large majority of VOC and GHG emissions in the Basin also result from either fugitive or combustion emissions resulting from our energy choices. In 2011, the SCAQMD Governing Board adopted the SCAQMD Air Quality Related Energy Policy which guides the SCAQMD in integrating air quality and GHG reductions along with Basin energy issues in a coordinated manner[5]. The Energy Outlook white paper in part further implements the policies and actions within the SCAQMD Air Quality Related Energy Policy. To further reduce Basin emissions while providing clean reliable energy sources, transformations of the traditional energy infrastructure will be needed as new technologies that have zero and near zero emissions and renewable energy sources are increasingly implemented.

III. Emissions by Energy Type

Shown below in Figure 2 are the NOx emissions from the 2012 AQMP inventory resulting from different types of energy use. The diesel and gasoline fuels (consumed primarily for transportation) result in the highest NOx emissions. Even as fleet turnover to lower emission vehicles occurs in the transportation sector and further reductions are achieved for stationary sources, The 2016 AQMP baseline inventory projects that the Basin will not achieve NOx levels sufficient to achieve the 2023 and 2031 ozone standard, without significant further reductions of NOx.

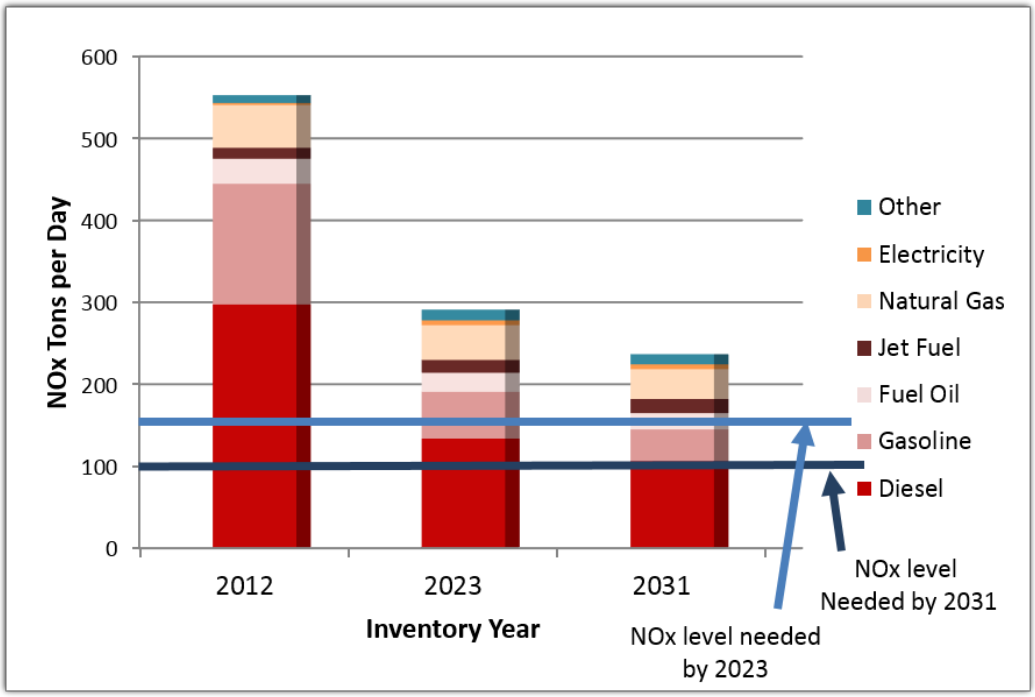


FIGURE 2

NOx Annual Average Emissions Inventory by Fuel Type (*2016 AQMP inventory*)

The carbon dioxide emissions in the Basin associated with fossil fuel combustion are directly linked to the carbon content in the fuels and the amount of fuels used. As shown in Figure 3 the 2008 Basin carbon dioxide emissions were over 134 million metric tons. This emission estimate does not include fuels used to generate power that is imported into the Basin or the impact of many of the GHG policies and regulations that have come into effect since the 2012 AQMP analysis.

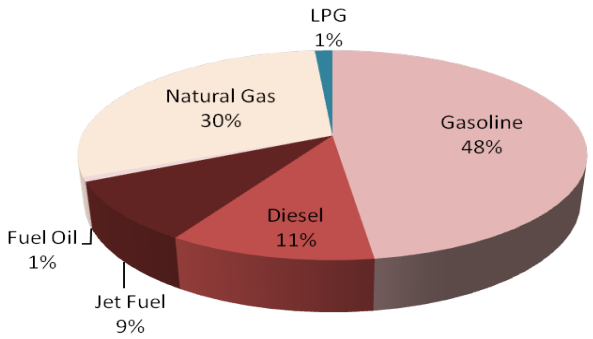


FIGURE 3

Greenhouse Gas (CO2) Emissions in 2008 by Fuel Type (Total 134 MMT CO2, *2012 AQMP*)

IV. Policies and Regulations Impacting Energy Use in California

There are several federal, state, and local regulations and policies that impact energy usage in California. Table 1 provides a partial list of policies and regulations, which have been recently enacted or proposed at the different levels of government.

TABLE 1

Policies and Regulations Impacting Energy Use in California

Policy Objective	Level of Government	Name	Goal
Air Quality	Federal	Clean Air Act	Achieve health based standard levels of criteria and toxic pollutants along with protecting public health from ozone depleting substances and greenhouse gases.
GHG Reduction	Federal	Clean Power Plan	Reduce GHG emissions from new, modified and existing power plants
Fuel Standard	Federal	Energy Independence and Security Act of 2007	36 billion gallons of renewable transportation fuel by 2022
Truck GHG Reductions	Federal	Phase 2	Increases fuel economy of trucks and trailers starting for model year 2021
Petroleum Reduction	State	California State Alternative Fuels Plan, Governors Target	Reduce petroleum use in to 15% below 2003 levels by 2020; 50% reduction in petroleum fuel use by 2030.
ZEV Mandate	State	California Executive order B-16-2012	1 million EVs by 2023 and 1.5 million by 2025
Vehicle Efficiency	State	Pavley Standards AB 1493	Increase vehicle efficiencies and reduce GHG emissions
GHG Reduction	State	AB32, California Global Warming Solutions Act Governor Targets	Reduce GHG emissions to 1990 levels by 2020, 40% below 1990 levels in 2030, and 80% below 1990 levels by 2050.
GHG Reduction	State	Cap and Trade	Reduce GHG emissions from stationary facilities and fuel providers.
Renewable Power Generation	State	Renewable Portfolio Standard Governors Target, SB 350	33% renewable electricity generation by 2020 and target of 50% renewable power generation by 2030.
Building Efficiency Standards	State	Title 24, Governors Target, SB 350	Net zero energy new residential construction by 2020, net zero energy commercial construction by 2030, increase in existing building efficiency 50% by 2030.
Emissions Performance Standard	State	SB 1368	Establish base load generation to not exceed 1,100 lbs CO2/MWh
Coastal water protection	State	Once Through Cooling	Eliminate use of once through ocean water cooling by coastal power plants. Protection of coastal waters and marine life.
Energy Storage Mandate	State	AB2514	1.3GW storage mandate by 2020
Large Stationary Emissions Reductions	Local	Regional Clean Air Incentives Market (RECLAIM)	Declining Allocations and Credit trading program within Basin for NOx and SOx reductions from large stationary sources.
Electrical system reliability	State/Local	AB 1318	Needs assessment report evaluates electrical system reliability needs of the South Coast Air Basin.

V. Energy Landscape

Over the past decade the energy landscape in the United States has changed dramatically. This is largely the result of an increase in domestic fossil fuel production from implementing unconventional recovery techniques such as fracking. As a result the United States is requiring less imported energy to match consumption and, by around 2028, is projected to recover as much fossil energy as consumed, Figure 4[6]. However, there are many potential environmental issues and concerns associated with unconventional recovery techniques and the transport of fuel from increased domestic energy production. These concerns, in-part, include the potential for groundwater contamination, wastewater disposal, and emissions associated with well production.

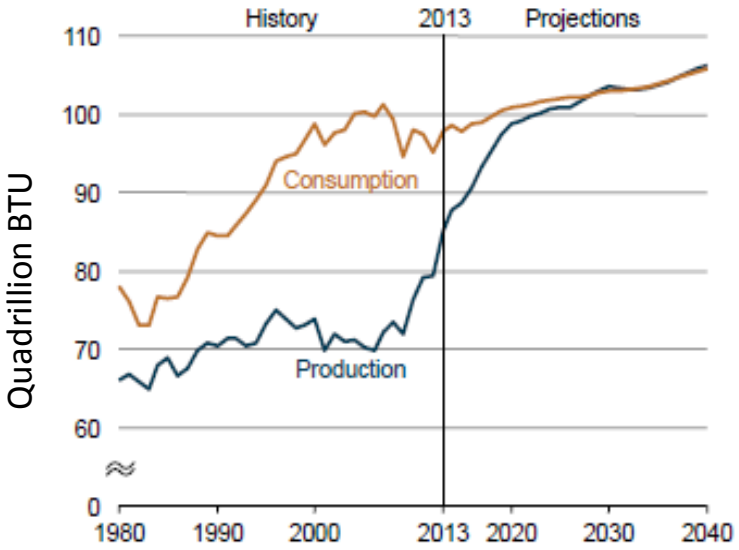


FIGURE 4

Historical and Projected United States Domestic Energy Production and Consumption[6]

At the same time, renewable energy is also being more widely implemented and integrated with new technologies in transportation, energy storage, distributed energy, and demand side management[7]. One of the most significant changes in the renewable landscape has been the dramatic drop in costs for solar power generation as shown in Figure 5. Under the California Solar

Initiative, the installed costs for rooftop photovoltaic (PV) systems have dropped 50% over the last 7 years to a recent average below $5 per watt.

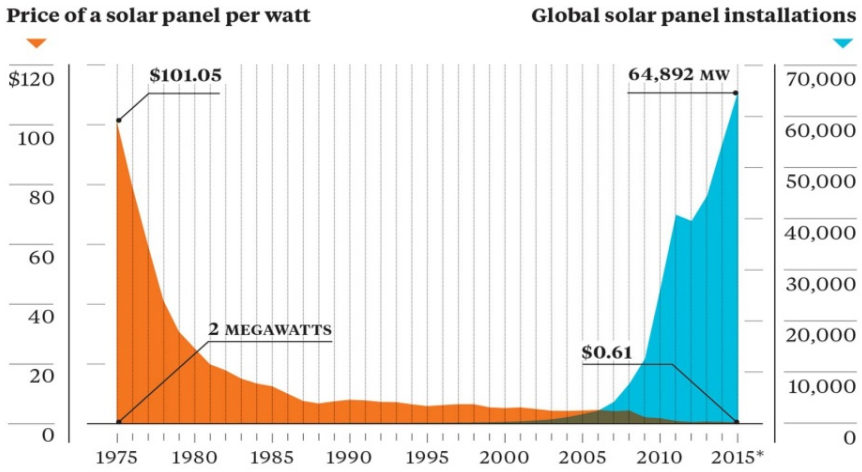


FIGURE 5

Solar Panel Prices and Installations over Time (*Source: Bloomberg Markets*[8])

The increase in production of oil and gas within the United States has also led to declining prices. These changes, new technologies, along with new policies and regulations are changing the energy landscape within the Basin. Current and upcoming issues and technologies for each energy sector that may result in emissions impacts are discussed below.

a. Electricity

Background

The electricity energy sector is reliant on many different types of fossil and renewable energy sources to meet electrical load demands in real time. A stable grid relies upon the delicate balancing of matching generation with demand, traditionally accomplished by using large central power plants connected to transmission grids operated by grid balancing agencies such as the California Independent System Operator (CAISO). These large transmission grids help supply localized distribution grids operated by utilities to supply end use customers. The traditional generation and distribution system meets electricity demand increases through large central power plants and peaking generation units. The need to balance generation capacity with peak demand periods, occurring during the daytime during the summer months, requires excess generating capacity that often sits idle. For instance, peaking generator units typically provide the excess generating capacity when needed, but have low capacity factors (utilization factors) around 5% and do not operate as efficiently as larger combined cycle base load power plants[9].

The traditional one way flow of electricity from large power plant to passive end use creates additional expenses for ratepayers based on the need for excess infrastructure and generating capacity. A version of the simplified traditional utility model with large plants supplying end users is still somewhat in place within California, but

started changing with state demand side programs being implemented by the CEC and DOE in the 1970's. These programs started the process of adjusting end user demand to help minimize the amount of electrical infrastructure needed to maintain the electrical grid. The early demand side management regulations implemented by the CEC, include building energy standards under Title 24 and appliance efficiency standards. End use efficiency programs along with other demand side measures have helped lower and leveled the per capita electricity consumption in California while also reducing the amount of new power plants needed (see Residential and Commercial Energy White Paper).

Electricity pricing structures also reduce electricity demand during peak demand periods. Many large electricity consumers are billed largely based on time of use and for on-peak power demand. Under this pricing structure electricity rates vary substantially during the highest usage hours of the summer months. Time of use rate structures have recently become available to residential customers as utility smart meters have been implemented. To help shave energy during peak demand periods, many utilities have created demand response programs that provide financial benefits to customers that install equipment to shave energy use during high demand periods.

The electricity sector in Southern California is undergoing rapid changes with the unexpected shutdown of the San Onofre Nuclear Generating Station along with the repowering of coastal generating plants to meet the state's requirements of the Once-Through-Cooling (OTC) Policy. At the same time, other mandates requiring implementation of more renewable power generation and increasing the amount of electric cars in California are quickly creating additional demands on the electricity system.

POWER CONTENT LABEL

ENERGY RESOURCES	2013 SCE POWER MIX (Actual)	2012 CA POWER MIX**
Eligible Renewable	**22%**	**15%**
-- Biomass & waste	1%	2%
-- Geothermal	9%	4%
-- Small hydroelectric	1%	2%
-- Solar	1%	1%
-- Wind	10%	6%
Coal	6%	8%
Large Hydroelectric	4%	8%
Natural Gas	28%	43%
Nuclear	6%	9%
Other	0%	0%
Unspecified sources of power*	**34%**	**17%**
TOTAL	**100%**	**100%**

* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.

** Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the previous year.

For specific information about this electricity product, contact Southern California Edison. For general information about the Power Content Label, contact the California Energy Commission at 1-800-555-7794 or www.energy.ca.gov/consumer.

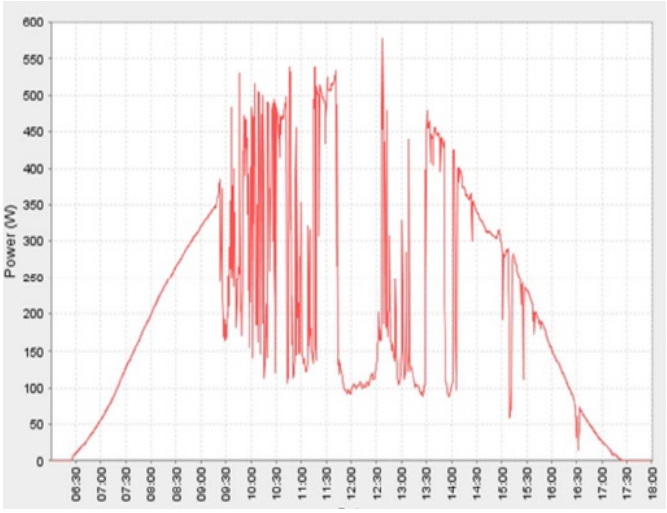
FIGURE 6

Power Content Label for Southern California Edison's Power Supply Mix in 2013

Under AB162, utilities are required to disclose the percentage of power from different generation sources that they supply to customers as they progress toward supplying at least 33% energy from renewable generation sources by 2020. As shown in Figure 6, SCE in 2013 supplied 22% from qualifying renewable resources and is currently on track to achieve the 33% target in 2020. In 2003, the Energy Action Plan implemented the states preferred resources for electrical loading order which places priority, respectively, on demand side management, renewable generation, and lastly, additional fossil fuel powered generation[10]. Other regulations such as California's GHG Cap and Trade Program provide market incentives that promote increased generation efficiencies and the use of renewable fuels.

FIGURE 7

Daily Power Output from Solar Panel Array showing Generation Intermittency from Passing Clouds (*Courtesy UC, Irvine*)



As higher percentages of variable and intermittent renewable resources are integrated into the electrical grid, matching generation with demand becomes increasingly difficult with traditional grid systems, and can make the electrical grid less reliable. The addition of large amounts of renewable generation often requires resources that can balance the short term intermittency. For photovoltaics and wind generation, this often results from intermittent cloud cover (Figure 7) and varying wind speeds, respectively. Additional resources must be implemented to balance large variable renewable power sources on the larger transmission and utility distribution electrical grids. Figure 8, shows the actual and projected net generation demand that is required from fossil generation as more wind and solar power are projected to be added to the CAISO transmission electrical grid. Referred to as the "Duck Curve", due to its shape, the primary impact of adding more solar generation requires the output from fossil generation units to significantly decline or idle during the peak daylight hours. The generation units, however, must be quickly dispatchable not only to help balance potential renewable generation intermittency, but also be capable and ready to provide the rapid generation ramp needed as the sun sets and system load increases into the evening.

Currently, peaking generation plants and synchronous condensers are being utilized to help provide the flexible and dispatchable resources that help integrate renewable resources into the electrical grid. The peaking generation units help support renewable resources by having fast ramp rates and response times, but negate some of the GHG emissions benefits of using renewables by maintaining reliance on fossil generation. Additionally, increasing the number of startup events along with ramping needs results in slightly higher criteria pollutant emissions from peaking generation units than have been observed from these generators in the past (refer to: UCI Professor Jack Brouwer April 15th Energy Outlook Workgroup Presentation[11]).

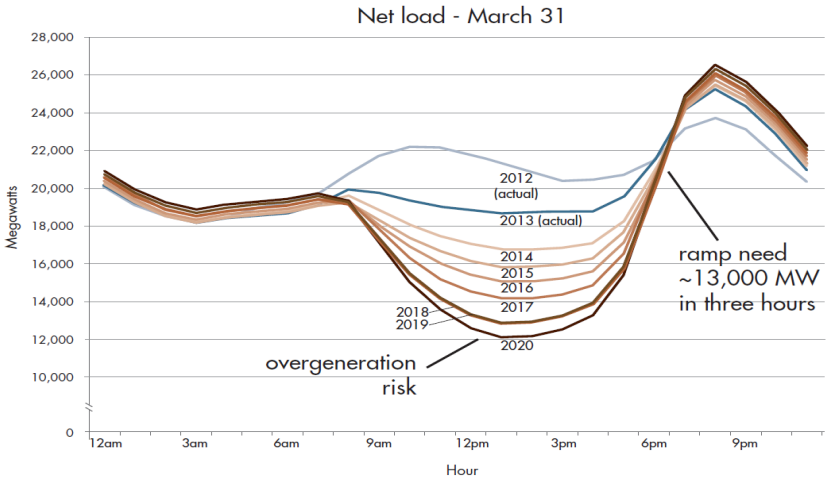


FIGURE 8

"Duck Curve" represents the Net Load which shows the variability in demand and supply that CAISO must balance with controllable flexible resources. The net load represents the load that must be met with flexible and dispatchable resources. The net load subtracts the variable renewable generation from the end user demand.

As a result of changes in power plants such as San Onofre closure, along with the planned closure and repowering of additional Southern California coastal power plants, there is a need for voltage support on the local distribution networks. Smaller generating plants and other distributed energy resources are being implemented in a newer grid structure that provides more resilience and less reliance on large traditional generation, and operates with less infrastructure redundancy. Additionally, a change under CPUC Rule 21 is being made to start allowing smart inverters attached to rooftop solar installations to provide grid support services such as voltage support. Allowing the large amounts of rooftop solar inverters to help provide other grid service needs other than energy helps provide cleaner more reliable grid power. In California most inverters installed with rooftop solar panel systems are smart inverters; however, the grid services capabilities, such as voltage support, has been disallowed under outdated grid interconnection requirements that are currently under review[12]. Allowing smart inverters to provide grid services has already been implemented in Europe.

New Technologies and Adapting to a Changing Grid Landscape

As mentioned earlier, the traditional electric grid management paradigm has been to add additional generation to match demand with end use customers being passive consumers. It has been shown that demand side management is much less costly than adding generation and provides greater utilization of existing resources[13,14,15]. Demand side management is increasingly becoming more important as higher amounts of power are derived from renewable generation making it more difficult to match generation with demand[16]. Southern California Edison is undertaking a preferred resources pilot program within Orange County that is studying which types of demand side management resources can help alleviate infrastructure needs, in part, due to the San Onofre shutdown[17]. Large amounts of renewable power

during low demand periods have recently resulted in periods of over-generation that led to negative wholesale market prices[18]. New technologies are rapidly being developed and implemented that provide flexible resources to help manage any excess power generated from renewable resources along with reduced load during times of peak demand or high net load ramping needs[16].

To help balance end user demand with generation, households and businesses are increasingly relying on energy management systems that help reduce peak demand charges, can participate in demand response events, and better manage energy loads with onsite generation and occupancy needs. One example of these technologies in the residential sector has been the implementation of Wi-Fi connected smart thermostats that help reduce heating and cooling energy use by using occupancy sensors along with weather forecasts. Other technologies are beginning to utilize utility smart meters with cellular phones to incentivize participation in demand response events (Ohmconnect.com). These systems also can be registered with utility demand response programs and are being developed to integrate with other electricity end uses.

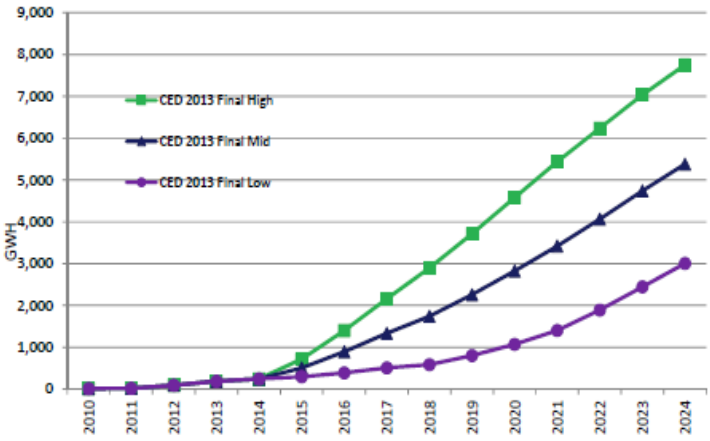


FIGURE 9

Projected Energy Needs by Electric Vehicles in California (*High, Mid, and Low Scenarios*)[19].

One of the largest challenges facing the electricity sector will be integrating increasingly large amounts of power and energy demands from an increasingly electrified transportation sector (Figure 9). Traditionally, as shown in Figure 1, the transportation sector primarily has relied on liquid fuels and has been separated from the electricity sector. Original implementation designs for the existing electrical infrastructure did not incorporate energy or power requirements for transportation. As increasing numbers of electric vehicles become reliant on the electrical grid for energy needs, incorporating electric vehicles into the grid can be done in a manner that actually helps provide needed grid resources. Demonstrations are being done with managed charging of electric vehicles that synchronize with grid resource needs during periods of over generation and peak usage. Existing utility rules are being reviewed to also allow electric vehicles to provide other ancillary grid services such as frequency regulation, voltage support and reactive power. Managing electric transportation charging in this manner may be done by the site host, local utility, and/or system integrator. Collectively, plugged in electric vehicles can provide significant grid resources when intelligently integrated with the grid. If unmanaged, the integration of transportation energy needs onto the electrical grid will create additional infrastructure needs without benefits to grid stability.

Incorporating large amounts of energy storage will help integrate increasing amounts of renewable generation, better manage demand charges and help reduce infrastructure costs for electric vehicle chargers. Energy storage systems can be deployed on the larger transmission grid, the local utility distribution grids, and behind the meter applications. Several different technologies are being utilized for energy storage systems which include: batteries, fuel production, flywheels, pumped hydro, and compressed air. Currently the most widely used storage systems utilize different battery chemistries along with using second life electric vehicle batteries. The costs for batteries for both vehicle and stationary storage applications have been shown to be steadily dropping, however, it is often difficult to reliably determine and compare recent prices without a standard methodology. Thus, there is a need to establish a battery price index or energy storage price index as these technologies become more widely used[20].

Grid scale energy storage systems are starting to be implemented that replace the need for peaking generation plants. These systems have several advantages over peaking generation units in that they have high utilization capacity factors, zero emissions, and are easier to site. As more renewable generation is integrated, and over generation becomes more prominent, the excess power may be used to electrolyze water to form hydrogen and oxygen. The hydrogen can then be stored nearby and used for transportation applications, power generation, integrated into the natural gas pipelines, and/or used to develop synthetic fuels. The application of hydrogen in natural gas pipelines is being demonstrated in Europe.


The World's Biggest Battery Is Being Built For Southern California's Grid

AES is building a 400 MW-hour lithium-ion battery for SCE as an alternative to gas peaker plants.

Eric Wesoff
November 12, 2014

The world's biggest battery is coming to California.

Last week, Southern California Edison (SCE) revealed the winners of a massive

Greentechgrid: Nov. 2014

Behind the meter storage systems are being used to help offset peak demand charges, provide backup power when needed, integrate vehicle chargers with existing infrastructure, and off grid applications. As many residences and businesses are under time of use utility rates, the storage systems can provide arbitrage opportunities for the residents and businesses to utilize low electricity costs during off peak hours and use the stored power during high priced periods "on-peak" [21]. Behind the meter applications also include backup power and in many applications may reduce or eliminate the need for backup generation units and, when coupled with renewable generation under high utility rates, may become a cost effective technology for off grid solutions[22].

b. Natural Gas

Within the United States the natural gas supply has gone from a possible need for imports to that of ample supply and declining prices. This is a result of technological developments in exploration, drilling, and well stimulation that have increased recoverable reserves within the United States (Figure 10). The increase in supply and resource base has driven natural gas prices down to a recent $3 per thousand cubic feet in May 2015, 60% lower than in May 2008 when reserves started to dramatically increase. In 2008, an estimated $3 billion worth of natural gas was consumed in the residential and commercial sectors Basin wide.

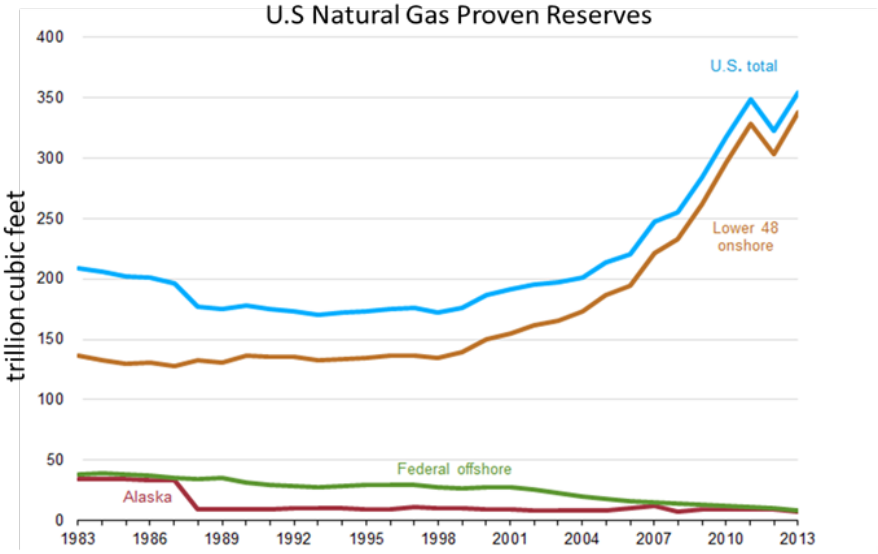


FIGURE 10

Increase in U.S. Natural Gas Proven Reserves over Time[6].

In the Basin, the natural gas distribution infrastructure provides the primary fuel used for electricity generation along with cooking and heating needs in the residential and commercial sectors and process heating in the industrial sector (Figure 11; also see Residential and Commercial White Paper). Within California, the majority of non-renewable power generation derives from natural gas powered generation. This is, in part, due the increased generating efficiency that natural gas combined cycle power plants provide over traditional steam boilers that helps provide overall emission benefits relative to other fuel choices[9]. Additionally, natural gas when combusted has lower particulate matter formation relative to other fuels with complex carbon molecules. This property allows for lower particulate matter emissions than other fuel choices and, when used in heavy duty transportation applications, does not have the associated toxicity of diesel fuel combustion.

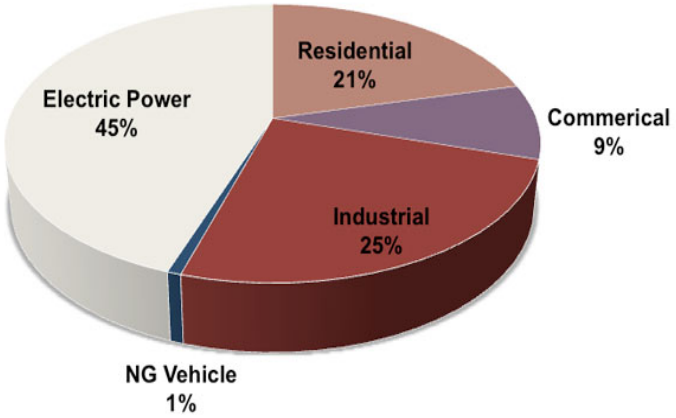


FIGURE 11

California Natural Gas Demand by Sector in 2012 (*CEC Energy Almanac*)

Natural gas has an existing pipeline infrastructure that makes it easily transportable, is often a lower energy cost option, and can often provide GHG and criteria emissions benefits over petroleum and coal. However, methane, the primary component in natural gas, has a long atmospheric lifetime of 10 to 14 years, whereas, other hydrocarbons have atmospheric lifetimes from hours to days. Therefore, the fugitive releases of methane within the Basin do not contribute to photochemical production of ozone or secondarily formed particulate matter as result of short residence times in the Basin and long atmospheric lifteimes. However, on a global scale, the atmospheric levels of methane do contribute to increased global background levels of ozone as well as being a potent GHG.

Using natural gas can provide reduced end use carbon dioxide emissions as a result of methane having a higher hydrogen to carbon molecular ratio than every other hydrocarbon. Combustion of methane therefore releases less CO2 on a weight per weight basis relative to other hydrocarbons[23]. However, the direct end use GHG emission benefits from natural gas can be negated or reversed from upstream fugitive releases of methane into the atmosphere. Further efforts and research are needed to minimize fugitive methane emissions along the entire natural gas production, distribution, and end use chain[24]. Due to the high climate forcing impacts from methane, the fugitive emissions of methane need to be better understood and further incorporated into the lifecycle analysis.

The greatest GHG benefits from methane use are realized from renewable sources. There are many different supply streams of renewable methane that include landfills, wastewater treatment plants, and food waste and manure digesters. Difficulties recovering renewable sources of methane include the implementation of clean and efficient systems that separate methane from other impurities in a cost effective manner. The SCAQMD Clean Fuels program along with other state agencies' programs have helped develop and demonstrate technologies to clean up renewable methane waste streams for power generation and transportation uses. Although these technologies are being implemented, it is currently unclear how much renewable methane might be cost-effectively recovered within the Basin from the many different waste streams.


THE PRESS-ENTERPRISE
LOCAL
FOOD TO FUEL
Closing the food waste cycle

Press Enterprise; Aug 18, 2015

New Technologies and Uses

The natural gas distribution system in California is slightly constrained during the winter month periods when more natural gas is required for heating purposes[25]. During these months underground storage helps provide natural gas during peak demand periods. Much like electricity generation constraints during peak summer demand periods, the natural gas pipelines require a similar balancing technique during times of high usage in the winter months. Within Southern California, there is currently over 140 Billion cubic feet of underground

storage using depleted reservoirs that help balance Basin natural gas needs between seasons of high use and high prices with seasons that have lower prices and lower natural gas demands.

As mentioned earlier, methane use in California will increasingly be derived from renewable sources. Several technologies will likely become more prominent; these include[11,26]:

- Technologies, such as pressure swing adsorption that help scrub the natural gas from different waste streams.
- Developing natural gas from excess renewable power generation (power to gas).
- Increasing use of natural gas for stationary and transportation fuel cells.
- Using oxy generation systems for combustion processes without pollutant emissions.
- Ultra low NOx heavy duty compressed natural gas (CNG) engines.

c. Liquid Fuels

In the Basin, the primary use of liquid petroleum fuels is for transportation purposes. In 2008 over 7.3 billion gallons of gasoline and 1.4 billion gallons of diesel were consumed within the Basin with a combined estimated cost of $32 billion dollars (2012 AQMP). Of all the different energy types, the gasoline and diesel fuels often have more significant price volatilities as a result of variations in global crude prices, refinery capacity issues, and overall supply for California blended fuels[4] as shown in Figures 12 and 13. Supply issues for California reformulated gasoline can result in prices for California gasoline being decoupled from crude oil market prices and gasoline prices in the rest of the nation, Figure 13.

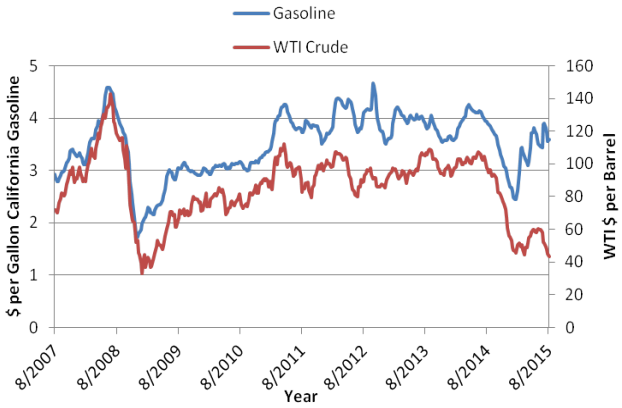


FIGURE 12

Average Weekly Market Price between a Gallon of California Gasoline and WTI Crude (*CEC Energy Almanac and EIA*)

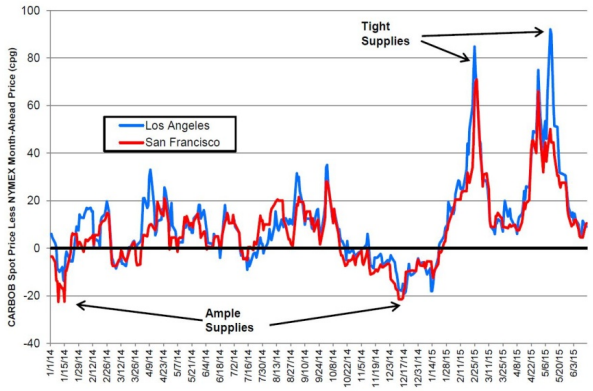


FIGURE 13

Recent High Market Premium (in cents) on California Reformulated Gasoline Blendstock for Oxygenate Blending (CARBOB) minus the NYMEX national price (*CEC Petroleum Watch July 15, 2015*)

As previously shown in Figure 2, the use of liquid fuels currently result in the highest emissions of NOx and is the largest contributor to GHG emissions within the Basin. A large transformation is needed within engine technologies to lower NOx emissions from transportation sources. As shown in Figure 2, diesel use results in significant NOx emissions, particularly within the heavy duty and off-road engine categories. As outlined within the Goods Movement, On-Road and Off-Road white papers, new technologies are needed to improve engine emissions and drive train efficiencies to reduce NOx along with GHG levels[27].

Continued use of liquid fuels will increasingly require climate friendly fuel use pathways that, in part, include more efficient end use technologies. Overall GHG emissions need to be considered, not only at the tailpipe but also by using a full well to wheels emissions analysis that accounts for fuel production and distribution. This is currently implemented within the Low Carbon Fuel Standard (LCFS) to determine the carbon intensities of different fuels by reviewing the lifecycle analysis of bio-fuels along with other low carbon intensity alternative fuels. A similar analysis can also consider the associated lifecycle emissions of criteria and toxic pollutant emissions but is currently not part of the LCFS program. Unfortunately, the majority of bio-fuels produced still have a positive GHG impact and the upstream emissions associated with traditional oil and gas recovery are still relatively uncertain[28]. The use of bio-fuels can provide a partial solution to GHG reductions, particularly in applications that don't have alternative technologies available such as aircraft. However, the limited availability of fuel feed stocks, land use considerations, weather variability, and potential negative impacts upon food prices are all issues that should be addressed as bio-fuels develop as part of the solution in reducing GHG emissions.

d. Other Energy Choices

As newer technologies such as fuel cells become more widely available for power generation and transportation, the supply of alternative energy sources will become more important. Partially discussed in earlier sections, these energy sources will include renewable fuels such as biodiesel, ethanol, and waste woody biomass. Some of these renewable fuels may be produced from algae that sequester CO2 from power plant emissions that are then converted back into fuels used again at the power plant (*See: SoCal Gas, Ron Kent's April 15th Energy Outlook Workgroup Presentation*[26]).

Other energy supply choices that will be produced from different feed stocks and energy sources are fuels that do not occur naturally in pure form such as hydrogen and dimethyl ether (DME). The production of these fuels will help provide emission benefits but may also be produced to help integrate increasingly larger percentages of renewables onto the electrical grid, provide renewable energy streams for transportation, and use existing infrastructure for transport and delivery.

In 2015 the first fuel cell vehicles for purchase were introduced in California from Toyota and Hyundai. As these vehicles are being introduced, supplies of hydrogen and fueling infrastructure is needed to support their operation. Using hydrogen as an energy source produces water as a byproduct in fuel cell applications.

Additionally, the fugitive release of hydrogen into the atmosphere does not have an impact on climate, criteria pollutants, or toxic risk.

Although the end uses of hydrogen are generally considered zero-emission, the sources of hydrogen fuel and the associated emissions to generate hydrogen can vary significantly. Currently, the largest supply of hydrogen within California comes from steam reformation of hydrocarbons. Methane currently is widely used as the hydrocarbon source for production of hydrogen; however, other compounds such as methanol have been utilized for onsite reformation and fuel cell systems. Unfortunately the reformation process emits CO2 as a byproduct which can be mitigated by using renewable sources, or possibly by future carbon capture technologies such as algae systems.

Production of hydrogen can also occur through the electrolysis of water. As mentioned within the Electricity section, the implementation of renewable generation will result in periods of overproduction relative to real time demand. Rather than curtail the production of power, the excess energy can also be stored by producing fuels. Hydrogen generated during periods of excess power through electrolysis of water, referred to as "power to gas", can be utilized by fuel cells during periods of high electrical demand or within the transportation sector. During the electrolysis process, hydrogen and oxygen are produced, and the oxygen might also be recovered and used at nearby peak generation units using zero-emission oxy combustion technologies (see natural gas emerging technologies section). Additionally, the hydrogen produced renewably through this process might eventually be blended with natural gas and added into the distribution pipelines. It is also possible to use the hydrogen produced with waste CO2 streams to produce synthetic natural gas along with other hydrocarbons.

While it is currently not possible to track the amount of hydrogen being produced from different sources within the Basin, the implementation of both stationary and transportation fuel cells along with implementing clean pathways to develop large quantities of hydrogen needs to be closely monitored and supported.

VI. Scenario Analysis

Studies have been conducted to show how new technologies can help achieve both air quality and climate goals. For example, there have been several studies conducting "back casts" on the state energy sectors to identify potential pathways to achieve the 2050 GHG targets [29,30,.31]. Achieving the GHG state targets will have the co-benefit of criteria pollutant reductions. The scenario case shown in Figure 14 uses the 2016 AQMP baseline inventory and applies two variations of the Governor's 2030 target reductions of 50% reduced petroleum use, a 50% increase in existing building energy efficiency, and a 50% renewable portfolio standard. Under SB 350, the 50% increase in building efficiency and 50% renewable energy production by 2030 are being set into law. The potential impact on NOx reductions from these targets is represented as Scenario #1 in Figure 14. Further implementing the 50% reduction in fossil fuels in addition to the other two targets, represented as Scenario #2 in Figure 14, results in the largest potential NOx reductions. In both scenarios, a linear implementation of the 50%

targets is assumed along with a linear and proportional reduction in criteria pollutants applied to the forecasted inventory years (2012, 2023, and 2031).

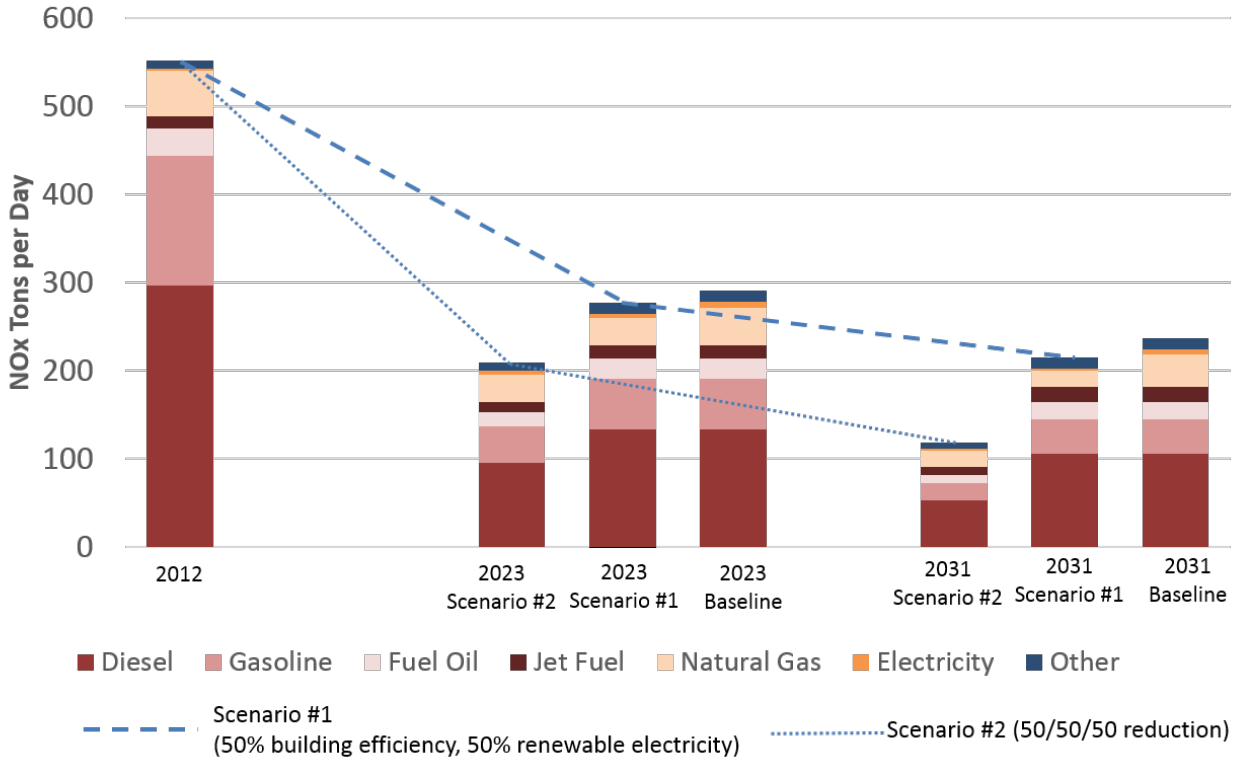


FIGURE 14

Potential Impact on 2016 AQMP Inventory from Scenarios Implementing 50% Reduction in Existing Building Energy Usage, 50% Renewable Power, and in Scenario #2, 50% Fossil Fuel Reduction by 2030. Dashed Lines show Reductions in NOx from Applied Scenarios over 2016 Baseline Inventory

In Figure 15, the two "50% reduction" scenarios are shown again in relation to the NOx levels needed for attainment and 2016 AQMP baseline inventory. The two scenarios shown in Figure 15 provide the potential for significant NOx reductions, but do not meet the projected NOx carrying capacities for ozone attainment in 2023 and 2031. Further NOx reductions will be needed above and beyond these scenarios designed primarily to make progress towards the state's 2030 GHG targets. However, the NOx reductions that might be achieved through the Governor's 50/50/50 targets provide significant progress towards the ozone standards.

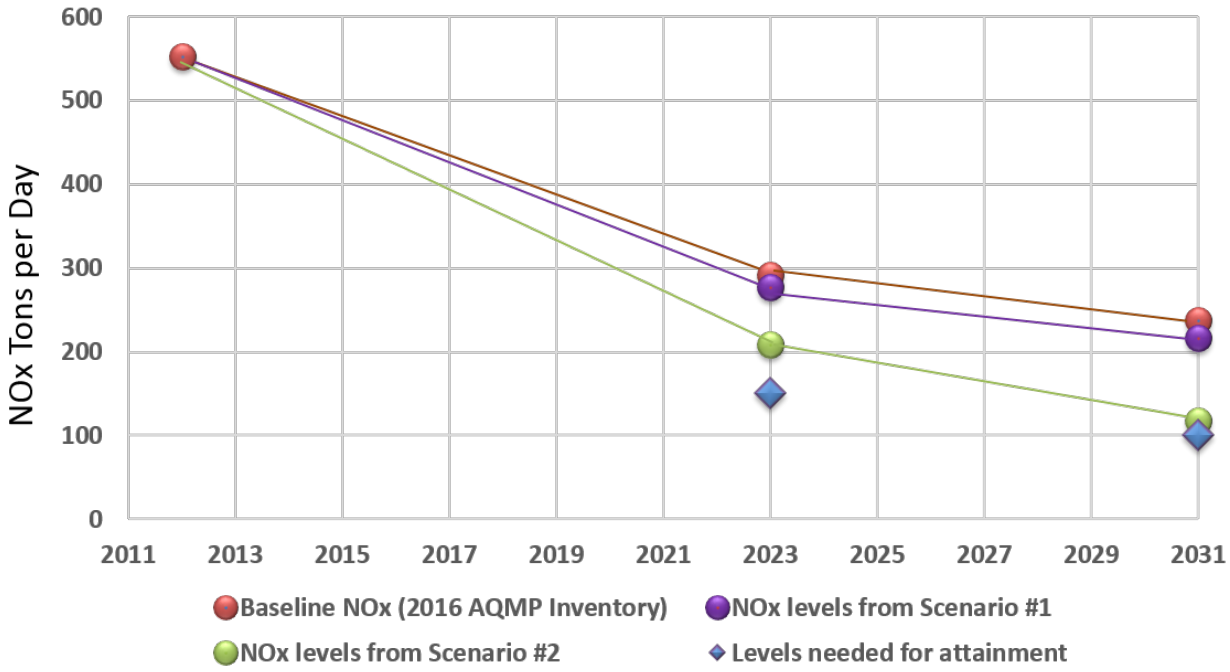


FIGURE 15

Basin NOx Levels showing Projections for Future Years from 2016 AQMP Inventory (red), Future NOx levels with Scenario #1 50% Increase in Building Efficiency and Renewable Power Generation by 2030 (purple), Scenario #2 showing Significant NOx Reduction when 50% Fossil Fuel Reduction is included. Diamonds (blue) show NOx Levels Needed for Attainment of Federal Ozone Standards.

VII. Findings and Recommendations for 2016 AQMP

Southern California is facing challenges in providing its residents with clean air, clean and sufficient supplies of water, affordable and reliable energy, and efficient transportation options. The traditional energy landscape is rapidly changing to incorporate new technologies that alleviate resource challenges, are adaptable to match changing demand profiles, and provide more efficient use of energy with fewer emissions. To increase resilience and provide leadership in reducing greenhouse gas emissions while addressing looming air quality deadlines, the changes occurring within the energy sector are providing opportunities and pathways to achieve these goals.

As part of the 2016 AQMP, staff is recommending consideration of the following actions:

Electricity:

- Monitor the implementation of increasingly large electrical energy demand from electric transportation. Promote the demonstration and development of technologies that minimize the emission impacts of adding electric transportation while reducing infrastructure needs.
- Support the development of a battery price index and/or energy storage index to provide clarity on recent storage prices.
- Support development and demonstrate energy storage applications and the benefits they can have on reducing the need for additional fossil generation units and/or increased start up/ shutdown/ramping of existing peaking units.
- Review and develop programs for increased demand side management implementation and for technology development with an additional focus on emission benefits.

Natural Gas:

- Further study the potential supply of renewable natural gas from applicable waste streams, such as waste water treatment plants, in the Basin.
- Implement new technologies such as fuel cells that use reformation and can provide high efficiencies through combined heat and power applications. Use these technologies to help integrate the transportation sector, to provide grid services, and as a potential replacement for backup generation units.
- Work with utilities and other energy developers to review the integration of the natural gas system with power generation and the further implementation of renewables.
- Assess the development of oxy combustion power generation systems.

Liquid Fuels

- Consider criteria pollutants in the well to wheels lifecycle analysis of fuels. This analysis would include criteria and toxic emissions associated with flaring at well sites, processing, and delivery.
- Promote the development of renewable fuels that provide criteria pollutant emission reductions as well as GHG benefits.

Other Fuels

- Support the development of an index that monitors of the amounts of hydrogen used in transportation along with a price tracking monitor for costs associated with different hydrogen producing technologies.
- Continue to demonstrate and promote renewable energy sources that provide criteria pollutant reductions as well as GHG reductions.

VIII. References

1. EIA, California Electric Power Consumption Estimates, http://www.eia.gov/state/seds/data.cfm?incfile=/state/seds/sep_use/eu/use_eu_CA.html&sid=California.
2. 2014 Total System Power, CEC; http://energyalmanac.ca.gov/electricity/total_system_power.html.
3. CEC, California Energy Balance Database, January 2012.
4. U.S. DOE, Where the energy goes: gasoline vehicles, http://www.fueleconomy.gov/feg/atv.shtml .
5. http://www.aqmd.gov/home/about/policies/aqmd-air-quality-related-energy-policy
6. EIA Annual Energy Outlook 2015, April 2015.
7. Jacobson *et al.* 100% clean and renewable wind, water, and sunlight all-sector energy roadmaps for the 50 United States, Energy Environment Sci., 2015, 8, 2093.
8. Bloomberg Markets, May 2015 page 40.
9. CEC, Thermal Efficiency of Gas-Fired Generation in California: 2014 Update, Sept. 2014, (CEC-200-2014-005).
10. 2003 Energy Action Plan (http://www.energy.ca.gov/energy_action_plan/index.html).
11. Brouwer, Jack; Air quality simulations – renewable energy and other technology implementation scenarios, Energy Outlook workgroup presentation, April 15, 2015 (http://www.aqmd.gov/home/about/groups-committees/aqmp-advisory-group/2016-aqmp-white-papers#energy).
12. California Public Utilities Commission, Rule 21 Smart Inverter Working Group, (http://www.energy.ca.gov/electricity_analysis/rule21/).
13. The Program Administrator Cost of Saved Energy for Utility Customer-Funded Energy Efficiency Programs, Lawrence Berkeley Laboratory, March 2014.
14. OPOWER, Without energy efficiency there'd be an extra Europe plugged into the grid, October 2014.
15. New Expectations for Electricity Consumers, The Wall Street Journal, Aug. 3, 2015.
16. Rocky Mountain Institute, The Economics of Demand Flexibility: How "Flexiwatts" Create Quantifiable Value for Customers and the Grid, 2015 (http://www.rmi.org/electricity_demand_flexibility).
17. Southern California Edison, Preferred Resources Pilot Program; http://www.edison.com/home/innovation/preferred-resources-pilot.html#.
18. Bloomberg Business, Solar Shines as Sellers Sometimes Pay Buyers to Use Power, May 26, 2015.
19. CEC, California Energy Demand 2014-2024 Final Forecast, January 2014.
20. Nature Climate Change, Rapidly Falling Costs of Battery Packs for Electric Vehicles, March 23, 2015.
21. Applied Energy, Economic viability of energy storage systems based on price arbitrage potential in real-time U.S. electricity markets, 114 (2014) 512-519.
22. Rocky Mountain Institute, The Economics of Grid Defection: When and Where Distributed Solar Generation Plus Storage Competes with Traditional Utility Service, 2014 (http://www.rmi.org/electricity_grid_defection#economics_of_grid_defection).
23. Leveraging Natural Gas to Reduce Greenhouse Gas Emissions, C2ES, June 2013.
24. Brandt et al., Methane Leaks from North American Natural Gas Systems, *Science*, 343(6172) 2014.
25. 2013 Natural Gas Issues, Trends, and Outlook, *CEC* July 2014. CEC-200-2014-001-SF.
26. Gas Co. Energy Outlook Workgroup presentation by Ron Kent on April, 15, 2015 (http://www.aqmd.gov/docs/default-source/GB-Committees/energy-outlook-white-paper-working-group/socal-gas.pdf?sfvrsn=2).
27. Goods Movement, Passenger Transportation, and Off-Road Commercial 2016 AQMP White Papers. (http://www.aqmd.gov/home/about/groups-committees/aqmp-advisory-group/2016-aqmp-white-papers).
28. Low Carbon Fuel Standard, Table 6. Carbon Intensity Lookup Table for Gasoline and Fuels that Substitute Gasoline (http://www.arb.ca.gov/fuels/lcfs/121409lcfs_lutables.pdf).

29. Yang et al., Achieving California's 80% greenhouse gas reduction target in 2050: Technology, policy and scenario analysis using CA-TIMES energy economic systems model, Atmospheric Environment, February 2015 (118-130).
30. E3, Pathways to Deep decarbonization in the United States, November 2014 (http://unsdsn.org/what-we-do/deep-decarbonization-pathways/).
31. E3, Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios, April 6, 2015 (http://www.arb.ca.gov/html/fact_sheets/e3_2030scenarios.pdf).

SOUTH COAST
AIR QUALITY
MANAGEMENT DISTRICT

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 33

PROPOSAL: Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities

SYNOPSIS: On October 15, 2008 the U.S. EPA lowered the National Ambient Air Quality Standard (NAAQS) for lead from 1.5 µg/m^3 to 0.15 µg/m^3 averaged over a rolling 3-month period to protect public health and the environment. The SCAQMD staff is proposing Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities to further protect public health from exposure to lead and to help ensure and maintain attainment of the lead NAAQS. The SCAQMD staff is proposing an initial ambient air lead concentration limit of 0.150 µg/m^3 averaged over any consecutive 30 days which will be lowered to a final limit of 0.100 µg/m^3 by 2018. The proposed rule also establishes requirements for enclosures, point source lead emission limits, source testing, ambient air monitoring, housekeeping and maintenance activities, and submittal and implementation of a Compliance Plan if the facility exceeds ambient air lead concentration limits set forth in the rule.

COMMITTEE: Stationary Source, May 15, 2015, June 19, 2015, September 18, 2015, Reviewed

RECOMMENDED ACTION:
Adopt the attached resolution:

1. Certifying the Final Environmental Assessment (EA) for Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities; and
2. Adopting Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities.

Barry R. Wallerstein, D.Env.
Executive Officer

PF:JW:SN:EK: DG

Background

On September 11, 1992 the Board adopted Rule 1420 – Emission Standards for Lead, which is the umbrella rule for all facilities that use or process lead. With the lowering of the lead National Ambient Air Quality Standard (NAAQS) in 2008 from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ averaged over a rolling 3-month period, SCAQMD staff has been developing source-specific lead rules to better ensure lead emitting facilities meet the lead NAAQS and to provide additional safeguards to further protect public health, particularly for young children and other sensitive individuals that live or work near lead emitting facilities. Proposed Rule 1420.2 – Emission Standards for Lead Metal Melting Facilities (PR 1420.2) represents the second rule in the series of source-specific lead rules. PR 1420.2 applies to 13 facilities that melt more than 100 tons of lead annually and includes a steel mini mill, solder manufacturers, battery manufacturers, aerospace parts manufacturers, and metal recyclers.

Health Effects of Lead

Lead is a criteria pollutant and is also identified as a carcinogenic toxic air contaminant. Chronic health effects can include problems such as nervous and reproductive system disorders, neurological and respiratory damage, cognitive and behavioral changes, and hypertension. Pre-school children or children under five years old are the most vulnerable to exposure and adverse health effects, and thereby represent the greatest at-risk population. Young children are especially susceptible to the effects of environmental lead because their bodies accumulate lead more readily than adults, and because they are more vulnerable to certain biological effects of lead including learning disabilities, behavioral problems, and deficits in IQ.

Lead poisoning is a preventable disease. The Centers for Disease Control and Prevention (the CDC) has stated that no safe blood level of lead in children has been identified. Neurocognitive health effects in young children are recognized as the most sensitive endpoint associated with blood lead concentrations. Based on EPA's 2014 Policy Assessment for Review of the NAAQS, evidence continues to indicate that neurocognitive effects in young children may not be reversible and may have effects that persist into adulthood. Multiple epidemiologic studies conducted in diverse populations of children consistently demonstrate the harmful effects of lead exposure on cognitive function. The effects can be measured by IQ decrements, decreased academic performance and poorer performance on tests of executive function.

Proposal

The regulatory approach under Proposed Rule 1420.2 is to establish basic core requirements that all facilities must comply with, and if the facility exceeds the applicable ambient lead concentration limit, additional measures will be required through a Compliance Plan. Core requirements under the proposed rule include: conducting ambient monitoring and sampling for lead; complying with an ambient lead concentration limit of 0.150 $\mu g/m^3$ beginning date of adoption and 0.100 $\mu g/m^3$

beginning April 1, 2018, averaged over any 30 consecutive days; demonstrating that all lead point sources meet a 99 percent control efficiency; conducting annual source tests for each lead control device, using a total enclosure for all furnace, refining, casting and lead-oxide production areas by March 2016; and implementing specific housekeeping and maintenance provisions.

Under Proposed Rule 1420.2, in the event a facility has elevated ambient lead levels or a point source emission rate greater than 0.080 pounds per hour, the facility would then be required to submit a Compliance Plan that identifies additional contingency measures that can be implemented. The facility would not be required to implement the Compliance Plan, unless the following occurs: one exceedance of 0.150 $\mu g/m^3$ over a rolling 24-month period beginning January 1, 2017 or three exceedances of 0.100 $\mu g/m^3$ over a rolling 24-month period beginning April 1, 2018. Measures in the Compliance Plan would be implemented based on the need for additional lead reductions to achieve the applicable ambient lead concentration limits. Proposed Rule 1420.2 also includes reporting and recordkeeping requirements, provides an off-ramp for lead monitoring and sampling provided the facility can meet monitoring, modeling, and point source requirements, and an exemption from the proposed rule for facilities that can reduce the amount of lead melted to less than 50 tons annually based on permit conditions and process records.

Public Process

Proposed Rule 1420.2 was developed with input from the Proposed Rule 1420.2 Working Group which includes industry and environmental representatives, consultants, and other agencies. The Working Group provided substantial input regarding the approach and specific requirements of the proposed rule. The SCAQMD staff has held six working group meetings on December 17, 2014, January 20, 2015, February 19, 2015, April 23, 2015, May 13, 2015, and June 18, 2015. A Public Workshop was held on May 14, 2015 to present the proposed rule and receive public comment. In addition, the SCAQMD staff held numerous meetings with industry groups and affected facilities to discuss specific elements of the proposed rule and conducted site visits at nearly all of the facilities that would be subject to the proposed rule.

Key Issues

Through the rulemaking process, staff has been working with industry representatives to address a variety of issues. As a result, a number of revisions have been made to Proposed Rule 1420.2 such as reducing the frequency of conducting monitoring and sampling, reducing the frequency for implementing housekeeping measures, increasing the number of exceedances before a facility is required to implement a Compliance Plan, and extending compliance dates. Based on the most recent discussions with representatives from the Battery Council International, a non-profit trade organization representing lead battery manufacturers, it is SCAQMD staff's understanding that the following outstanding issues remain: (1) need for Proposed Rule 1420.2, (2) approval

of alternative housekeeping measures, and (3) frequency of cleaning paved areas. Each of these issues and staff's assessment is described below.

Need for Proposed Rule 1420.2

The Battery Council International has commented that they believe Proposed Rule 1420.2 is not needed. SCAQMD staff believes developing a source-specific lead rule for facilities melting more than 100 tons of lead is necessary to protect public health. Ambient lead monitoring data at two of the affected facilities, Gerdau and Trojan Battery, have shown the potential to exceed the lead NAAQS and underscores the need for ambient monitoring at lead melting facilities. In addition, wipe sampling at four battery manufacturing facilities has shown elevated levels of lead particulate at the openings and vents of enclosures where lead melting activities occur which is further evidence that fugitive lead emissions are escaping enclosures and there is a need to implement good housekeeping measures. Lastly, the final ambient concentration limit of 0.100 $\mu g/m^3$ averaged over any 30 days will ensure that children and other sensitive individuals that live and work near lead melting facilities will be protected from the serious health effects of lead.

Approval of Alternative Housekeeping Measures

In response to the Battery Council International's request, staff added a provision that allows the owner or operator to use an alternative housekeeping measure that meets the same objective and is equally or more effective as the measure it is replacing, provided the Executive Officer approves the alternative measure. The Battery Council International has commented that they do not object to the objectives and measures of effectiveness provided in the proposed rule; however they commented that the operator should be allowed to simply *notify* the Executive Officer instead of obtaining *approval* from the Executive Officer prior to using an alternative housekeeping measure. The SCAQMD staff believes that the Executive Officer, not the facility's owner or operator, is the appropriate person to determine whether an alternative housekeeping measure proposed by the facility meets the same objective and effectiveness of the housekeeping requirement it is replacing. The SCAQMD staff is concerned that an operator may implement a series of less effective measures that increase lead emissions and can potentially increase the exposure of lead emissions to the surrounding community. SCAQMD staff believes that requiring Executive Officer approval prior to using an alternative measure is necessary to ensure that public health is adequately protected from harmful lead emissions.

Frequency of Cleaning Paved Areas

In response to comments from the Battery Council International, staff also revised Proposed Rule 1420.2 to reduce the frequency for cleaning parking lots that border administrative buildings from once per shift to weekly. The Battery Council International further commented that the frequency of cleaning <u>all</u> paved areas should be reduced from once per shift to weekly. This request is much broader than the Battery

Council International's original request and would substantially weaken one of the most important housekeeping provisions. Therefore, staff recommends maintaining the frequency specified in the proposed rule.

AQMP and Legal Mandates

Pursuant to Health & Safety Code Section 40460 (a), the SCAQMD is required to adopt an Air Quality Management Plan (AQMP) demonstrating compliance with all federal regulations and standards. The SCAQMD is required to adopt rules and regulations that carry out the objectives of the AQMP. PR 1420.2 is not a control measure of the 2012 AQMP but is needed to reduce exposure and associated health risk impacts from lead emitted from metal melting facilities. Since PR1420.2 represents a subset of Rule 1420, which is a control measure in the 2012 State Implementation Plan for lead, PR 1420.2 will be submitted as a control measure as part of the State Implementation Plan that outlines the strategy to demonstrate attainment and maintenance with the lead NAAQS.

California Environmental Quality Act

Pursuant to the California Environmental Quality Act (CEQA) Guidelines 15252 and SCAQMD Rule 110, the SCAQMD staff evaluated the proposed project and prepared a Draft Environmental Assessment (EA), which was circulated for a 32-day public review and comment period from July 17, 2015 to August 18, 2015. Subsequently, a Revised Draft EA, which included formatting changes to Appendix B, was released for a 30-day public review and comment period from July 21, 2015 to August 19, 2015. The SCAQMD received one comment letter regarding the environmental analysis in the Draft EA during the public comment period and has responded to those comments in the Final EA.

The public workshop also solicited public input on any potential environmental impacts from the proposed project. Comments received at the public workshops on any environmental impacts were considered when developing the final CEQA document for this rulemaking. No significant adverse environmental impacts were identified.

Socioeconomic Assessment

The main requirements of the proposed rule that have cost impacts for affected facilities would include ambient air monitoring and sampling, point source emissions controls, total enclosures, housekeeping measures, maintenance activity requirements, source testing, recordkeeping, and reporting. The total annual compliance costs of PR1420.2 are estimated to range from $6.5 to $7.2 million, depending on the real interest rate assumed (1%-4%). Gerdau, a steel mini mill, would bear the largest share of compliance costs (71% or approximately $5.1 million annually based on 4% real interest) due to the installation of a complete baghouse replacement that is necessary to reduce lead emissions. Although Gerdau's meltshop/baghouse project received air permits from the SCAQMD on July 24, 2014, prior to the 1420.2 rulemaking process, the socioeconomic analysis nonetheless analyzed the cost of the meltshop/baghouse

given that it will help Gerdau achieve ambient lead levels compliant with Rule 1420.2 and help implement a Risk Reduction Plan required under Rule 1402.

The proposed rule is expected to result in approximately 140 jobs forgone annually between 2016 and 2035 when a 4-percent real interest rate is assumed (approximately 120 jobs with a 1-percent real interest rate). The projected job impacts represent about 0.001 percent of the total employment in the four-county region. The socioeconomic assessment was made available to the public at least 30 days prior to the Public Hearing and is included as part of the Public Hearing package.

Implementation and Resource Impact
Existing SCAQMD resources will be used to implement Proposed Rule 1420.2.

Attachments
A. Summary of Proposal
B. Key Issues and Responses
C. Rule Development Process
D. Key Contacts List
E. Resolution
F. Proposed Rule 1420.2 Rule Language
G. Proposed Rule 1420.2 Staff Report
H. Socioeconomic Assessment
I. Final Environmental Assessment

ATTACHMENT A

SUMMARY OF PROPOSAL

Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities

Ambient Air Lead Concentration Limit

- Meet 0.150 μg/m^3 averaged over any 30 consecutive days by:
  - Beginning rule adoption for facilities with approved ambient air monitoring sites prior to rule adoption;
  - Beginning 90 days from approval of a Lead Ambient Air Monitoring and Sampling Plan for all other facilities.
- Meet 0.100 μg/m^3 averaged over any 30 consecutive days by April 1, 2018 for all facilities.
- Operator can elect to submit information to the Executive Officer to demonstrate a lead metal melting facility is not the primary cause of an exceedance.

Ambient Air Monitoring and Sampling

- By March 1, 2016, submit a Lead Ambient Air Monitoring and Sampling Plan.
- No later than 90 days from plan approval, conduct ambient air lead monitoring and sampling.

Lead Point Source Emissions Controls

- No later than March 1, 2016, vent emissions from each lead point source to a lead control device that reduces lead emissions by a minimum of 99% or meets a lead emission rate of 0.00030 lb/hr.
- High efficiency bags and filters required for lead control devices.
- Conduct periodic smoke tests for all lead control devices.

Total Enclosures

- No later than March 1, 2016, install a total enclosure for all furnace, refining, casting, and lead oxide pasting and production areas.
- Total enclosures shall minimize cross-draft conditions that decrease the collection of lead emissions for emission collection systems.
- Negative air required for total enclosures if facility has an approved HRA exceeding the Rule 1402 action risk level and exceeds 0.120 μg/m^3 averaged over any 30 consecutive days no later than two years after approval of a Health Risk Assessment or by April 1, 2018, whichever is latest.

Housekeeping and Construction & Maintenance Activity

- PR 1420.2 includes a variety of housekeeping measures to address fugitive emissions
- No later than 180 days after rule adoption:
  - Conduct quarterly cleaning of roof tops $\leq$ 45 feet in height;
  - Conduct semi-annual cleaning of roof tops > 45 feet in height;

- Pave, concrete, asphalt, or stabilize all facility grounds.
- Construction & maintenance activity requirements effective date of rule adoption
- Can use an alternative housekeeping measure provided meets the objective and is equally or more effective as approved by the Executive Officer.

Periodic Source Testing

- Conduct source testing for each lead control device annually; conduct every 24 months if total facility lead emission rate is less than 0.020 pounds/hour.

Compliance Plan

- Submittal of plan required only if facility:
  - Beginning July 1, 2016, exceeds 0.120 $\mu g/m^3$ averaged over any 30 consecutive days;
  - Beginning July 1, 2016, exceeds a total facility mass lead emission rate of 0.080 lbs/hr; or
  - Beginning April 1, 2018 exceeds 0.100 $\mu g/m^3$ averaged over any 30 consecutive days.
- Implementation of plan required only if facility:
  - Beginning January 1, 2017, exceeds 0.150 $\mu g/m^3$ averaged over any 30 consecutive days.
  - Beginning April 1, 2018, after 3 exceedances (within a rolling 24-month period) of 0.100 $\mu g/m^3$ averaged over any 30 consecutive days.

Reporting and Recordkeeping

- Monthly ambient air monitoring reports.
- Daily recordkeeping of amounts of lead-containing material melted.
- Records of all ambient air lead monitoring, wind monitoring, housekeeping activities, construction or maintenance activities, period smoke tests, and emission control device inspection and maintenance.

Exemptions

- Ambient Air Monitoring Relief Plan – Facilities shall be exempt from the ambient air monitoring and sampling requirements of PR 1420.2 if the facility:
  - Demonstrates one year of monitored ambient air lead concentration $\leq$ 0.070 $\mu g/m^3$ averaged over any 30 consecutive days;
  - Air dispersion modeling analysis demonstrates facility ambient air lead concentration of $\leq$ 0.070 $\mu g/m^3$ averaged over any 30 consecutive days; and
  - Most recent source tests show a total facility mass lead emission rate of < 0.040 lb/hr.
- Lead Point Source Emission Controls – Lead point sources with an uncontrolled emission rate of 0.005 lb/hr are exempt from the point source requirements of PR 1420.2.
- Lead Minimization Plan – Facilities that reduce to < 50 tons of lead melted annually based on facility permit conditions and process records shall be exempt from PR 1420.2 and instead subject to Rule 1420.

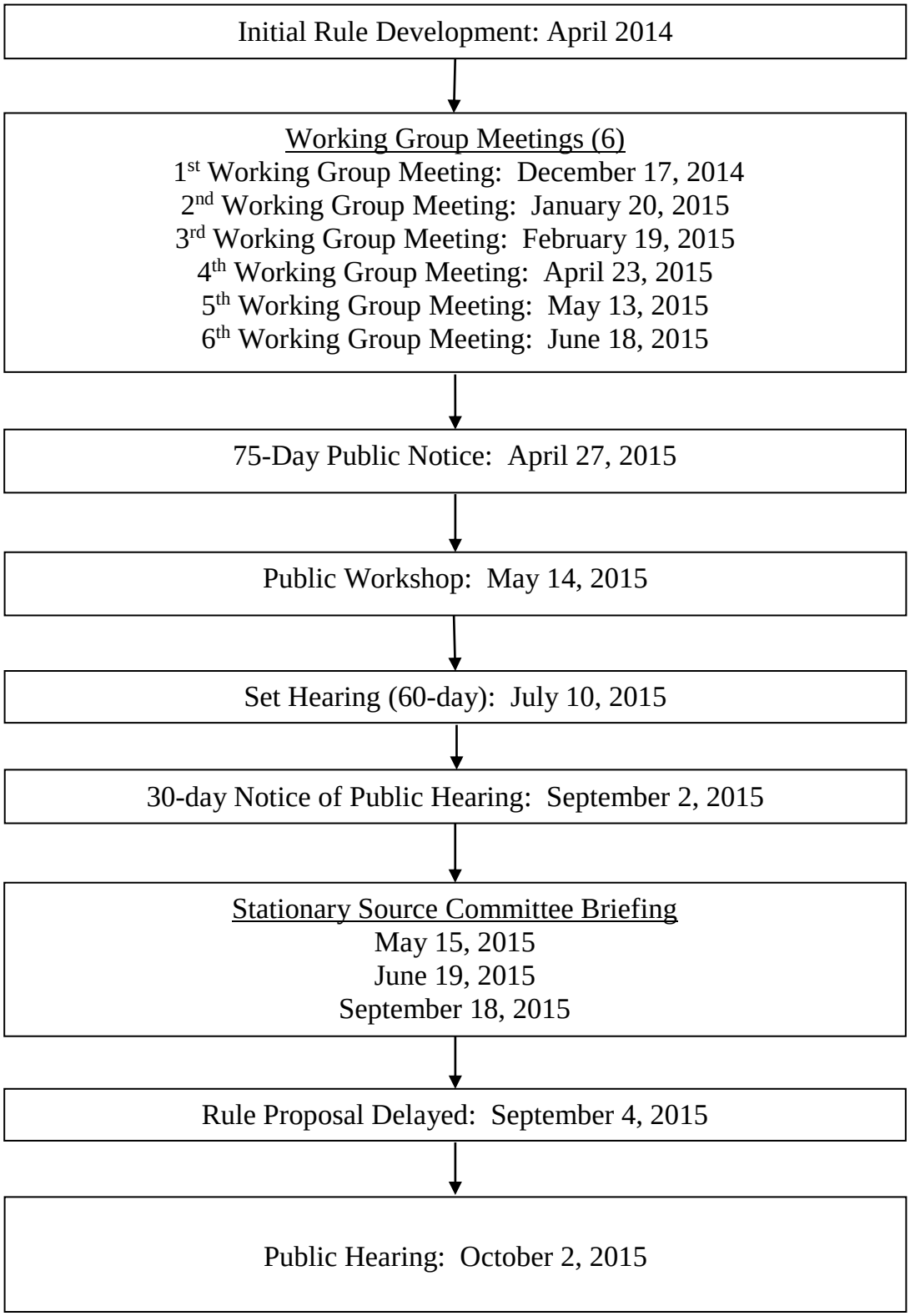
ATTACHMENT B
KEY ISSUES AND RESPONSES

Proposed Rule (PR) 1420.2 – Emissions Standards for Lead from Metal Melting Facilities
Need for Proposed Rule: The Battery Council International has commented that they believe Proposed Rule 1420.2 is not needed. • Ambient lead monitoring data at two of the affected facilities, Gerdau and Trojan Battery, have shown the potential to exceed the lead NAAQS and underscores the need for ambient monitoring at lead melting facilities • Wipe sampling at four battery manufacturing facilities which show elevated levels of lead particulate at the openings and vents of enclosures where lead melting activities occur is further evidence that fugitive lead emissions are escaping enclosures and there is a need to implement good housekeeping measures • The final ambient concentration limit of 0.100 µg/m^3 averaged over 30 consecutive days will ensure that the children and other sensitive individuals that live and work near these facilities will be protected from the serious health effects of lead Approval of an Alternative Housekeeping Measure: The Battery Council International has commented that they do not object to the objectives and measure of effectiveness provided in the proposed rule, however they commented that the operator should be allowed to *notify* the Executive Officer instead of obtaining *approval* from the Executive Officer prior to using an alternative housekeeping measure. • The SCAQMD staff believes that the Executive Officer, not the facility's owner or operator, is the appropriate person to determine whether an alternative housekeeping measure proposed by the facility meets the same objective and effectiveness of the housekeeping requirement it is replacing. • The SCAQMD staff is concerned that an operator may implement a series of less effective measures that increase lead emissions and can potentially increase the exposure of lead emissions to the surrounding community. • SCAQMD staff believes that requiring Executive Officer approval prior to using an alternative measure is a minor inconvenience to the operator to ensure that public health is adequately protected from harmful lead emissions. Frequency of Cleaning Paved Areas: The Battery Council International further commented that the frequency of cleaning all paved areas should be reduced from once per shift to weekly • Staff revised Proposed Rule 1420.2 to reduce the frequency for cleaning parking lots that border administrative buildings from once per shift, to weekly cleanings • The Battery Council International's request was substantially broader than their original request and would substantially weaken one of the most important housekeeping provisions

ATTACHMENT C

RULE DEVELOPMENT PROCESS

Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities



Eighteen (18) months spent in rule development.
One (1) Public Workshop.
Six (6) Working Group Meetings.

ATTACHMENT D
KEY CONTACTS LIST

Ace Clearwater

Advanced Environmental Compliance

Advanced Environmental Controls

Almega Environmental

APS-DEV

Atlas Pacific

Battery Council International

Bender Corporation

California Metals Coalition

Concorde Battery

Environ International Corporation

ERM

Gerdau

Liberty Manufacturing Inc.

PK Metals

Ramcar Battery

Trojan Battery Company

U.S. Battery Manufacturing

Weck Laboratories

ATTACHMENT E

RESOLUTION NO. XX-_____

A Resolution of the Governing Board of the South Coast Air Quality Management District (SCAQMD) certifying the Final Environmental Assessment (EA) for Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities.

A Resolution of the SCAQMD Governing Board Adopting Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities.

WHEREAS, the SCAQMD Governing Board finds and determines that the Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities is considered a "project" pursuant to the California Environmental Quality Act (CEQA) and that the proposed project would not have a significant adverse effect on the environment; and

WHEREAS, the SCAQMD has had its regulatory program certified pursuant to Public Resources Code §21080.5 and has conducted a CEQA review pursuant to such program (SCAQMD Rule 110); and

WHEREAS, the SCAQMD staff has prepared a Draft Environmental Assessment (EA) pursuant to its certified regulatory program and CEQA Guidelines §15252, setting forth the potential environmental consequences of Proposed Rule 1420.2; and

WHEREAS, the Draft EA was circulated for a 32-day public review from July 17, 2015 to August 18, 2015 and subsequently, a Revised Draft EA was released for a 30-day public review and comment period, from July 21, 2015 to August 19, 2015; and

WHEREAS, subsequent to release of the Revised Draft EA, modifications were made to the proposed project in response to verbal and written comments received relative to the project's effects. None of the individual comments identified any potentially significant adverse impacts from the proposed project. Further, none of the modifications constitute significant new information or a substantial increase in the severity of an environmental impact, nor provide new information of substantial importance relative to the draft document. In addition, revisions to the proposed project in response to comments would not create new,

avoidable significant effects. The Revised Draft EA has been revised such that it is now a Final EA; and

WHEREAS, Findings pursuant to Public Resources Code §21081.6 and CEQA Guidelines §15091 and a Statement of Overriding Considerations pursuant to CEQA Guidelines §15093 were not prepared because the analysis of the proposed project shows that Proposed Rule 1420.2 would not have a significant adverse effect on the environment, and thus, are not required; and

WHEREAS, it is necessary that the adequacy of the Final EA be determined by the SCAQMD Governing Board prior to its certification; and

WHEREAS, pursuant to CEQA Guidelines §15252 (a)(2)(B), since no significant adverse impacts were identified, no alternatives or mitigation measures are required and thus, a Mitigation Monitoring Plan pursuant to Public Resources Code §21081.6 and CEQA Guidelines §15097, has not been prepared; and

WHEREAS, the SCAQMD Governing Board voting on Proposed Rule 1420.2, has reviewed and considered the Final EA prior to its certification; and

WHEREAS, the Final EA reflects the independent judgment of the SCAQMD; and

WHEREAS, the SCAQMD Governing Board finds and determines, taking into consideration the factors in Section (d)(4)(D) of the Governing Board Procedures, that the modifications which have been made to Proposed Rule 1420.2 since notice of public hearing was published do not significantly change the meaning of the proposed rule within the meaning of Health and Safety Code §40726 and would not constitute significant new information requiring recirculation of the Revised Draft EA pursuant to CEQA Guidelines §15073.5 and §15088.5; and

WHEREAS, lead has been identified as a toxic air contaminant by the Office of Environmental Health Hazard Assessment (OEHHA) and the Center for Disease Control has stated that no safe blood level of lead in children has been identified; and

WHEREAS, the 2010 Clean Communities Plan specified that the SCAQMD would investigate sources of lead emissions and identify control measures to address lead emissions from these identified sources; and

WHEREAS, the SCAQMD Governing Board has determined that a need exists to adopt Proposed Rule 1420.2 - Emission Standards for Lead from Metal Melting Facilities to further protect public health by minimizing public exposure to lead emissions and preventing exceedances of the 2008 NAAQS for Lead; and

WHEREAS, the SCAQMD staff relied on the EPA's 2008 *Review of the Lead NAAQS* and the EPA's *2015 Proposed Rule to Retain the Current Lead NAAQS* as the basis and supporting scientific information for establishing the 0.100 $\mu g/m^3$ limit, which demonstrate that the 0.100 $\mu g/m^3$ limit is more protective of human health compared to the existing federal standard of 0.15 $\mu g/m^3$; and

WHEREAS, the 2012 Lead State Implementation Plan for Los Angeles County identified amendment of SCAQMD Rule 1420 – Emissions Standards for Lead as a control measure; and

WHEREAS, the Proposed Rule 1420.2 regulates lead metal melting facilities previously regulated under Rule 1420; and

WHEREAS, the Proposed Rule 1420.2 will be submitted for inclusion into the Lead State Implementation Plan for Los Angeles County; and

WHEREAS, Proposed Rule 1420.2 is not a control measure in the 2012 Air Quality Management Plan (AQMP) and was not ranked by cost-effectiveness relative to other AQMP control measures in the 2012 AQMP, and furthermore, pursuant to Health and Safety Code §40910, cost-effectiveness in terms of dollars per ton of pollutant reduced is only applicable to rules regulating ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide and does not apply to toxic air contaminants; and

WHEREAS, the SCAQMD Governing Board obtains its authority to adopt, amend or repeal rules and regulations from sections 39002, 39650 et. Seq., 40000, 40001, 40440, 40441, 40702, 40725 through 40728, 41508, 41700, and 41706 of the Health and Safety Code; and

WHEREAS, the SCAQMD staff conducted a public workshop regarding Proposed Rule 1420.2 on May 14, 2014; and

WHEREAS, California Health and Safety Code §40727 requires that prior to adopting, amending or repealing a rule or regulation, the SCAQMD Governing Board shall make findings of necessity, authority, clarity, consistency,

non-duplication, and reference based on relevant information presented at the public hearing and in the staff report; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Rule 1420.2 - Emission Standards for Lead from Metal Melting Facilities, as proposed to be adopted, is written and displayed so that the meaning can be easily understood by persons directly affected by it; and

WHEREAS, the SCAQMD Governing Board, in adopting this regulation, references the following statutes which the District hereby implements, interprets or makes specific: the provisions of the California Health and Safety Code Sections 40001 (rules to achieve and maintain ambient air quality standards), 41700 (nuisance), 41706(b) (emission standards for lead compounds from non-vehicular sources), Federal Clean Air Act Section 112 (Hazardous Air Pollutants), and CAA Section 116.

WHEREAS, the SCAQMD Governing Board has determined that Proposed Rule 1420.2 - Emission Standards for Lead from Metal Melting Facilities, as proposed to be adopted, is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Rule 1420.2 - Emission Standards for Lead from Metal Melting Facilities, as proposed to be adopted, does not impose the same requirements as any existing state or federal regulations, and the proposed project is necessary and proper to execute the powers and duties granted to, and imposed upon, the SCAQMD; and

WHEREAS, Health and Safety Code §40727.2 requires the SCAQMD to prepare a written analysis of existing federal air pollution control requirements applicable to the same source type being regulated whenever it adopts, or amends a rule, and that the SCAQMD's comparative analysis of Proposed Rule 1420.2 is included in the staff report; and

WHEREAS, the SCAQMD Governing Board has determined that the Socioeconomic Impact Assessment of Proposed Rule 1420.2 is consistent with the March 17, 1989 and October 14, 1994 Governing Board Socioeconomic Resolutions for rule adoption; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Rule 1420.2 will result in increased costs to metal melting facilities, yet are considered to be reasonable, with a total annualized cost as specified in the Socioeconomic Impact Assessment; and

WHEREAS, the SCAQMD Board has actively considered the Socioeconomic Impact Assessment and has made a good faith effort to minimize such impacts; and

WHEREAS, the SCAQMD Governing Board has determined that the Socioeconomic Impact Assessment is consistent with the provisions of the California Health and Safety Code Sections 40440.8, 40728.5, 40920.6; and

WHEREAS, the SCAQMD Governing Board specifies the Director overseeing the rule development for Proposed Rule 1420.2 as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of this proposed project is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; and

WHEREAS, a public hearing has been properly noticed in accordance with all provisions of Health and Safety Code §40725; and

WHEREAS, the SCAQMD Governing Board has held a public hearing in accordance with all provisions of law; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Rule 1420.2 - Emission Standards for Lead from Metal Melting Facilities will alleviate the problem of lead emissions being released to the atmosphere and depositing on surfaces in and around lead melting facilities and putting children and sensitive individuals that live or recreate near lead melting facilities at risk by establishing specific requirements to control point and fugitive lead emissions and requiring ambient lead monitoring to promote the attainment or maintenance of state or federal ambient air quality standards; and

NOW, THEREFORE BE IT RESOLVED, that the SCAQMD Governing Board directs staff to return to the SCAQMD Stationary Source Committee in Spring 2017 to report on implementation status, available ambient monitoring data, and any key issues; and

BE IT FURTHER RESOLVED, that the SCAQMD Governing Board hereby approves the responses to comments in the Final EA and certifies, pursuant to the authority granted by law, that the Final EA for Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities was prepared in compliance with the requirements of CEQA and the SCAQMD's Certified Regulatory Program; and that the Final EA was presented to the SCAQMD Governing Board, whose members reviewed, considered and approved the information therein prior to acting on Proposed Rule 1420.2 and

BE IT FURTHER RESOLVED, that because no significant adverse environmental impacts were identified as a result of implementing Proposed Rule 1420.2, a Statement of Findings, a Statement of Overriding Considerations, and a Mitigation Monitoring Plan are not required; and

BE IT FURTHER RESOLVED, that the SCAQMD Governing Board does hereby adopt, pursuant to the authority granted by law, Proposed Rule 1420.2 as set forth in Attachment F and incorporated herein by this reference.

DATE: _____ _____

CLERK OF THE BOARDS

PROPOSED RULE 1420.2 **EMISSION STANDARDS FOR LEAD FROM METAL MELTING FACILITIES**

(a) Purpose

The purpose of this rule is to protect public health by reducing emissions and ambient air concentrations of lead from metal melting facilities, reduce public health impacts by reducing the exposure to lead, and to help ensure attainment and maintenance of the National Ambient Air Quality Standard for Lead.

(b) Applicability

This rule applies to all persons who own or operate a metal melting facility that melts 100 tons or more of lead a year based on any of the five calendar years prior to [Date of Adoption], or any year thereafter. Applicability shall be based on facility lead processing records required under subdivision (k) of this rule and subdivision (i) of Rule 1420 – Emissions Standards for Lead.

(c) Definitions

For the purposes of this rule, the following definitions shall apply:

(1) AMBIENT AIR means outdoor air.

(2) CASTING means the formation of metallic parts or casts by pouring melted metal into a mold and core assembly or into a mold for ingots, sows, or cylinders.

(3) CONSTRUCTION OR MAINTENANCE ACTIVITY means any of the following activities conducted outside of a total enclosure with negative air that generates or has the potential to generate fugitive lead-dust:

(A) building construction or demolition, the altering of a building or permanent structure, or the removal of one or more of its components;

(B) replacement or repair of refractory, filter bags, or any internal or external part of equipment used to process, handle, or control lead-containing materials;

(C) replacement of any duct section used to convey lead-containing exhaust;

(D) metal cutting or welding that penetrates the metal structure of any equipment, and its associated components, used to process lead-containing material, such that lead dust within the internal structure or its components can become fugitive lead-dust; ~~or~~

(E) resurfacing, grading, repairing, or removing~~al of~~ ground, pavement, concrete, or asphalt; or

(F) soil disturbances, including but not limited to, soil sampling and soil remediation, or activities where soil is moved, removed, and/or stored.

(4) DUCT SECTION means a length of duct including angles and bends which is contiguous between two or more process devices (e.g., between a furnace and heat exchanger; baghouse and scrubber; scrubber and stack; etc.).

(5) DUST SUPPRESSANTS are water, hygroscopic materials, or non-toxic chemical stabilizers used as a treatment material to reduce fugitive dust emissions.

(6) EMISSION COLLECTION SYSTEM means any equipment installed for the purpose of directing, taking in, confining, and conveying an air contaminant, and which at minimum conforms to design and operation specifications given in the most current edition of *Industrial Ventilation, Guidelines and Recommended Practices,* published by the American Conference of Governmental Industrial Hygienists, at the time a complete permit application is filed with the District.

(7) EMISSION CONTROL DEVICE means any equipment installed in the ventilation system of a lead point source or emission collection system for the purposes of collecting and reducing emissions of lead.

(8) FUGITIVE LEAD-DUST means any solid particulate matter containing lead that is in contact with ambient air and has the potential to become airborne.

(9) FURNACE means a device used to melt metal including, but not limited to, cupola, electric arc, pot, induction, blast, crucible, sweat, and reverberatory furnaces.

(10) FURNACE, REFINING, OR CASTING AREA means any area of a metal melting facility in which:

(A) Melting furnaces are located;

(B) Refining operations occur; or

(C) Casting operations occur.

(11) LEAD means elemental lead, lead compounds calculated as elemental lead, and elemental lead found in alloys.

(12) LEAD POINT SOURCE means any process, equipment, or total enclosure used at a metal melting facility, including, but not limited to, furnaces, tapping ports, or refining kettles, whose lead emissions pass through a stack or vent designed to direct or control the exhaust flow prior to release into the ambient air.

(13) LEEWARD WALL means the furthest exterior wall of a total enclosure that is opposite the windward wall.

(14) MEASURABLE PRECIPITATION means any on-site measured rain amount greater than 0.01 inches in any complete 24-hour calendar day (i.e., midnight to midnight).

(15) METAL means ~~metals including~~ ferrous (iron-based) metals and alloys and non-ferrous (non-iron-based) metals and alloys. Examples of metals include, but are not limited to, iron, steel, and their iron-based alloys; aluminum, copper, brass, bronze, gold, silver, zinc, tin, lead, platinum, nickel, chromium, cadmium, manganese, mercury, tungsten, and titanium and their non-ferrous alloys.

(16) METAL MELTING FACILITY means any facility that operates a furnace in which scrap metal, ingots, and/or other forms of metals are charged and melted, with the melted metal tapped or poured into a ladle or directly into a mold or other shape forming receptacle.

(17) PARTIAL ENCLOSURE means a structure comprised of walls or partitions on at least three sides or three-quarters of the perimeter that surrounds areas where a construction or maintenance activity is conducted, in order to prevent the generation of fugitive lead-dust.

(18) PROCESS means using lead or lead-containing materials in any operation including, but not limited to, the charging of lead-containing materials to melting furnaces, lead refining operations, and casting operations.

(~~19~~) ~~SENSITIVE RECEPTOR means any residence including private homes, condominiums, apartments, and living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.~~

(~~20~~ 19) SLAG means the inorganic material by-product discharged, in melted state, from a smelting furnace that has a lower specific gravity than lead metal and contains lead compounds. This shall include, but is not limited to, lead sulfate, lead sulfide, lead oxides, and lead carbonate consisting of other constituents charged to a smelting furnace, which are fused together during the pyrometallurgical process.

(~~21~~ 20) SMELTING means the chemical reduction of lead compounds to elemental lead or lead alloys through processing in temperatures greater than 980° C.

(~~22~~ 21) SMELTING FURNACE means any furnace where smelting takes place including, but not limited to, blast furnaces, reverberatory furnaces, rotary furnaces, and electric furnaces.

(~~23~~ 22) TOTAL ENCLOSURE means a permanent containment building/structure, completely enclosed with a floor, walls, and a roof to prevent exposure to the elements, (e.g., precipitation, wind, run-off), with limited openings to allow access and egress for people and vehicles, that is free of cracks, gaps, corrosion, or other deterioration that could cause or result in fugitive lead-dust.

(~~24~~ 23) VALID 24-HOUR SAMPLE means a sample in which the sampling run-time was no less than 23 hours and no greater than 25 hours, with the sample collection conducted using Title 40, CFR 50 Appendix B - *Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method),* or U.S. EPA-approved equivalent methods.

(~~25~~ 24) WINDWARD WALL means the exterior wall of a total enclosure which is most impacted by the wind in its most prevailing direction determined by a wind rose using data required under paragraph (e)(9) of this rule, or other data approved by the Executive Officer.

(d) Ambient Air Lead Concentration Limit

(1) The owner or operator of a metal melting facility shall not discharge emissions into the atmosphere which contribute to ambient air concentrations of lead that exceed the following:

Effective Date	Ambient Air Concentration of Lead, ~~micrograms per cubic meter~~ ($\mu g/m^3$)~~,~~ averaged over any 30 consecutive days
Beginning [Date of Adoption] – March 31, 2018	0.150
~~Beginning~~ On or After ~~January~~ April 1, 2018	0.100

(2) For facilities that do not have approved ambient air monitoring and sampling sites by the Executive Officer by [Date of Adoption], the ambient air lead concentration limit of 0.150 $\mu g/m^3$ averaged over any 30 consecutive days shall be met beginning 90 days from approval of the ~~a~~Ambient ~~a~~Air ~~m~~Monitoring and ~~s~~Sampling Plan ~~sites~~ pursuant to paragraph (e)(2).

(3) An exceedance of the ambient air concentrations of lead specified in the above table shall occur if it is measured by any monitor installed pursuant to subdivision (e), by any District-installed monitor collocated with a monitor installed pursuant to subdivision (e), or by any District-installed monitor located beyond the property line of a metal melting facility that measures lead concentrations resulting from the facility.

(4) In the event that a metal melting facility exceeds the applicable ambient lead concentration limit specified in paragraph (d)(1), the owner or operator may provide information to the Executive Officer to substantiate its position that the primary cause of the exceedance is not attributed to its metal melting facility. In the event the owner or operator exercises this opportunity to demonstrate that the primary cause of the exceedance is not attributed to its metal melting facility, the owner or operator shall submit the following information to the Executive Officer within five business days of when the owner or operator of the metal melting facility knew or should have known that the ambient lead concentration exceeded the applicable limit specified in paragraph (d)(1):

(A) Date and time of the exceedance;

(B) Location of the monitor where exceedance was measured;

(C) Monitored ambient lead concentration levels at all of the facility's monitors for the prior 30 days, including the date of the exceedance;

(D) Wind direction(s) during the timeframe of the exceedance;

(E) Description of the alleged primary cause(s) and source(s) of the exceedance including timeframe and location; and

(F) Evidence demonstrating that the primary cause(s) of the exceedance is not attributed to the facility's operations such as other monitored data, photographs, and video.

(5) The Executive Officer shall consider the information submitted under paragraph (d)(4) and notify the owner or operator of the determination in writing. If the Executive Officer determines that the primary cause(s) of the exceedance is not attributed to the metal melting facility, that exceedance will not be considered a violation of the applicable ambient lead concentration limit per subdivision (d) nor an exceedance requiring submittal or implementation of a Compliance Plan per subdivision (m).

(e) Ambient Air Monitoring Requirements

(1) No later than March 1, 2016, the owner or operator of a metal melting facility shall submit a Lead Ambient Air Monitoring and Sampling Plan for review and approval by the Executive Officer, subject to plan fees as specified in District Rule 306 – Plan Fees, that includes information specified in subparagraphs (e)(1)(A) through (e)(1)(C):

(A) Source test results of all lead point sources conducted pursuant to subdivision (j).

(B) Map of the facility identifying the location of all lead emission sources, air pollution control devices, stacks, enclosures, openings of enclosures, storage of lead containing materials, roadways where vehicles carrying lead containing materials travel within the facility, vehicle egress and ingress locations, the property line of the facility, the fence line of the facility if it differs from the property line of the facility, and any areas within the property line of the facility that are publicly accessible.

(C) Number and locations for sampling sites that meet the requirements of paragraph (e)(2).

(D) The Executive Officer shall notify the owner or operator in writing whether the Lead Ambient Air Monitoring and Sampling Plan is approved or disapproved.

(i) Determination of approval status shall be based on, at a minimum, submittal of information that satisfies the criteria set forth in subparagraphs (e)(1)(A) through (e)(1)(C).

(ii) If the Lead Ambient Air Monitoring and Sampling Plan is disapproved, the owner or operator shall resubmit the plan, subject to plan fees specified in Rule 306, within 30 calendar days after notification of disapproval of the plan. The resubmitted plan shall include any information necessary to address deficiencies identified in the disapproval letter. It is a violation of the rule for a facility not to have an approved Lead Ambient Air Monitoring and Sampling Plan after the second denial.

(iii) If the resubmitted plan is denied, the owner or operator may appeal the denial by the Executive Officer to the Hearing Board under Rule 216 – Appeals and Rule 221 – Plans.

(2) No later than ~~60~~ 90 days after approval of a Lead Ambient Air Monitoring and Sampling Plan, the owner or operator of a metal melting facility shall install and conduct ambient air lead monitoring and sampling as follows:

(A) Collect samples from a minimum of three sampling sites. Locations for sampling sites shall be approved by the Executive Officer.

(B) Locations for sampling sites shall be based on maximum expected ground level lead concentrations, at or beyond the property line, as determined by Executive Officer-approved air dispersion modeling calculations and emission estimates from all lead point sources and fugitive lead-dust sources, and other factors including, but not limited to, population exposure and seasonal meteorology.

(C) The Executive Officer may require one or more of the sampling sites to be at locations that are not based on maximum ground level lead concentrations, and that are instead at locations at or beyond the property line that are representative of upwind or background concentrations.

(D) Sampling sites at the property line may be located just inside the fence line on facility property if logistical constraints preclude placement outside the fence line at the point of maximum expected ground level lead concentrations.

(E) The Executive Officer may require a facility to relocate existing monitors or install additional monitors to those required under subparagraph (e)(2)(A) in order to measure ambient air lead concentrations at locations that may contribute to the exceedance of an ambient air lead concentration limit specified in subdivision (d) if information becomes available showing:

(i) A new or existing source of lead emissions that was not previously identified or fully disclosed;

(ii) An increase in lead emissions from an existing source where existing monitors are not capturing the potential ambient air lead concentration; or

(iii) That none of the existing monitors are capturing the maximum expected ground level lead concentration.

(3) Any facility that is conducting ambient air lead monitoring and sampling prior to [Date of Adoption] where the number and locations of the monitors have been approved by the Executive Officer and meet the requirements specified

subparagraphs (e)(2)(A) through (e)(2)(D) shall continue conducting ambient air lead monitoring and sampling as approved by the Executive Officer. An owner or operator ~~applicable to this paragraph~~ shall not be subject to the plan submittal requirements of paragraph (e)(1) if the plan previously approved by the Executive Officer for the existing ambient air lead monitoring and sampling system meets the requirements of subparagraphs (e)(2)(A) through (e)(2)(D), and in which case the previously approved plan shall be subsumed into the requirements of this rule and be considered a Lead Ambient Air Monitoring and Sampling Plan under this rule.

(4) All facilities, except those that meet the applicability of paragraph (e)(3)~~,~~ shall conduct ambient air monitoring and sampling as follows:

(A) Commission the ambient air monitoring and sampling network by collecting a valid 24-hour ~~sample~~, midnight-to-midnight~~,~~ sample at all sites for 30 consecutive days from the date of initial sampling.

(B) After the commission period specified above, collect one valid 24-hour, midnight-to-midnight~~,~~ sample ~~collected~~ at least once every six calendar days, on a schedule approved by the Executive Officer.

(5) Notwithstanding paragraph (e)(4), facilities shall collect a valid 24-hour, midnight-to-midnight~~,~~ sample ~~collected~~ according to the requirements specified in subparagraph (e)(5)(A) through (e)(5)(D), if any of the exceedances of subparagraph (e)(5)(A) or (e)(5)(C) occur:

(A)

Effective Date	Ambient Air Concentration of Lead~~, micrograms per cubic meter~~ ($\mu g/m^3$)~~,~~ ~~a~~Averaged over any 30 consecutive days	Sampling Frequency at the Affected Monitor
On or Before ~~January~~ March 31, 2018	0.150 - 0.300	1-in-3 days
	> 0.300	Daily
~~Beginning~~ On or After ~~January~~ April 1, 2018	0.100 ~~–~~ 0.150	1-in-3 days
	> 0.150	Daily

For facilities conducting ambient air monitoring and sampling pursuant to paragraph (e)(2), the effective date of the table above shall be 90 days after approval of a Lead Ambient Air Monitoring and Sampling Plan. For facilities conducting ambient air monitoring and sampling pursuant to paragraph (e)(3), the effective date of the table above shall be no later than the [Date of Adoption].

(B) The owner or operator of a metal melting facility shall begin ~~T~~the applicable ambient air monitoring and sampling schedule specified in subparagraph (e)(5)(A) no later than three calendar days from the time the facility knew or should have known of the exceedance. The monitoring and sampling done pursuant to the schedule in subparagraph (e)(5)(A) shall remain in effect until the monitoring results at each affected monitoring station are at or below ambient air lead concentration limit specified in subdivision (d) for a period of 30 consecutive days. ~~shall be conducted as follows:~~

~~(i) Facilities conducting sampling pursuant to (e)(2) shall begin ambient air monitoring and sampling pursuant to the applicable schedule in the table of subparagraph (e)(5)(A) no later than three calendar days from the time the facility knew or should have known of the exceedance, which shall remain in effect until the monitoring results at each affected monitoring station are at or below ambient air lead concentration limit specified in subdivision (d) for a period of 30 consecutive days.~~

~~(ii) Facilities conducting sampling pursuant to (e)(3) shall begin ambient air monitoring and sampling pursuant to the applicable schedule in the table of subparagraph (e)(5)(A) no later than three calendar days from the time the facility knew or should have known of the exceedance, or by [Date of Adoption], whichever is later, and shall remain in effect until the monitoring results at each affected monitoring station are at or below the ambient air lead concentration limit specified in subdivision (d) for a period of 30 consecutive days.~~

(C) The owner or operator of a metal melting facility shall collect a valid 24-hour ~~sample,~~ midnight-to-midnight~~,~~ sample ~~collected~~ daily if:

(i) The Executive Officer has approved a Health Risk Assessment for the facility after January 1, 2015 that exceeds the action risk level specified in District Rule 1402; and

(ii) After [12 months prior to Date of Adoption], the facility has exceeded an ambient air lead concentration of 0.120 µg/m^3 averaged over any 30 consecutive days measured by any monitor installed pursuant to subdivision (e), by any District-installed monitor collocated with a monitor installed pursuant to paragraph (e), or by any District-installed monitor located beyond the property line of a metal melting facility that measures lead concentrations resulting from the facility.

(D) For facilities required to conduct daily sampling pursuant to (e)(5)(C), daily ambient air monitoring and sampling shall begin no later than three calendar days after approval of the Health Risk Assessment specified in clause (e)(5)(C)(i), no later than three calendar days from the time the facility knew or should have known of the exceedance specified in clause (e)(5)(C)(ii), or by [Date of Adoption], whichever date is latest.

(6) If a valid 24-hour, midnight-to-midnight sample was not collected due to a monitor malfunction or other occurrence beyond the control of the facility, the owner or operator shall:

(A) Report with a notification made to 1-800-CUT-SMOG within 2 hours of knowing that the valid 24-hour, midnight-to-midnight sample was not collected providing the facility name, name of the monitor, the date of the occurrence, and the reason that the valid 24-hour, midnight-to-midnight sample was not collected; and

(B) For each of the monitors, the operator shall not miss a valid 24-hour, midnight-to-midnight sample for more than one day over a consecutive 30-day period.

(7) The owner or operator of a metal melting facility shall ~~S~~submit samples collected pursuant to this subdivision to a laboratory approved under the SCAQMD Laboratory Approval Program for analysis within three calendar days of collection and calculate ambient lead concentrations for individual valid 24-hour samples within 15 calendar days of the end of the calendar month in which the samples were collected. Split samples shall be made available and submitted to the District upon request by the Executive Officer.

(8) Sample collection for lead shall be conducted using Title 40, CFR 50 Appendix B - *Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)*, or U.S. EPA-approved equivalent methods, and sample analysis for lead shall be conducted using Title 40, CFR 50 Appendix G - *Reference Method for the Determination of Lead in Suspended Particulate Matter Collected from Ambient Air*, or U.S. EPA-approved equivalent methods.

(9) Continuously record wind speed and direction data at all times using equipment approved by the Executive Officer at a minimum of one location approved by the Executive Officer.

(10) A facility may conduct valid 24-hour sampling on a schedule different than midnight-to-midnight if it is demonstrated to and approved by the Executive Officer that the alternative schedule is adequate to routinely collect valid 24-hour samples and is conducted using the sampling methods referenced in paragraph (e)(8). The approval may be temporarily suspended during days when the SCAQMD conducts concurrent sampling to verify monitor readings. The approval may also be permanently rescinded by the Executive Officer.

(11) Ambient air quality monitoring shall be conducted by persons approved by the Executive Officer, or facility personnel trained and certified to conduct ambient air quality monitoring demonstrated through successful completion of a course offered or approved by the Executive Officer. Sampling equipment shall be operated and maintained in accordance with U.S. EPA-referenced methods.

(12) All ambient air quality monitoring systems conducting daily sampling required by subparagraph (e)(5)(C) shall be equipped with a backup, uninterruptible power supply to ensure continuous operation of the monitoring system during a power outage, which must be installed no later than 30 days after daily sampling under subparagraph (e)(5)(C) is required.

(13) Cleaning activities including, but not limited to, wet washing and misting, that could result in damage or biases to samples collected shall not be conducted within 10 meters of any sampling site required under this subdivision.

(14) Lead samples collected pursuant to this subdivision shall be retained for one year. The samples shall be stored in an individually sealed container and labeled with the applicable monitor and date. Upon request, the samples shall be provided to the Executive Officer within one business day.

(f) Lead Point Source Emissions Controls

No later than March 1, 2016, the owner or operator of a metal melting facility shall vent emissions from each lead point source to a lead emission control device that meets the requirements of this subdivision and is approved in writing by the Executive Officer.

(1) Any lead emission control device, or series of lead emission control devices, shall reduce lead emissions by a minimum of 99% or meet an outlet mass lead emission rate of less than 0.00030 pounds per hour as determined by the most recent District-approved source test conducted on behalf of the facility or the District pursuant to subdivision (j). Subsequent to the initial source test to demonstrate compliance with the minimum 99% control efficiency, the owner or operator, may alternatively demonstrate, through a source test conducted pursuant to subdivision (j), that the total mass lead outlet emission rate is no greater than a total mass lead outlet emission rate requisite to achieve 99% control efficiency, as calculated using the most recent District-approved source test conducted at the inlet and outlet of the lead emission control device to determine compliance with the 99% control efficiency requirement, or meet an outlet mass lead emission rate of less than 0.00030 pounds per hour. Any permit modification to the equipment or process vented to the subject lead control device that may affects the amount of lead emissions from the equipment or process shall result in a new source test at the inlet and outlet of the lead emission control device to determine compliance with the 99% control efficiency requirement.

(2) Filter media other than a filter bag(s) for any lead emission control device including, but not limited to, HEPA and cartridge-type filters, shall be rated by the manufacturer to achieve a minimum of 99.97% control efficiency for 0.3 micron particles.

(3) Filter bag(s) for any lead emission control device shall be polytetrafluoroethylene membrane-type, or any other material that is equally or more effective for the control of lead emissions, and approved for use by the Executive Officer.

(4) The total facility mass lead emissions shall be determined based on the average of triplicate samples, using the most recently approved source tests conducted on behalf of the facility or the District, pursuant to subdivision (j).

(5) For each emission collection system subject to this subdivision, a periodic smoke test shall be conducted, unless performing such test presents an unreasonable risk

to safety, at least once every 3 months using the procedure set forth in Appendix 2 of this rule.

(6) Each emission collection system and emission control device subject to this subdivision shall be approved in writing by the Executive Officer and, at minimum, be inspected, maintained, and operated in accordance with the manufacturer's specifications.

(g) Total Enclosures

(1) Enclosure Areas

No later than March 1, 2016, the owner or operator of a metal melting facility shall install a total enclosure, as defined in paragraph (c)(2~~3~~2), for the following areas:

(A) Furnace, refining, and casting areas; and

(B) Lead oxide production and pasting areas.

Total enclosures shall be designed in a manner that does not conflict with requirements set forth by the Occupational and Safety Hazard Assessment regarding worker safety.

(2) Total Enclosure Cross-D~~d~~raft

The owner or operator of a metal melting facility shall minimize the cross-draft conditions of a total enclosure by closing any openings that result in a decrease in the collection of lead emissions for an emission collection system, including, but not limited to, vents, windows, passages, doorways, bay doors, and roll-ups. Acceptable methods to minimize cross-draft conditions include closing doors or openings when not in use, using automatic roll-up doors, installing plastic strip curtains, or installing vestibules. Alternative methods to closing openings may be used, if the owner or operator can demonstrate to the Executive Officer equivalent or more effective ways to minimize cross-draft conditions.

(3) Total Enclosure with Negative Air

(A) The owner or operator of a metal melting facility shall provide negative air for a total enclosure specified in paragraph (g)(1) pursuant to Appendix 1 if:

(i) The Executive Officer has approved a Health Risk Assessment for the facility after January 1, 2015 that exceeds the action risk level specified in District Rule 1402; and

(ii) After [12 months prior to Date of Adoption], the facility has exceeded an ambient air lead concentration of 0.120 µg/m^3 averaged over any 30 consecutive days measured by any monitor installed pursuant to subdivision (e), by any District-installed monitor collocated with a monitor installed pursuant to paragraph (e), or by any District-installed monitor located beyond the property line of a metal melting facility that measures lead concentrations resulting from the facility.

(B) Total enclosures with negative air subject to this paragraph shall be installed, maintained, and operated no later than two years after approval of a Health Risk Assessment specified in clause (g)(3)(A)(i), no later than two years after an exceedance referenced in clause (g)(3)(A)(ii) that occurred ~~after a~~ at a facility with an approved Health Risk Assessment referenced in clause (g)(3)(A)(i), or by ~~January~~ April 1, 2018, whichever is latest.

(C) The Executive Officer may approve a request for an extension of the compliance deadline date in subparagraph (g)(3)(B) if the facility can demonstrate that it timely filed all complete permit applications and is unable to meet the deadline due to reasons beyond the facility's control. The request shall be submitted to the Executive Officer no later than 30 days before the compliance deadline date.

(h) Housekeeping Requirements

Unless otherwise specified, ~~N~~no later than 30 days after [Date of Adoption], the owner or operator of a metal melting facility shall control fugitive lead-dust by conducting all of the following housekeeping practices:

(1) Clean by wet wash or with a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles in a manner that does not generate fugitive lead-dust, the areas at the specified frequencies listed in subparagraph (h)(1)(A) through (h)(1)(D), unless located within a total enclosure vented to a lead emission control device. Days of measurable precipitation in the following areas occurring within the timeframe of a required cleaning ~~frequency~~ may be counted as a cleaning.

(A) Quarterly cleanings, no more than 3 calendar months apart, of roof tops on structures ≤ 45 feet in height that house areas associated with the

processing, handling, or storage of lead-containing materials capable of generating any amount of fugitive lead-dust, excluding areas associated with the storage of raw, unprocessed lead-containing materials or finished lead-containing products;

(B) Beginning no later than [180 days after Date of Adoption], semi-annual cleanings, no more than 6 calendar months apart, of roof tops on structures > 45 feet in height that house areas associated with the processing, handling, or storage of lead-containing materials capable of generating any amount of fugitive lead-dust, excluding areas associated with the storage of raw, unprocessed lead-containing materials or finished lead-containing products; and

(C) Weekly cleanings by wet wash, vacuum, wet-mop, or stabilization with a dust suppressant of all:

(i) Areas where lead-containing wastes generated from housekeeping activities are stored, disposed of, recovered or recycled; and

(ii) Surfaces that accumulate lead-containing dust subject to foot traffic.

(D) Initiate immediate cleaning, no later than one hour after any construction or maintenance activity or event including, but not limited to, accidents, process upsets, or equipment malfunction, that causes deposition of fugitive lead-dust onto areas specified in subparagraphs (h)(1)(A) through (h)(1)(C). If the facility can demonstrate that delays were due to unreasonable risks to safety posed by earlier cleaning, or inability to reasonably obtain equipment required to implement this requirement, immediate cleanings of roof tops shall be completed within 72 hours.

(2) Inspect all total enclosures and facility structures that house, contain or control any lead point source or fugitive lead-dust emissions at least once a month. Any gaps, breaks, separations, leak points or other possible routes for emissions of lead or fugitive lead-dust from the total enclosure to the ambient air shall be permanently repaired within 72 hours of discovery. The Executive Officer may approve a request for an extension beyond the 72-hour limit if the request is submitted before the 72-hour time limit has expired.

(3) No later than [180 days after Date of Adoption], pave with concrete or asphalt all facility grounds. Alternatively, the owner or operator may stabilize with dust

suppressants all facility grounds, at a frequency no less than what is specified by the manufacturer, as approved in writing by the Executive Officer.

(A) An alternative frequency of applying stabilization with dust suppressants may be used based on recommendations by a vendor or installer if the facility can provide information to the Executive Officer demonstrating that the alternative frequency is more appropriate for the specific application at its facility, including factors such as the type of use of the dust suppressant, physical properties of the lead containing material, exposure, and adjacent uses.

(B) Facility grounds used for plant life that ~~are~~ have less than a total surface area of 500 square feet, landscaped areas within facility parking lots, ~~or~~ and facility perimeter landscaped areas shall not be subject to paragraph (h)(3).

(C) Facility grounds that cannot be paved with concrete or asphalt, or otherwise stabilized with dust suppressants, in order to comply with city or other municipal permits, ordinances, ~~or requirements for the~~ State Water Control Board requirements, or any other state or federal agency requirements, shall not be subject to paragraph (h)(3).

(D) Facility grounds requiring removal of existing pavement, concrete, asphalt or other forms of stabilization, necessary for construction or maintenance purposes, shall not be subject to this paragraph while undergoing work, and shall be paved with concrete or asphalt, or otherwise stabilized with dust suppressants immediately after all required work is completed. All work shall be conducted in accordance with subdivision (i).

(E) Undeveloped facility grounds where no activities or operations are conducted shall not be subject to paragraph (h)(3).

(4) Remove any weather cap installed on any stack that is a source of lead emissions.

(5) Store all materials capable of generating any amount of fugitive lead-dust including, but not limited to, slag and any other lead-containing waste generated from the housekeeping requirements of this ~~paragraph~~ subdivision and the construction or maintenance activities of subdivision (i), in sealed~~,~~ leak-proof containers, or stabilize such materials using dust suppressants approved in writing by the Executive Officer, unless located within a total enclosure.

(6) Transport all materials capable of generating any amount of fugitive lead-dust including, but not limited to, slag and any other waste generated from the housekeeping requirements of this ~~paragraph~~ subdivision, within closed conveyor systems or in sealed, leak-proof containers, or stabilize such materials using dust suppressants approved in writing by the Executive Officer, unless located within a total enclosure. This paragraph shall not be applicable to the transport of high temperature materials exceeding 500 degrees Fahrenheit where implementation of the specified control requirements is infeasible.

(7) Maintain a~~n onsite~~ mobile wet scrubber or vacuum sweeper that is in compliance with District Rule 1186, or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles to conduct the following sweeping activities located outside of a total enclosure:

(A) Wet scrub or ~~V~~vacuum sweep all facility areas paved with concrete or asphalt subject to vehicular traffic at least once per operating shift with each event not less than four hours apart, unless located within a total enclosure vented to a lead control device or as specified pursuant to subparagraph (h)(7)(B). Wet scrubbing or vacuum sweeping shall not be required in parking spaces that are occupied by parked vehicles or between parked vehicles.

(B) Wet scrub or vacuum sweep parking lots that border administrative offices once per week. However, any parking lot that borders an administrative office(s) and is used to transport, handle, or store lead containing materials that have the potential to generate fugitive lead-dust shall be wet scrubbed or vacuum swept~~ep~~ in accordance with subparagraph (h)(7)(A).

~~(B)~~(C) Immediately wet scrub or vacuum sweep any area specified in subparagraph (h)(7)(A), no later than one hour after any construction or maintenance activity or event including accidents, process upsets, or equipment malfunctions that result~~s~~ in the deposition of fugitive lead-dust.

~~(C)~~(D) Wet scrubbing or ~~V~~vacuum sweeping activities shall not be required during days of measurable precipitation.

(8) Except when inside a total enclosure, all lead-containing trash and debris shall be placed in covered containers that remain covered at all times except when trash or debris is actively transferred. Trash and debris containers shall be free of liquid or dust leaks.

(9) Post signs at all entrances and truck loading and unloading areas indicating a:

(A) Speed limit of 5 miles per hour (mph) or less on any roadway located within 75 feet of the perimeter of a total enclosure.

(B) Speed limit of 15 ~~miles per hour (~~mph~~)~~ or less on any roadway located more than 75 feet from the perimeter of a total enclosure.

(10) For any of the housekeeping requirements specified under paragraphs (h)(1) through (h)(9), an alternative housekeeping measure can be used provided the owner or operator demonstrates and receives written approval from the Executive Officer that the alternative housekeeping measure meets the same objective and effectiveness of the housekeeping requirement it is replacing, where the objective and effectiveness of each housekeeping requirement is stated in Appendix 3.

(i) Construction or Maintenance Activity Requirements

(1) Beginning [Date of Adoption], the owner or operator shall conduct any construction or maintenance activity and subsequent clean-up using one of the following control measures:

(A) Inside a temporary negative air containment enclosure, vented to a District-permitted negative air machine equipped with a filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles, that encloses all affected areas where fugitive lead-dust generation potential exists.

(B) Inside a partial enclosure, using wet suppression or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles at locations where the potential to generate fugitive lead-dust exists.

(C) If conducting construction or maintenance activity and subsequent clean-up inside a partial enclosure creates conditions posing physical constraints, limited accessibility, or unreasonable risks to safety, construction or maintenance activity must be conducted using wet suppression or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles, at locations where the potential to generate fugitive lead-dust exists.

(2) Construction or maintenance activity shall be stopped immediately when instantaneous wind speeds are $\geq$ 20 mph, unless the activity is being conducted within a temporary negative air containment enclosure or partial enclosure.

Construction or maintenance work may be continued if it is necessary to prevent the release of lead emissions.

(3) All concrete or asphalt cutting or drilling performed outside of a total enclosure shall be performed under 100% wet conditions.

(4) Grading of soil shall only be performed on soils sufficiently wet to prevent fugitive dust.

(5) Store in a closed container or clean by wet wash or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles, all lead-contaminated equipment and materials used for any construction or maintenance activity immediately after completion of work in a manner that does not generate fugitive lead-dust.

(j) Source Tests

(1) Beginning [Date of Adoption], the owner or operator shall conduct a source test of all lead point sources at least annually to demonstrate compliance with the facility mass emissions standards specified in subdivision (f). If an annual source test to demonstrate compliance with the lead point source emission standards of subdivision (f) demonstrates a 99% or greater reduction of lead emissions, and total facility mass lead emissions of less than 0.020 pounds per hour, then the next test for all lead point sources shall be performed no later than 24 months after the date of the most recent test.

(2) The owner or operator of a metal melting facility with an existing lead emission control device in operation before [Date of Adoption] shall conduct a source test for it no later than [90 days after Date of Adoption]. The owner or operator of a metal melting facility with a new or modified lead control device with initial start-up on or after [Date of Adoption] shall conduct the initial source test for it within 60 calendar days after initial start-up.

(3) At least 60 calendar days ~~P~~prior to conducting a source test pursuant to paragraph (j)(1) or (j)(2), the owner or operator shall submit a pre-test protocol to the Executive Officer for approval ~~at least 60 calendar days prior to conducting the source test~~. The pre-test protocol shall include the source test criteria of the end user and all assumptions, required data, and calculated targets for testing the following:

(A) Target lead mass emission standard;

(B) Preliminary target pollutant analytical data;

(C) Planned sampling parameters; and

(D) Information on equipment, logistics, personnel, and other resources necessary for an efficient and coordinated test.

(4) The owner or operator shall notify the Executive Officer in writing one week prior to conducting any source test required by paragraph (j)(1) or (j)(2).

(5) The owner or operator shall notify the Executive Officer within three business days (Monday through Friday) of when the facility knew or should have known of any source test result that exceeds any of the emission standards specified in subdivision (f). Notifications shall be made to 1-800-CUT-SMOG and followed up in writing to the Executive Officer with the results of the source tests within seven business ~~(7)~~ days of notification.

(6) Source tests shall be conducted while operating at a minimum of 80% of the equipment's permitted capacity and in accordance with any of the following applicable test methods:

(A) SCAQMD Method 12.1 - *Determination of Inorganic Lead Emissions from Stationary Sources Using a Wet Impingement Train*

(B) ARB Method 12 – *Determination of Inorganic Lead Emissions from Stationary Sources*

(C) EPA Method 12 – *Determination of Inorganic Lead Emissions from Stationary Sources*

(D) ARB Method 436 – *Determination of Multiple Metal Emissions from Stationary Sources*

(7) The operator may use alternative or equivalent source test methods as defined in U.S. EPA 40 CFR 60.2, if approved in writing by the Executive Officer, in addition to the Air Resources Board, or the U.S. EPA, as applicable.

(8) The operator shall use a test laboratory approved under the SCAQMD Laboratory Approval Program for the source test methods cited in this subdivision. If there is no approved laboratory, then approval of the testing procedures used by the laboratory shall be granted by the Executive Officer on a case-by-case basis based on SCAQMD protocols and procedures.

(9) When more than one source test method or set of source test methods are specified for any testing, the application of these source test methods to a specific set of test conditions is subject to approval by the Executive Officer. In addition, a violation established by any one of the specified source test methods or set of source test methods shall constitute a violation of the rule.

(10) An existing source test conducted on ~~and~~ or after January 1, 2014 for lead emission control devices existing before [Date of Adoption] may be used as the initial source test specified in subparagraph (j)(1) to demonstrate compliance with the lead emission control standards of subdivision (f). The source test shall meet, at a minimum, the following criteria:

(A) The test is the most recent conducted since January 1, 2014;

(B) The test demonstrated compliance with the control requirements of subdivision (f); ~~and~~

(C) The test is representative of the method to control emissions currently in use; and

(D) The test was conducted using applicable and approved test methods specified in paragraphs (j)(6) through (j)(8).

(11) Testing conducted by the facility, by the District, or by a contractor acting on behalf of the District or the facility to determine compliance with this rule shall be performed according to the most recent District-approved test protocol for the same purpose or compounds.

(12) Reports from source testing conducted pursuant to subdivision (j) shall be submitted to the District in 90 days or less after completion of testing.

(k) Recordkeeping

(1) The owner or operator shall keep records of the following:

(A) Daily records indicating amounts of lead-containing material melted, the percentage of lead contained within that melted metal, and the basis for any lead percentage calculation. The Executive Officer may approve other alternative methods to calculate the amount of lead melted and the~~,~~ ~~including the~~ percentages of lead contained within the melted metal. Records to be maintained shall include, but are not limited to, purchase records, usage records, results of analyses, source test data, ~~or~~ and other District-approved verification to indicate melting amounts;

(B) Results of all ambient air lead monitoring, wind monitoring, and other data specified by subdivision (e); and

(C) Records of housekeeping activities completed as required by subdivision (h), construction or maintenance activities required by subdivision (i), periodic smoke tests required by paragraph (f)(5), and emission control device inspection and maintenance ~~requirements~~ required ~~of~~ by paragraph

(f)(6), including the name of the person performing the activity, and the dates and times ~~on~~ at which specific activities were completed.

(2) The owner or operator shall maintain all records for five years, with at least the two most recent years kept onsite.

(l) Ambient Air Monitoring Reports

(1) Beginning no later than [30 days after Date of Adoption], the owner or operator of a metal melting facility that meets the requirements of paragraph (e)(3), shall report by the 15th of each month to the Executive Officer, the results of all ambient air lead and wind monitoring for each preceding month, or more frequently if determined necessary by the Executive Officer. The report shall include the results of individual valid 24-hour samples and 30-day rolling averages for each day within the reporting period.

(2) Beginning no later than ~~30~~ 90 days after a Lead Ambient Air Monitoring and Sampling Plan is approved by the Executive Officer, the owner or operator of a metal melting facility shall report by the 15th of each month to the Executive Officer, the results of all ambient air lead and wind monitoring for each preceding month, or more frequently if determined necessary by the Executive Officer. The report shall include the results of individual valid 24-hour samples and 30-day rolling averages for each day within the reporting period.

(3) Any exceedances of ambient air lead concentrations specified in subdivision (d) shall be reported with a notification made to the 1-800-CUT-SMOG within 24 hours of receipt of the completed sample analysis required in subdivision (e), followed by a written report to the Executive Officer no later than three calendar days after the notification. The written report shall include the potential causes of the exceedance and the specific corrective actions implemented.

(m) Compliance Plan

(1) The owner or operator shall submit a Compliance Plan if emissions are discharged into the atmosphere which contribute to an ambient air lead concentration or total facility mass lead emissions rate that exceeds any of the following:

Effective Date	Ambient Air Concentration of Lead~~, micrograms per cubic meter~~ (µg/m^3)~~,~~ ~~a~~Averaged over any 30 consecutive days	Total Facility Mass Lead Emissions Rate~~,~~ (pounds per hour) ~~(lbs/hr)~~
~~Beginning~~ July 1, 2016 – March 31, 2018	0.120	0.080
~~Beginning~~ On or After ~~January~~ April 1, 2018	0.100	

An exceedance of the ambient air lead concentrations specified in this paragraph shall occur if it is measured by any monitor installed pursuant to subdivision (e), by any District-installed monitor collocated with a monitor installed pursuant to subdivision (e), or by any District-installed monitor located beyond the property line of a metal melting facility that measures lead concentrations resulting from the facility. The total facility mass lead emissions rate shall be determined based on the average of triplicate samples, using the most recently approved source tests conducted on behalf of the facility or the District, pursuant to subdivision (j).

(2) The owner or operator shall notify the Executive Officer in writing within 72 hours of when the facility knew or should have known it exceeded the applicable ambient air lead concentration or total facility mass lead emissions rate specified in paragraph (m)(1).

(3) The Compliance Plan shall contain a description of ~~additional~~ lead emission reduction measures necessary to avoid future exceedances of ~~to achieve~~ the applicable ambient air lead concentration ~~of 0.100 µg/m^3 averaged over any 30 consecutive days~~ limit specified in subdivision (d).

(A) ~~The additional lead emission reduction measures shall include, but are not limited to the following, as necessary to attain the applicable ambient air lead concentration limits specified in subdivision (d):~~The lead emission reduction measures shall consider the following categories for those lead emission sources ~~near~~that may have contributed to any monitor that has

measured an ambient air lead concentration greater than 0.070 µg/m^3 averaged over any 30 consecutive days:

(i) Housekeeping, inspection, and construction or maintenance activities;

(ii) Total enclosures with negative air pursuant to the requirements in Appendix 1 of this rule;

(iii) Modifications to lead emission control devices and total enclosures with negative air;

(iv) Installation of multi-stage lead emission control devices, including but not limited to devices that use filter media other than a filter bag(s), such as HEPA and cartridge-type filters rated by the manufacturer to achieve a minimum of 99.97% control efficiency for 0.3 micron particles;

(v) Process changes, including reduced throughput limits; and

(vi) Conditional curtailments including, at a minimum, information specifying the curtailed processes, process amounts, and length of curtailment.

(B) The Compliance Plan shall explain how the owner or operator will identify and ~~identify~~implement the ~~initial~~ lead emission reduction measures necessary to achieve the applicable ambient air lead concentration limit specified in subdivision (d)~~of 0.100 µg/m^3 averaged over any 30 consecutive days~~ and how ~~as well as~~ additional measures ~~to~~ will be evaluated and implemented in the event of a subsequent exceedance.~~s of the concentration threshold of 0.100 µg/m^3 averaged over any 30 consecutive days.~~

(4) The Compliance Plan shall identify the locations within the facility and method(s) of implementation for each lead emissions reduction measure~~, including those~~ listed in accordance with paragraph (m)(3).

(5) The Compliance Plan shall include an implementation schedule for each lead emission reduction measure including those specified pursuant to paragraph (m)(3). ~~The Compliance Plan shall include information that:~~

(A) The Compliance Plan shall include information that categorizes the lead emission reduction measures based on the potential cause of a reasonable foreseeable exceedance~~(s)~~ and prioritizes each measure based on the time needed to implement the measure, with the highest priority given to those

measures that can be implemented within the shortest amount of time; andPrioritizes the lead emission reduction measures in order from the lowest to highest potential lead emissions reductions to ; and

(B) The Compliance Plan shall specify Specifies within the a schedule, increments of time after the requirement to implement initial measures is triggered by paragraph (m)(10), or subsequent exceedance of the ambient air concentration limits specified in paragraph (m)(10) that occur following completion of implementation of the initial measures that identifies the length of time needed to implement each lead emission reduction measure. The implementation schedule shall take into consideration the timeframe needed for engineering design, permitting, installing, and commissioning of equipment, if applicable.

(C) The Executive Officer may require implementation of additional lead emission reduction measures prior to the completion of implementation of the initial measures if there is information demonstrating that implementation of the initial measures is not enough to avoid a subsequent exceedance of the applicable ambient lead concentration limit specified in subdivision (d).of 0.100 µg/m^3 averaged over any 30 consecutive days.

(6) A complete Compliance Plan shall be submitted to the Executive Officer in writing for review and approval within 30 calendar days of an initial exceedance of an ambient air lead concentration or total facility mass lead emissions rate pursuant to paragraph (m)(1).

(7) The owner or operator shall update the Compliance Plan 30 days from any additional exceedances of the ambient air lead concentration or total facility mass lead emissions rate pursuant to paragraph (m)(1). The updated Compliance Plan shall identify any measures implemented pursuant to paragraph (m)(3) through (m)(5) and identify any new measures that can be implemented.

(8) The review and approval of the Compliance Plan shall be subject to plan fees as specified in Rule 306.

(9) The Executive Officer shall notify the owner or operator in writing whether the Compliance Plan is approved or disapproved.

(A) Determination of approval status shall be based on, at a minimum, submittal of information that satisfies the criteria set forth in paragraphs (m)(3) through (m)(5), and whether the plan is likely to lead to avoiding

future exceedances of the ambient air concentration limits set forth in subdivision (d).

(B) If the Compliance Plan is disapproved, the owner or operator shall resubmit the Compliance Plan, subject to plan fees specified in Rule 306, within 30 calendar days after notification of disapproval of the Compliance Plan. The resubmitted Compliance Plan shall include any information necessary to address deficiencies identified in the disapproval letter. It is a violation of the rule for a facility not to have an approved Compliance Plan after the second denial.

(C) If the resubmitted plan is denied, the owner or operator may appeal the denial by the Executive Officer to the Hearing Board under Rule 216 – Appeals and Rule 221 – Plans.

(10) ~~The owner or operator shall implement one or more of the measures of the approved Compliance Plan necessary to attain the applicable ambient air concentration limit specified in subdivision (d) if lead emissions discharged from the facility contribute to ambient air lead concentrations that exceeds the levels in the table below. In considering the measure(s) that the owner or operator shall implement that are necessary to attain the applicable ambient air lead concentration limit, the Executive Officer shall consider the cause, magnitude, and duration of the exceedance, as well as past exceedances, if applicable. Implementation of each measure shall be based on the implementation schedule of paragraph (m)(5) in the approved Compliance Plan.~~ If lead emissions discharged from the facility contribute to ambient air lead concentrations that exceed the levels specified in the table below within any rolling 24 month period, the owner or operator shall implement the appropriate measure(s) described in the approved Compliance Plan that are necessary to attain the applicable ambient air concentration limit specified in subdivision (d) and notify the Executive Officer of the measures being implemented within 10 business days of when the owner or operator knew or should have known that the ambient lead concentration exceeded the applicable limit specified in paragraph (d)(1).

Effective Date	Ambient Air Concentration of Lead, micrograms per cubic meter (µg/m^3), averaged over any 30 consecutive days	Total # of exceedances (within any rolling 24-month period)
~~Beginning~~ January 1, 2017 – March 31, 2018	0.150	1
~~Beginning~~ On or After ~~January~~ April 1, 2018	0.100	3

An exceedance of the ambient air lead concentrations specified in this paragraph shall occur if it is measured by any monitor installed pursuant to subdivision (e), by any District-installed monitor collocated with a monitor installed pursuant to subdivision (e), or by any District-installed monitor located beyond the property line of a metal melting facility that measures lead concentrations resulting from the facility.

(11) If the owner or operator of a metal melting facility is required to implement lead reduction measures in an approved Compliance Plan pursuant to paragraph (m)(10) and the lead emission rate from all lead point sources as determined pursuant to subdivision (j) is greater than 0.080 ~~lb/hour~~ pounds per hour, the owner or operator of a metal melting facility shall implement those measures in the approved Compliance Plan that will reduce the lead point source emission rate. The owner or operator of a metal melting facility shall not be required to implement lead emission reduction measures relating to the installation of additional controls on existing control equipment if:

(A) Installation of additional/modified controls are already underway during the time of the ambient air lead concentration exceedance; and

(B) The installation of additional/modified controls are for the lead point source that caused the ambient air lead concentration exceedance; and

(C) No more than 90 days have passed since initial operation of the additional/modified controls.

(12) The owner or operator may make a request to the Executive Officer to approve a ~~to~~ modifiedy ~~or~~ or updated ~~an approved~~ Compliance Plan.

(13) The owner or operator shall update the Compliance Plan 12 months from initial approval. Thereafter, the owner or operator shall update the Compliance Plan on or before the annual anniversary of the initial approval if within the preceding 12 months the lead emissions discharged from the facility contributed to ambient air concentrations of lead that exceeded 0.100 µg/m^3 averaged over any 30 consecutive days, measured at any monitor pursuant to subdivision (e), or by any District-installed monitor located beyond the property line of a metal melting facility that measures lead concentrations resulting from the facility. Compliance Plan updates shall indicate measures that have been implemented and identify any new or enhancements to existing lead emission reduction measures.

(n) Visible Emissions

Beginning [Date of Adoption], the owner or operator of a metal melting facility shall not discharge into the atmosphere fugitive lead-dust emissions that exceed Ringlemann 0.5, or 10 percent opacity, for more than three minutes aggregate in any 60-minute period.

(o) Exemptions

(1) Ambient Air Monitoring Relief Plan

An owner or operator of a metal melting facility that demonstrates ambient air lead concentration levels of less than or equal to 0.070 µg/m^3 averaged over 30 consecutive days, measured during normal operating conditions that are representative of the facility, may be exempt from the ambient air monitoring requirements set forth in subdivision (e) upon Executive Officer approval of an air monitoring relief plan, which shall be granted if the plan contains all of the following:

(A) Air dispersion modeling analysis that demonstrates an ambient air lead concentration of $\leq$ 0.070 µg/m^3 averaged over 30 consecutive days that is representative of normal facility operations; and

(B) One ~~(1)~~ year of ambient air lead monitoring data without a single 30 consecutive day average exceeding an ambient air lead concentration of 0.070 µg/m^3; and

(C) Most recent source tests approved by the District demonstrate a total facility mass lead emissions rate from all lead point sources of less than 0.040 pounds per hour.

Any violation of the ambient air lead concentrations required by subdivision (d) or any permit modification to equipment or processes that results in an increase in lead emissions that can be shown to cause an exceedance with the ambient air lead concentrations required by subdivision (d) shall result in revocation of the air monitoring relief plan. Upon revocation of the air monitoring relief plan, the owner or operator of a metal melting facility shall comply with the requirements of subdivision (e) no later than 180 days after revocation of the air monitoring relief plan.

(2) Lead Point Source Emissions Controls

Any lead point source that has an uncontrolled emission rate of 0.005 pounds per hour or less shall be exempt from the requirements of subdivision (f) of this rule provided that a source test pursuant to subdivision (j) is conducted for the lead point source at least once every 24 months.

(3) Lead Minimization

The owner or operator of a metal melting facility as described in subdivision (b) shall not be subject to the requirements of this rule if the amount of lead melted at the facility has been reduced to less than 50 tons per year based on lead melting limits specified in facility permit conditions, and facility lead processing records required under subdivision (k) of this rule or subdivision (i) of Rule 1420 – Emissions Standards for Lead. A facility exempt from this rule shall be subject to requirements of Rule 1420.

(4) Rule 1420

An owner or operator of a metal melting facility subject to this rule shall be exempt from the requirements of Rule 1420. A Rule 1420 Compliance Plan that has been issued to the owner or operator of a metal melting facility prior to [Date of Adoption] shall be subsumed into the requirements of this rule and be considered a Rule 1420.2 Compliance Plan. The ~~, for which the~~ owner or operator shall continue to comply with all conditions stated within the plan in addition to the requirements of subdivision (m) if triggered.

Appendix 1 – Requirements for Total Enclosures with Negative Air

The following provides the requirements for Total Enclosures with Negative Air that must be complied with pursuant to paragraph (g)(3) or included in the Compliance Plan as specified in clause (m)(3)(A)(iii).

1. Total Enclosure Emissions Control

   The owner or operator shall vent each total enclosure under negative pressure to an emission collection system that ducts the entire gas stream that may contain lead to a lead emission control device pursuant to subdivision (f).

2. Total Enclosure Ventilation

   Ventilation of the total enclosure at any opening including, but not limited to, vents, windows, passages, doorways, bay doors, and roll-ups shall continuously be maintained at a negative pressure of at least 0.02 mm of Hg (0.011 inches H_2O) measured by paragraph (3) of this Appendix.

3. Digital Differential Pressure Monitoring Systems

   The owner or operator shall install, operate, and maintain a digital differential pressure monitoring system for each total enclosure as follow:

   (A) A minimum of one building digital differential pressure monitoring system shall be installed and maintained at each of the following three walls in each total enclosure having a total ground surface area of 10,000 square feet or more:

      (i) The leeward wall;

      (ii) The windward wall; and

      (iii) An exterior wall that connects the leeward and windward wall at a location defined by the intersection of a perpendicular line between a point on the connecting wall and a point on its furthest opposite exterior wall, and intersecting within plus or minus ten (+10) meters of the midpoint of a straight line between the two other monitors specified for the leeward wall and windward wall. The midpoint monitor shall not be located on the same wall as either of the other two monitors specified for the leeward wall and windward wall.

   (B) A minimum of one building digital differential pressure monitoring system shall be installed and maintained at the leeward wall of each total enclosure that has a total ground surface area of less than 10,000 square feet.

   (C) Digital differential pressure monitoring systems shall continuously record, at a minimum, 1-minute data for differential pressure measurements which are to be

used to calculate rolling 15-minute averages in order to determine compliance with a negative pressure of at least 0.02 mm of Hg (0.011 inches H_2O).

(D) Digital differential pressure monitoring systems shall be certified by the manufacturer to be capable of measuring and displaying negative pressure in the range of 0.01 to 0.2 mm Hg (0.005 to 0.11 inches H_2O) with a minimum increment of measurement of plus or minus 0.001 mm Hg (0.0005 inches H_2O).

(E) Digital differential pressure monitoring systems shall be equipped with a continuous strip chart recorder. An electronic recorder may be approved for use by the Executive Officer if the recorder is capable of writing data on a medium that is secure and tamper-proof, and the recorded data is readily accessible upon request by the Executive Officer. If software is required to access the recorded data that is not readily available to the Executive Officer, a copy of the software, and all subsequent revisions, shall be provided to the Executive Officer at no cost. If a device is required to retrieve and provide a copy of such recorded data, the device shall be maintained and operated at the facility.

(F) Digital differential pressure monitoring systems shall be calibrated in accordance with manufacturer's specifications at least once every 12 calendar months or more frequently if recommended by the manufacturer.

(G) Digital differential pressure monitoring systems shall be equipped with a backup, uninterruptible power supply to ensure continuous operation of the monitoring system during a power outage.

4. <u>In-draft Velocity</u>

The in-draft velocity of the total enclosure shall be maintained at > 200 feet per minute at any opening including, but not limited to, vents, windows, passages, doorways, bay doors, and roll-ups. In-draft velocities for each total enclosure shall be determined by placing an anemometer, or an equivalent device approved by the Executive Officer, at the center of the plane of any opening of the total enclosure.

5. <u>Alternative Monitoring Methods and Procedures</u>

The owner or operator may submit an alternative to any monitoring method or procedure of this Appendix for review and approval by the Executive Officer. Approval shall be granted if it is demonstrated that the alternative method or procedure is equally or more effective than the methods or procedures prescribed in this Appendix.

Appendix 2 - Smoke Test to Demonstrate Capture Efficiency for Ventilation Systems of Add-on Air Pollution Control Device(s) Pursuant to Paragraph (f)(5).

1. Applicability and Principle

1.1 Applicability. This method is applicable to all lead point sources where an add-on air pollution control device is used to capture and control emissions of lead.

1.2 Principle. Collection of lead emissions from lead point sources is achieved by the ventilation system associated with the add-on air pollution control device for lead processing equipment including, but not limited to hot processes that melt lead or other processes that produce lead dust. Emission control efficiency at the exhaust of an add-on air pollution control device is related to capture efficiency at the inlet of the ventilation system. For this reason, it is imperative that 100% capture efficiency is maintained. A smoke device placed within the area where collection of lead emissions by the ventilation system occurs reveals this capture efficiency.

2. Apparatus

2.1 Smoke Generator. Adequate to produce a persistent stream of visible smoke (e.g., Model #15-049 Tel-Tru™ T-T Smoke Sticks from E. Vernon Hill, Incorporated). The smoke generating device should not provide excessive momentum to the smoke stream that may create a bias in the determination of collection efficiency. If the device provides slight momentum to the smoke stream, it shall be released perpendicular to the direction of the collection velocity.

3. Testing Conditions

3.1 Equipment Operation: Any equipment to be smoke tested that is capable of generating heat as part of normal operation must be smoke tested under those normal operating conditions. Temperatures of pots or firing rates shall be recorded to verify operation. The smoke test shall be conducted while the add-on air pollution control device is in normal operation. The position of any adjustable dampers that can affect air flow shall be documented.

3.2 Cross Draft: The smoke test shall be conducted while the add-on air pollution control device is in normal operation and under typical draft conditions representative of the facility's lead processing operations. This includes cooling fans and openings affecting draft conditions around the process area including, but not limited to, vents, windows, doorways, bay doors, and roll-ups. The smoke generator must be at full generation during the entire test and operated according to manufacturer's suggested use.

4. Procedure

4.1 Collection Slots: For work stations equipped with collection slots or hoods, the smoke shall be released at points where lead emissions are generated (e.g. the point where welding or stacking of grids occurs). Observe the collection of the smoke to the collection location(s) of the ventilation system. An acceptable smoke test shall demonstrate a direct stream to the collection location(s) of the ventilation system without meanderings out of this direct path. Smoke shall be released at points not to exceed 12 inches apart across ventilated work areas. Record these observations at each of the points providing a qualitative assessment of the collection of smoke to the ventilation system.

4.2 Enclosures: Enclosures include equipment where emissions are generated inside the equipment and the equipment is intended to have inward air flow through openings to prevent the escape of process emissions. Types of enclosures include, but are not limited to lead pots and grid casting machines. The smoke shall be released at points outside of the plane of the opening of the equipment, over an evenly spaced matrix across all openings with points not to exceed 12 inches apart. Observe the inward movement of the smoke to the collection location(s) of the ventilation system. An acceptable smoke test shall demonstrate a direct stream into the equipment without meanderings out of this direct path. Record these observations at each of the points providing a qualitative assessment of the collection of smoke to the ventilation system.

5. Documentation: The smoke test shall be documented by photographs or video at each point that clearly show the path of the smoke. Documentation shall also include a list of equipment tested and any repairs that were performed in order to pass the smoke test. As previously discussed, the documentation shall include the position of adjustable dampers, cross draft conditions, and the heat input of the equipment, if applicable. The documentation shall be signed and dated by the person performing the test. The records shall be maintained on site for at least two years and be made available to District personnel upon request.

Appendix 3 –Objectives of Housekeeping Requirements Set-forth in Paragraph (h)

Housekeeping Measure/Paragraph	Objective	Effectiveness
(h)(1)	To clean or remove accumulated lead dust on surfaces specified under subparagraph (h)(1)(A), (h)(1)(B), and (h)(1)(C).	Any method that can clean or remove accumulated lead dust for the areas specified in paragraph (h)(1) at a frequency that provides for the same or better efficiency than implementing the required housekeeping measure and ensures that lead dust will not be generated by the alternative measure
(h)(2)	To ensure that total enclosures or structures specified in paragraph (h)(2) are free from gaps, breaks, separations, leak points or other possible routes for emissions of lead or fugitive lead dust.	Any method that can identify possible routes for emissions of lead or fugitive dust that are as or more effective than visually inspecting.
(h)(3)	To minimize fugitive lead-dust emissions from facility grounds used for operational activities.	Any method that is equally or more effective as encapsulation or physical or chemical containment of lead dust from facility grounds.
(h)(4)	To minimize accumulation near lead emission point sources.	Demonstrate that use of a weather cap does not impact the dispersion of lead dust or increase the accumulation of lead dust in and around facility more than the removal of a weather cap.
(h)(5)	To minimize fugitive lead-dust emissions from the storage of materials capable of generating fugitive lead-dust emissions specified under paragraph (h)(5).	Any method that is equally or more effective as a sealed-leak proof container or physical or chemical containment of lead dust from areas specified under paragraph (h)(5).

Housekeeping Measure/Paragraph	Objective	Effectiveness
(h)(6)	To minimize fugitive lead-dust emissions from the transport of materials capable of generating fugitive lead-dust emissions from areas specified under paragraph (h)(6).	Any method that is equally or more effective as a closed conveyor system, sealed-leak proof container, or physical or chemical containment during transport of lead dust from areas specified under paragraph (h)(6).
(h)(7)	To clean or remove accumulated lead dust on surfaces specified under paragraph (h)(7).	Any method that can clean or remove accumulated lead dust for the areas specified in paragraph (h)(7) at a frequency that provides for the same or better efficiency than implementing the required housekeeping measure and ensures that lead dust will not be generated by the alternative measure
(h)(8)	To minimize fugitive lead-dust emissions from all lead-containing trash and debris.	Any method that can contain lead-containing trash and debris that is as or more effective than a covered container.
(h)(9)	To notify persons that are operating vehicles within the facility the speed limit to minimize fugitive lead-dust emissions from vehicular movement.	Any method that effectively reduces vehicle speed to, or communicates to persons operating vehicles within the facility, the speed limit specified in paragraph (h)(9).

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Staff Report
Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities

September 2015

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

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BACKGROUND

The South Coast Air Quality Management District (SCAQMD) is responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin). By state law, the SCAQMD is required to adopt an Air Quality Management Plan (AQMP) demonstrating compliance with all federal regulations and standards such as National Ambient Air Quality Standards (NAAQS) for the Basin [H&S Code Section 40460 (a)].

In October 1978, the U.S. Environmental Protection Agency (EPA) promulgated the primary and secondary NAAQS for lead under section 109 of the Clean Air Act. Both primary and secondary standards were set at a level of 1.5 micrograms per cubic meter ($\mu g/m^3$) averaged over a calendar quarter. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings.

On October 15, 2008, the EPA amended both the primary and secondary NAAQS for lead from a level of 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ averaged over a rolling 3-month period, along with changes to monitoring and reporting requirements. On December 31, 2010, the EPA designated a portion of Los Angeles County as non-attainment for the 2008 NAAQS for lead based on monitored air quality data from 2007-2009 that indicated a violation of the NAAQS near a large lead-acid battery recycling facility. Even before this designation, SCAQMD Rule 1420.1 – Emission Standards for Lead from Large Lead ~~acid~~ Acid Battery Recycling Facilities was adopted on November 5, 2010 to control emissions of lead from large lead-acid battery recycling facilities in order to reduce lead emissions and help ensure attainment of the 2008 NAAQS for lead of 0.15~~0~~ $\mu g/m^3$. In May of 2014, the U.S. EPA released its "Policy Assessment for the Review of the Lead National Ambient Air Quality Standards," reaffirming the primary (health-based) and secondary (welfare-based) standards and staff conclusions to retain the current standard, rather than revise it. As a result, in January of 2015 the U.S. EPA proposed that the ambient lead concentration standard of 0.15 $\mu g/m^3$ averaged over a rolling 3-month period remain unchanged. The 90-day comment period for this proposal ended on April 6, 2015 and requires further action by the U.S. EPA in order to issue a final rule.

Based on ambient air lead monitoring data, Rule 1420.1 has proven effective for demonstrating attainment with the lead NAAQS by the large lead-acid battery recycling industry, however, SCAQMD staff is concerned with lead emissions from the broader industry source category of metal melting. Based on SCAQMD annual emission inventories submitted through the SCAQMD Annual Emissions Reporting (AER) program, permitting information for equipment processing and handling lead, and ambient air lead monitoring data, the SCAQMD staff determined that the metal melting industry is a significant stationary source of lead emissions.[1] Existing federal and state regulations currently control lead emissions from this source category, however, additional requirements similar to those that have effectively reduced emissions from large lead-acid battery

[1] The supporting documentation for this evaluation includes the following sources: 2010-2013 SCAQMD AER Data, p~~P~~ermitting data for metal melting furnaces, 1420 Compliance Plans, s~~S~~ource tests from AB2588 program for affected facilities, and SCAQMD ambient air lead data for GERDAU and Trojan Battery. This information is available upon request (subject to the SCAQMD's Public Records Request Guidelines).

recyclers may be necessary to adequately protect public health. As a result, SCAQMD staff is proposing that the SCAQMD Governing Board adopt Proposed Rule (PR) 1420.2 – Emission Standards for Lead from Metal Melting Facilities. Specifically, the objective of PR 1420.2 is to protect public health by minimizing public exposure to lead emissions and preventing exceedances of the lead NAAQS in the Basin.

PUBLIC PROCESS

PR 1420.2 is being developed through a public process. A working group was formed to provide the public and stakeholders an opportunity to discuss important details about the proposed rule and provide the SCAQMD staff with important input during the rule development process. The working group and interested parties are comprised of a variety of stakeholders including representatives from industry, consultants, environmental groups, community groups, and public agency representatives. The SCAQMD staff has held six (6) working group meetings. To date, the working group has convened on December 17, 2014, January 20, 2015, February 19, 2015, April 23, 2015, May 13, 2015, and June 18, 2015. A Public Workshop was held on May 14, 2015 to present the proposed rule and receive public comment. Response to comments received can be found in Appendix A of this document.

LEAD

Lead is a naturally occurring metal found in the earth's crust. The metal is grayish in color and is soft, malleable, and ductile. It is also a limited electrical conductor and highly impervious to corrosion. This unique combination of physical properties has made it desirable for many uses in industries such as construction, piping, roofing, and lead-acid storage battery manufacturing. As a result, some business operations solely recover lead from lead-bearing materials through secondary smelting operations for use in the abovementioned industries. For some industries, lead is undesirable and considered an impurity to its final product. Lead for these industries results from the melting of recycled scrap metal that contains trace amounts of lead, or it inadvertently enter the process even after inspection to identify scrap metal that may contain lead.

Lead can be released into the ambient air in the form of particles that fall out onto the ground or other surfaces by rain or gravitational settling. Lead is strongly adsorbed in the soil and is generally retained in the upper layers where it does not leach appreciably into the subsoil and groundwater. Lead compounds can be converted to other lead compounds in the environment; however, lead is an element and cannot be destroyed. Because lead does not degrade, previous uses of lead and its releases into the ambient air result in high concentrations of lead that persist in the environment.

Lead is a persistent pollutant, and once deposited out of the air, lead can subsequently be re-suspended in the ambient air. In addition, because of the persistence of lead, lead emissions contribute to, in sufficient concentrations across multiple pathways, cause impacts for some years into the future (73 FR 66971). This cycling of lead in the environment means people can be exposed to lead that was emitted just yesterday or emitted years ago (EPA, 2014). Furthermore, lead emitted into the air is predominantly in particulate form, which can be transported long or short distances depending on particle size (73 FR 66971).

Thus, lead can affect communities surrounding lead melting facilities as well as those not immediately adjacent to these facilities. Reducing the ambient lead concentration limit to 0.100 µg/m^3 will minimize lead emissions from lead melting facilities from directly inhaled lead particulates, and further reducing the accumulation of surface dust and lead in the soil that can over time re-enter the air through re-suspension.

HEALTH EFFECTS

Lead is classified as a "criteria pollutant" under the federal Clean Air Act. The Office of Environmental Health Hazard Assessment (OEHHA) also identifies it as a carcinogenic toxic air contaminant (TAC). Chronic health effects include problems such as nervous and reproductive system disorders, neurological and respiratory damage, cognitive and behavioral changes, and hypertension. Exposure to lead can also potentially increase the risk of contracting cancer. Lead is a multipathway toxic air contaminant. It can enter the body through inhalation or ingestion. Exposure to lead emitted into the ambient air (air-related lead) can occur directly by inhalation, or indirectly by ingestion of lead-contaminated food, water or other materials including dust and soil. These exposures occur as lead emitted into the ambient air is distributed to other environmental media such as water or land. The emissions can contribute to human exposures via indoor and outdoor dusts, outdoor soil, and food and drinking water, as well as inhalation of air (73 FR 66971). Multiple studies of the relationship between lead exposure and blood lead in children have shown young children's blood lead levels to reflect lead exposures from ambient air levels, as well as exposure due to lead in surface dust (EPA, 2014). Young children are especially susceptible to the effects of environmental lead because their bodies accumulate lead more readily than do those of adults, and because they are more vulnerable to certain biological effects of lead including learning disabilities, behavioral problems, and deficits in IQ.

AFFECTED SOURCES

Based on lead emissions inventories reported to the SCAQMD AER program (i.e., for years 2010 through 2013) and information available from the SCAQMD permitting database, there are approximately 13 metal melting facilities expected to be subject to PR 1420.2. Cumulatively these facilities melt more than 50,000 tons of lead annually through a combination of metal melting furnaces.

PROPOSED RULE 1420.2

The purpose of PR 1420.2 is to protect public health by reducing public exposure to lead emissions from metal melting facilities and to help ensure attainment and maintenance of the NAAQS for lead. PR 1420.2 will initially require metal melting facilities to comply with an ambient air lead concentration limit of 0.150 µg/m^3, averaged over any consecutive 30 days. Beginning ~~January~~ April 1, 2018, the ambient air lead concentration limit will be lowered to 0.100 µg/m^3, averaged over any consecutive 30 days. In addition to the ambient air lead concentration limit, PR 1420.2 contains requirements for lead point source emissions controls and standards, ambient air monitoring, total enclosures of areas where metal melting operations and associated operations are conducted, housekeeping and maintenance activity measures, periodic source testing, and reporting and recordkeeping requirements. Metal melting facilities that exceed the ambient air

concentration limits will be subject to additional requirements that are necessary to attain the applicable ambient air concentration limits of the proposed rule, including enhanced emission controls, total enclosures with negative air, housekeeping measures, and Compliance Plan submittal and implementation.

JUSTIFICATION FOR LOWERING AMBIENT AIR TO 0.100 µg/m^3

An ambient lead concentration limit of 0.100 µg/m^3 will be more health protective for communities that live around metal melting facilities, particularly younger children. There is substantial scientific justification provided through EPA's development of the 2008 Lead NAAQS and the 2015 Proposed Rule to Retain the Current Lead NAAQS evidence-based framework to support the policy decision to establish an ambient limit of 0.100 µg/m^3. The detailed discussion in Chapter 1, Section "Justification for Lowering Ambient Air to 0.100 µg/m^3" provides a description of EPA's evidence-based framework to establish the 2008 Lead NAAQS of 0.15 µg/m^3 and key policy judgments made regarding the level of health protection and margin of safety for the national standard. As a regional air agency, developing a source-specific-rule for metal melting facilities, the SCAQMD staff is recommending policy decisions that are more health protective for communities, particularly young children, that are affected by metal melting facilities regulated under Proposed Rule 1420.2. The discussion in Chapter 1 substantiates the policy decision to establish an ambient lead concentration limit of 0.100 µg/m^3, with some key points of that discussion highlighted below:

- No safe blood level of lead in children has been identified (CDC, 2012a)
- The developing nervous system in children is among the sensitive-- if not the most sensitive-endpoints. (73 FR 66976)
- Lead affects children's IQs at exposure levels appreciably lower than recognized. (CHPAC, 2105)
- Pre-school children or children under five years old are the most vulnerable to exposure and adverse health effects, and thereby represent the greatest at-risk population. (EPA, 2013)
- Younger children absorb substantially more lead than adults, especially children below 2 years of age. (OEHHA, 2009)
- No study has determined a level of lead in blood that does not impair child cognition. Further, the effects are long-lasting. Damage to a child's developing brain from lead is not reversible. (AAP, 2008)
- CASAC commented that ''a population loss of 1–2 IQ points is highly significant from a public health perspective.'' (EPA, 2008)
- Air-to-blood ratio of 1:10 is also supported by EPA's evidence based air-related IQ loss data and is even more health protective (CHPAC, 2008b)

Based on all the foregoing, the evidence supports the District's policy decision to establish a final lead limit in ambient air at 0.100 µg/m^3.

SOCIOECONOMIC ASSESSMENT

A socioeconomic analysis has been conducted and was released for public review and comment on August 5, 2015, with an update version released on September 2, 2015. The main requirements of the proposed rule that have cost impacts for affected facilities would include ambient air monitoring and sampling, point source emissions controls, total enclosures, housekeeping measures, maintenance activity requirements, source testing, recordkeeping, and reporting. The total annual compliance costs of PR1420.2 are estimated to range from $6.5 to $7.2 million, depending on the real interest rate assumed (1%-4%). Gerdau, a steel mini mill, would bear the largest share of compliance costs (71% or approximately $5.1 million annually based on 4% real interest) due to installing a complete baghouse replacement to achieve ambient lead levels compliant with PR 1420.2. Although Gerdau's meltshop/baghouse project received air permits from the SCAQMD on July 24, 2014, prior to the 1420.2 rulemaking process, the socioeconomic analysis nonetheless analyzed the cost of the meltshop/baghouse given that it will help Gerdau achieve ambient lead levels compliant with Rule 1420.2 and implementation of a Risk Reduction Plan required under Rule 1402.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pursuant to the California Environmental Quality Act (CEQA) Guidelines 15252 and SCAQMD Rule 110, the SCAQMD staff evaluated the proposed project and prepared a Draft Environmental Assessment (EA), which was circulated for a 32-day public review and comment period from July 17, 2015 to August 18, 2015. Subsequently, a Revised Draft EA, which included formatting changes to Appendix B, was released for a 30-day public review and comment period from July 21, 2015 to August 19, 2015. The SCAQMD received one comment letter regarding the environmental analysis in the Draft EA during the public comment period and has responded to those comments in the Final EA.

The public workshop meeting also solicited public input on any potential environmental impacts from the proposed project. Comments received at the public workshops on any environmental impacts were considered when developing the final CEQA document for this rulemaking. No significant adverse environmental impact was identified.~~Pursuant to the California Environmental Quality Act (CEQA) and SCAQMD Rule 110, the SCAQMD staff evaluated the proposed project and prepared a Draft Environmental Assessment (EA), which was circulated for public review from July 17, 2015 to August 18, 2015. On July 21, 2015, a Revised Draft EA was circulated for public review and the original comment period was extended to August 19, 2015. The public workshop meeting also solicited public input to identify any potential environmental impacts from the proposed project. Comments received at the public workshops on all environmental impacts were considered when developing the final CEQA document for this rulemaking.~~

CHAPTER 1: BACKGROUND

INTRODUCTION

The purpose of PR 1420.2 is to protect public health by reducing public exposure to lead emissions from metal melting facilities and to help ensure attainment and maintenance of the NAAQS for lead. As required by the federal Clean Air Act, the U.S. EPA periodically reviews the standard to determine if changes are warranted. Based on review of health studies, the U.S. EPA has determined that the standard of 1.5 $\mu g/m^3$ set in 1978 was not sufficient to protect public health and welfare with an adequate margin of safety. The standard has been lowered to 0.15 $\mu g/m^3$ based on studies that demonstrate health effects at much lower levels of lead exposure than previously believed. The new standard provides increased protection for children and other at-risk populations against an array of health effects, most notably neurological effects in children, including neurocognitive and neurobehavioral effects.

On October 15, 2008, the EPA amended both the primary and secondary NAAQS for lead from a level of 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ averaged over a rolling 3-month period. EPA also adopted changes to monitoring and reporting requirements. On December 31, 2010, the EPA designated a portion of Los Angeles County as non-attainment for the 2008 NAAQS for lead based on monitored air quality data from 2007-2009 that indicated a violation of the NAAQS near a large lead-acid battery recycling facility. Even before this designation, SCAQMD Rule 1420.1 – Emission Standards for Lead from Large Lead-acid Battery Recycling Facilities was adopted on November 5, 2010 to control emissions of lead from large lead-acid battery recycling facilities in order to reduce lead emissions and help ensure attainment with the 2008 NAAQS for lead of 0.150 $\mu g/m^3$.

In May of 2014, the U.S. EPA released its "Policy Assessment for the Review of the Lead National Ambient Air Quality Standards," reaffirming the primary (health-based) and secondary (welfare-based) staff conclusions regarding whether to retain or revise the current standards. As a result, in January of 2015 the U.S. EPA proposed that the ambient air lead concentration standard of 0.15 $\mu g/m^3$ averaged over a rolling 3-month period remain unchanged. The 90-day comment period for this proposal ended on April 6, 2015 and the U.S. EPA has not yet issued a final rule.

Rule 1420.1 has proven effective for attainment demonstration with the lead NAAQS by the large lead-acid battery recycling industry. However, SCAQMD staff is concerned with lead emissions from the broader industry source category of metal melting. The 2012 Lead SIP identified amendment of SCAQMD Rule 1420 – Emissions Standards for Lead as the primary lead control measure. During the rule development process for PAR 1420, the SCAQMD staff conducted a comprehensive review of lead emissions data. The review took into consideration multiple data sources including emissions reports from the SCAQMD AER Program, U.S. EPA's Toxic Release Inventory (TRI) database, permitting data, compliance data, source test results garnered from the AB 2588 Air Toxics Program, and ambient air lead monitoring data.[1] Facilities were categorized based on high emissions, ambient air monitoring data, and similar process types. Based on this

[1] The supporting documentation for this evaluation includes the following sources: 2010-2013 SCAQMD AER Data, Permitting data for metal melting furnaces, 1420 Compliance Plans, Source tests from AB2588 program for affected facilities, and SCAQMD ambient air lead data for GERDAU and Trojan Battery. This information is available upon request (subject to the SCAQMD's Public Records Request Guidelines).

review, SCAQMD staff determined that facilities sharing the common process of metallurgical or metal melting activities, and categorized hereon as the metal melting industry, is a significant stationary source of lead emissions in the Basin. Further, a review of historical ambient air lead concentration data measured by the SCAQMD's air monitoring network has indicated that some metal melting facilities have the potential for elevated ambient concentrations of lead. During the review of available lead emissions data for years 2010 - 2012, SCAQMD staff also identified several petroleum refineries, a municipal trash incinerating facility, and a glass making facility with high reported emissions of lead. However, the majority of the lead emissions reported by these sources were emissions calculated using default lead emission factors from U.S. EPA's *Compilation of Emission Factors (AP-42)* for the combustion of fuels containing trace amounts of lead. Additionally, fugitive lead emissions reported by these facilities to the TRI database use conservative calculations such as a mass balance equation considering the amount of lead brought on-site minus the amount of lead in the final product, the amount released in wastewater, and the amount disposed as solid waste. Lastly, there was no available ambient air lead monitoring data for these facility types showing elevated ambient lead levels. These sources are currently subject to Rule 1420 and the lead emissions from these source categories will be further reviewed and addressed in a future amendment to Rule 1420.

Currently, Rule 1420 applies to metal melting facilities. However, since the SCAQMD Governing Board adopted Rule 1420 in 1992, an abundance of new and updated information including, but not limited to, lead emissions data, ambient air monitoring data and emissions control techniques has become available. Further, the lead NAAQS has been lowered tenfold from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ averaged over a rolling 3-month period. Although existing federal and state regulations also control lead emissions from this source category, additional requirements similar to those that have effectively reduced emissions from large lead-acid battery recyclers would more adequately protect public health. Rule 1420 currently imposes an ambient air lead concentration limit of 1.5 $\mu g/m^3$. Historical and current ambient air lead monitoring data from SCAQMD source-oriented monitors (see below under "2008 NAAQS Attainment Demonstration") show elevated concentrations of lead at some metal melting facilities. Additional control measures are necessary for the metal melting industry to ensure no violations of the current NAAQS of 0.15 $\mu g/m^3$. The 2010 Clean Communities Plan (CCP) specified that the SCAQMD staff would investigate other sources of lead emissions and identify control measures to address lead emissions from these identified stationary sources. For example, the CCP included control measure Stationary-01 (Lead Emissions), the objective of which is to reduce lead exposure to the public from lead related activities and comply with the 2008 adopted NAAQS for lead. Through the preliminary rule development efforts for PAR 1420, SCAQMD staff recognized the difficulty in developing lead control requirements for this source category within a general lead rule that controls multiple source categories (Rule 1420). As a result, staff is proposing a similar policy approach (i.e., source specific requirements) for metal melting facilities under PR 1420.2. Specifically, the objective of PR 1420.2 is to protect public health by minimizing public exposure to lead emissions and preventing exceedances of the lead NAAQS in the Basin.

PUBLIC PROCESS

PR 1420.2 is being developed through a public process. A working group was formed to provide the public and stakeholders an opportunity to discuss important details about the proposed rule and

provide the SCAQMD staff with important input during the rule development process. The working group and interested parties are comprised of a variety of stakeholders including representatives from industry, consultants, environmental groups, community groups, and public agency representatives. The SCAQMD staff has held six (6) working group meetings. To date, the working group has convened on December 17, 2014, January 20, 2015, February 19, 2015, April 23, 2015, May 13, 2015, and June 12, 2015. A Public Workshop was held on May 14, 2015 to present the proposed rule and receive public comment. Responses to comments received can be found in Appendix A of this document.

LEAD

Lead is a naturally occurring metal found in the earth's crust. The metal is grayish in color and is soft, malleable, and ductile. It is also a limited electrical conductor and highly impervious to corrosion. This unique combination of physical properties has made it desirable for many uses in industries such as construction, piping, roofing, and lead-acid storage battery manufacturing. As a result, some business operations solely recover lead from lead-bearing materials through secondary smelting operations for use in the abovementioned industries. For some industries, lead is undesirable and considered an impurity to its final product. Lead for these industries results from the melting of recycled scrap metal that either contain trace amounts of lead, or inadvertently enter the process even after inspection to identify scrap metal that may contain lead.

Lead can be released into the ambient air in the form of particles that fall out onto the ground or other surfaces by rain or gravitational settling. Lead is strongly adsorbed in the soil and is generally retained in the upper layers where it does not leach appreciably into the subsoil and groundwater. Lead compounds can be converted to other lead compounds in the environment; however, lead is an element and cannot be destroyed. Because lead does not degrade, previous uses of lead and its releases into the ambient air result in high concentrations of lead that persist in the environment.

Lead is a persistent pollutant, and once deposited out of the air, lead can subsequently be resuspended in the ambient air. In addition, because of the persistence of lead, lead emissions contribute to, in sufficient concentrations across multiple pathways, cause impacts for some years into the future (73 FR 66971). This cycling of lead in the environment means people can be exposed to lead that was emitted just yesterday or emitted years ago (EPA, 2014). Furthermore, lead emitted into the air is predominantly in particulate form, which can be transported long or short distances depending on particle size (73 FR 66971).

Thus, lead can affect communities surrounding lead melting facilities as well as those not immediately adjacent to these facilities. Reducing the ambient lead concentration limit to 0.100 $\mu g/m^3$ will minimize lead emissions from lead melting facilities from directly inhaled lead particulates, and further reducing the accumulation of surface dust and lead in the soil that can over time re-enter the air through re-suspension.

HEALTH EFFECTS OF LEAD

Lead is classified as a "criteria pollutant" under the federal Clean Air Act. The OEHHA also identifies it as a carcinogenic TAC. Chronic health effects include problems such as nervous and

reproductive system disorders, neurological and respiratory damage, cognitive and behavioral changes, and hypertension. Exposure to lead can also potentially increase the risk of contracting cancer. Lead is a multipathway toxic air contaminant. It can enter the body through inhalation or ingestion. Exposure to lead emitted into the ambient air (air-related lead) can occur directly by inhalation, or indirectly by ingestion of lead-contaminated food, water or other materials including dust and soil. These exposures occur as lead emitted into the ambient air is distributed to other environmental media such as water or land. The emissions can contribute to human exposures via indoor and outdoor dusts, outdoor soil, and food and drinking water, as well as inhalation of air (73 FR 66971). Multiple studies of the relationship between lead exposure and blood lead in children have shown young children's blood lead levels to reflect lead exposures from ambient air levels, as well as exposure due to lead in surface dust (EPA, 2014). Young children are especially susceptible to the effects of environmental lead because their bodies accumulate lead more readily than do those of adults, and because they are more vulnerable to certain biological effects of lead including learning disabilities, behavioral problems, and deficits in IQ. The Center for Disease Control and Prevention has summarized these effects in Figure 1-1 below:

Figure 1-1: Health Effects of Lead

JUSTIFICATION FOR LOWERING AMBIENT AIR TO 0.100 µg/m^3

During the rulemaking process, some industry representatives commented that the SCAQMD staff must provide a scientific justification for a 0.100 µg/m^3 ambient lead limit. The following provides the justification for the proposed ambient lead limit in PR 1420.2. As discussed below, the SCAQMD staff relied on the EPA's 2008 review of the Lead NAAQS and the EPA's 2015 Proposed Rule to Retain the Current Lead NAAQS as the basis for establishing the 0.100 µg/m^3 ambient lead limit. An ambient concentration limit of 0.100 µg/m^3 is supported by scientific information presented during the development of the 2008 Lead NAAQS and the 2015 Proposed Rule to Retain the Current Lead NAAQS. The following discusses the general approach and key assumptions that were the basis of EPA's evaluation of the Lead NAAQS. As explained in more detail below, in proposing an ambient concentration limit of 0.100 µg/m^3, the SCAQMD made policy decisions that are more protective of human health than the choices made by EPA in proposing to retain an ambient concentration limit of 0.15 µg/m^3. In particular, the SCAQMD proposes a more prophylactic approach for protecting the health of children, particularly those under five years of age, that live in communities near lead metal facilities in the Basin. We also

note that, while EPA has proposed retaining its existing standard of 0.150 μg/m^3, it has not finalized whether to lower the standard or not. (EPA, 2015)

Establishing the 2008 Lead NAAQS and the 2015 Proposed Rule to Retain the Current Lead NAAQS

The 2008 Lead NAAQS and 2015 Proposed Rule to Retain the Current Lead NAAQS reflect an evidenced-based framework that took into consideration the much-expanded evidence on the neurocognitive health effects of lead in children. EPA focused on the developmental neurotoxicity in children, with IQ decrement as the risk metric. After examining the wide variety of health endpoints associated with lead exposures, EPA concluded that "there is general consensus that the developing nervous system in young children is the most sensitive and that neurobehavioral effects (specifically neurocognitive deficits), including IQ decrements, appear to occur at lower blood levels than previously believed (i.e., at levels <10 μg/dL). (EPA, 2008)

In establishing the lead NAAQS, the EPA used an evidence-based framework, referred to as the air-related IQ loss framework, which shifts focus from identifying an appropriate target population mean blood lead level and instead focuses on the magnitude of effects of air-related lead on neurocognitive functions such as IQ loss (73 FR 66971). The two primary inputs to EPA's evidence-based, air-related IQ loss framework are air-to blood ratios and concentration-response (C-R) functions for the relationship between blood lead and IQ response in young children. The framework derives estimates of mean air-related IQ loss through multiplication of the following factors:

- Ambient lead standard level (μg/m^3),
- Air-to-blood ratio in terms of μg/dL blood lead per μg/m^3 air concentration, and
- Slope for the concentration-response (C-R) function in terms of points IQ decrement per μg/dL blood lead.

Application of the framework also entailed consideration of an appropriate level of protection from air-related IQ loss to be used in conjunction with the framework, such as an average of level of IQ loss and an adequate margin of safety. The framework provides for estimation of a mean air-related IQ decrement for young children in the high end of the national distribution of air-related exposures. It does so by focusing on children exposed to air-related lead in those areas with elevated air lead concentrations equal to specific potential standard levels. (EPA, 2014).

Air-to-Blood Level Ratio

The air-to-blood level ratio represents the relationship between the lead concentration in the air measured in μg/m^3 and the associated blood lead level measured in μg/deciliter (μg/dL). A ratio of 1:5 means that 1 μg/m^3 increase of lead in the air will result in a blood lead level of 5 μg/dL for a given population. In the 2008 Lead NAAQS and 2015 Proposed Rule to Retain the Current Lead NAAQS, EPA concluded that for each μg/m^3 increase of lead in air, children's blood lead levels increase by 5–10 μg/dL, i.e., the air-to-blood ratio ranged from 1:5 to 1:10. EPA selected an air-to-blood ratio of 1:7 "as a generally central value within this range." (73 FR 67002-67004).

Concentration-Response Functions

In establishing the 2008 Lead NAAQS and the 2015 Proposed Rule to Retain the Current Lead NAAQS, EPA considered the evidence regarding the quantitative relationships between IQ loss

and blood lead levels. EPA focused on those concentration-response functions that are based on blood lead levels which most closely reflect today's population of children in the U.S., although recognizing that the evidence does not include analyses involving mean blood lead levels as low as the mean blood lead level for today's children. EPA identified four analyses that have a mean blood lead level closest to today's mean for U.S. children; these yielded four slopes ranging from -1.56 to -2.94, with a median of -1.75 IQ points per μg/dL. In addition, the Administrator determined that it is appropriate to give more weight to the central estimate for this set of functions, which is the median of the set of functions, and not to rely on any one function. (73 FR 67003-67004)

IQ Decrement

EPA also concluded that the concentration-response relationship between blood level and IQ loss is nonlinear, with greater incremental IQ loss occurring at lower blood lead levels. Accordingly since studies show that the average lead blood levels for children in the United States has decreased over the years, and that even at these lower levels there are significant neurocognitive impacts such as IQ loss, the analyses of children with blood lead levels closest to those of children in the United States today were most relevant. In selecting the lead NAAQS, the EPA Administrator concluded that, "an air-related IQ loss of 2 points should be used in conjunction with the evidence-based framework in selecting an appropriate level for the standard." (73 FR 67002 - 67005)

Establishing the 2008 Lead NAAQS

Table 1-1 below summarizes the estimates of air-related mean IQ loss for children exposed to various ambient air lead concentrations and was used in establishing the 2008 Lead NAAQS. As previously discussed, EPA's evidence-based air-related IQ loss framework found that the air-to-blood ratio ranged from 1:10 to 1:5 and the EPA Administrator selected a 1:7 air-to-blood ratio as a generally central value within this range. Based on an air-to-blood ratio of 1:7 and use of a mean air-related IQ loss of no more than 2 points, EPA selected an ambient lead concentration limit of 0.15 $\mu g/m^3$ (see highlighted box in Table 1-1). At this level, children's IQ levels would be decreased by 1.8 points, assuming a 1:7 air to blood ratio. At an ambient lead concentration of 0.10 $\mu g/m^3$, children's IQ level would be decreased by 1.2 points using the same 1:7 air to blood level ratio assumption.

Table 1-1
Estimates of Air-Related Mean IQ Loss for the Subpopulation of Children Exposed at the Level of the Standard - Highlighting an Ambient Lead Concentration Limit of 0.150 µg/m^3 (Source: 73 FR 67005 and 67006)

Potential level for standard (µg/m^3)	Air-related mean IQ loss (points) for the subpopulation of children exposed at level of the standard		
	IQ loss estimate is based on median slope of 4 C–R functions with blood Pb levels closer to those of today's U.S. children (range shown for estimates based on lowest and highest of 4 slopes)		
	Air-to-blood ratio		
	1:10	1:7	1:5
0.50	>5*	>5*	4.4 (3.9–7.4)
0.40		4.9 (4.4–8.2)	3.5 (3.1–5.9)
0.30	5.3 (4.7–8.8)	3.7 (3.3–6.2)	2.6 (2.3–4.4)
0.25	4.4 (3.9–7.4)	3.1 (2.7–5.1)	2.2 (2.0–3.7)
0.20	3.5 (3.1–5.9)	2.5 (2.2–4.1)	1.8 (1.6–2.9)
0.15	2.6 (2.3–4.4)	1.8 (1.6–3.1)	1.3 (1.2–2.2)
0.10	1.8 (1.6–2.9)	1.2 (1.1–2.1)	0.9 (0.8–1.5)
0.05	0.9 (0.8–1.5)	0.6 (0.5–1.0)	0.4 (0.4–0.7)
0.02	0.4 (0.3–0.6)	0.2 (0.2–0.4)	0.2 (0.2–0.3)

*For these combinations of standard levels and air-to-blood ratios, the appropriateness of the C–R function applied in this table becomes increasingly uncertain such that no greater precision than ">5" for the IQ loss estimate is warranted.

At a level of 0.15 µg/m^3, the Administrator recognized that use of a 1:10 ratio produces an estimate greater than 2 IQ points and use of a 1:5 ratio produces a lower IQ loss estimate. Given the uncertainties and limitations in the air-related IQ loss framework, the Administrator decided to place primary weight on the results from this central estimate (1:7 ratio) rather than estimates derived using air-to-blood ratios either higher or lower than this ratio. (73 FR 67005).

The 2014 Policy Assessment concluded that, "The limited amount of new information available in this review has not appreciably altered the scientific conclusions reached in the last review regarding relationships between Pb in ambient air and Pb in children's blood or with regard to the range of ratios." As a result, the EPA Administrator is recommending to maintain the central estimate of 1:7 rather than estimates derived using higher air-to-blood ratios.

Selecting a 0.100 µg/m^3 Ambient Lead Limit for PR 1420.2

PR 1420.2 requires an ambient lead limit of 0.100 µg/m^3 effective ~~January~~ April 1, 2018. This is a policy decision that is supported by the same evidence-based framework used to establish the 2008 Lead NAAQS and the 2015 Proposed Rule to Retain the Current Lead NAAQS.

In developing the 2008 Lead NAAQS, EPA recognized that policy judgments must be made regarding the level of health protection and margin of safety. The available evidence supports a range of choices in setting that level. In reviewing all of the scientific information through the development of the 2008 Lead NAAQS and the 2015 Proposed Rule to Retain the Current Lead NAAQS, the EPA Administrator made a series of policy decisions. For example, the Administrator used a "central value" between 1:10 and 1:15 to represent the air-to-blood lead ratio and a decrement of 2 IQ points, all within the evidence-based framework for establishing a "national" standard for ambient lead. The 2014 Policy Assessment for Review of the Lead NAAQS maintained the same approach and range of ratios stating that, "The limited amount of new information available in this review has not appreciably altered the scientific conclusions reached in the last review regarding relationships between lead in ambient air and lead in children's blood or with regard to the range of ratios. The currently available evidence continues to indicate

ratios relevant to the population of young children in U.S. today, reflecting multiple air-related pathways in addition to inhalation, to be generally consistent with the approximate range of 1:5 to 1:10 given particular attention in the 2008 NAAQS decision, including the "generally central estimate" of 1:7." In doing so, the EPA Administrator recognized that:

> "…there are currently no commonly accepted guidelines or criteria within the public health community that would provide a clear basis for reaching a judgment as to the appropriate degree of public health protection that should be afforded to protect against risk of neurocognitive effects in sensitive populations, such as IQ loss in children." (73 FR 67004).

EPA further acknowledged that "different public health policy judgments could lead to different conclusions regarding the extent to which the current standard provides projection of public health with an adequate margin of safety." (EPA, 2014)

The NAAQS is a national standard for lead which applies uniformly to all parts of the United States. In contrast, PR1420.2 is a source-specific rule that regulates specific lead melting facilities. By establishing an ambient lead limit of 0.100 $\mu g/m^3$, and implementing other requirements in PR1420.2, the rule is designed to minimize the release of point source and fugitive lead emissions from such lead melting facilities and thereby to minimize the accumulation of lead surface and soil dust, both of which are meant to be more health protective. The proposed level considers that communities with children live around lead melting facilities, and it provides additional protection for the population most at-risk from lead emissions: pre-school children under the age of five. EPA has specifically recognized the significant health risks posed in this instance: "…situations of elevated exposure, such as residing near sources of ambient lead can also contribute to increased blood lead levels and increased risk of associated health effects from air-related lead." (73 FR 66976)

As discussed below, the EPA Administrator made a series of policy decisions based on evidenced-based air-related IQ loss framework. Two policy decisions that the SCAQMD staff has focused on are the air-to-blood lead ratio and the IQ decrement, particularly as these issues relate to PR1420.2 as a source-specific rule. In addition, as discussed below, the SCAQMD staff further considered the vulnerability of children to lead. SCAQMD staff is recommending a more preventative approach with an ambient lead limit of 0.100 $\mu g/m^3$ to provide greater health protection for communities, and more specifically for young children, that live near lead melting facilities.

1:10 Air-to-Blood Lead Ratio

An air-to-blood lead ratio of 1:10 would support a more protective standard for children (CHPAC, 2008b). As discussed above, EPA's evidence-based air-related IQ loss framework found that the air-to-blood lead ratio ranges from 1:10 to 1:5, and the EPA Administrator selected a 1:7 air-to-blood ratio as a "generally central value within this range." (73 FR 67005 and 67006). As we now explain, the ambient lead concentration limit of 0.100 $\mu g/m^3$ under PR 1420.2 is supported by EPA's evidence-based air-related IQ loss framework, assuming EPA's judgment of air-related IQ loss of 2 points and an air-to-blood ratio of 1:10. The SCAQMD's policy decision to use an

air-to-blood ratio of 1:10 is also supported by EPA's evidence based air-related IQ loss data and is even more health protective, particularly for young children living near lead melting facilities.

An air-to-blood ratio of 1:10 is supported by comments made by scientists, physicians, and researchers. During the development of the 2008 Lead NAAQS, EPA received scientific recommendations from the Clean Air Scientific Advisory Committee (CASAC), a federal advisory committee independently chartered to provide extramural scientific information and advice to the EPA Administrator and other officials of the EPA[2]. The CASAC recommended that EPA consider an air-to-blood ratio ''closer to 1:9 to 1:10 as being most reflective of current conditions.'' (73 FR 67001). The higher attained blood lead concentrations that are modeled with a ratio of 1:10 would support a more protective standard for children. (CHPAC, 2008b). Similar to the advice from CASAC, many commenters, including EPA's Children's Health Protection Advisory Committee, the Northeast States For Coordinated Air Use Management (NESCAUM) and the Michigan Department of Environmental Quality recommended that EPA consider ratios higher than the upper end of the range used in the proposal (1:7), such as values on the order of 1:9 or 1:10 or somewhat higher. They also rejected the lower ratios used in the proposal as being inappropriate for application to today's children. Commenters supporting such higher ratios cited ratios resulting from a study noted by CASAC (Schwartz and Pitcher, 1989), as well as others by Hayes et al. (1994) and Brunekreef et al. (1983) They also cited air-to- blood ratio estimates from the exposure/ risk assessment (73 FR 67001). The exposure/risk assessment evaluated the quantitative human exposure and health risk assessments in order to inform EPA during the 2008 review of the NAAQS for lead.

As shown in Table 1-2, when EPA's same evidence-based framework is employed using an air-to-blood ratio of 1:10, with a loss of less than 2 IQ points, the corresponding ambient limit of 0.100 $\mu g/m^3$ is necessary to protect public health.

[2] The CASAC for the 2008 NAAQS is made up of the following members: Rogene Henderson, Ph.D., Chair, Clean Air Scientific Advisory Committee, Scientist Emeritus, Lovelace Respiratory Research Institute; Donna Kenski, Ph.D., Director of Data Analysis, Lake Michigan Air Directors Consortium, (LADCO); Ellis Cowling, Ph.D., University Distinguished Professor At-Large, Emeritus, North Carolina State University; Armistead (Ted) Russell, Ph.D., Gerogia Power, Distinguished Professor of Environmental Engineering, Georgia Institute of Technology; James D. Crapo, M.D., Professor, Department of Medicine, National Jewish Medical and Research Center; Jonathan M. Samet, M.D., Professor and Chairman, Department of Epidemiology, Bloomberg School of Public Health, John Hopkins University; Douglas Crawford-Brown, Ph.D., Director, Institute for Environment; and Professor, Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill

Table 1-2
Estimates of Air-Related Mean IQ Loss for the Subpopulation of Children Exposed at the Level of the Standard - Highlighting an Ambient Lead Concentration Limit of 0.100 µg/m^3
(Source: 73 FR 67005 and 67006)

Potential level for standard (µg/m³)	Air-related mean IQ loss (points) for the subpopulation of children exposed at level of the standard		
	IQ loss estimate is based on median slope of 4 C–R functions with blood Pb levels closer to those of today's U.S. children (range shown for estimates based on lowest and highest of 4 slopes)		
	Air-to-blood ratio		
	1:10	1:7	1:5
0.50	>5*	>5*	4.4 (3.9–7.4)
0.40		4.9 (4.4–8.2)	3.5 (3.1–5.9)
0.30	5.3 (4.7–8.8)	3.7 (3.3–6.2)	2.6 (2.3–4.4)
0.25	4.4 (3.9–7.4)	3.1 (2.7–5.1)	2.2 (2.0–3.7)
0.20	3.5 (3.1–5.9)	2.5 (2.2–4.1)	1.8 (1.6–2.9)
0.15	2.6 (2.3–4.4)	1.8 (1.6–3.1)	1.3 (1.2–2.2)
0.10	1.8 (1.6–2.9)	1.2 (1.1–2.1)	0.9 (0.8–1.5)
0.05	0.9 (0.8–1.5)	0.6 (0.5–1.0)	0.4 (0.4–0.7)
0.02	0.4 (0.3–0.6)	0.2 (0.2–0.4)	0.2 (0.2–0.3)

*For these combinations of standard levels and air-to-blood ratios, the appropriateness of the C–R function applied in this table becomes increasingly uncertain such that no greater precision than ''>5'' for the IQ loss estimate is warranted.

Population Significance of Loss of IQ Points

Communities that are near metal melting facilities can suffer a significant loss of IQ points. In its July 2008 advice to EPA, CASAC commented that ''a population loss of 1–2 IQ points is highly significant from a public health perspective.'' CASAC further emphasized its view that an IQ loss of 1–2 points should be ''prevented in all but a small percentile of the population—and certainly not accepted as a reasonable change in mean IQ scores across the entire population.'' Recommendations from several commenters, including the American Academy of Pediatrics (AAP) and state health agencies commenting on this issue, generally agreed with the view emphasized by CASAC that air-related IQ loss of a specific magnitude, such as on the order of 1 or 2 points, should be prevented in a very high percentage (e.g., 99.5%) of the population. (73 FR 67000).

The issue of individual-level versus population-level risk also pertains to the implications of the magnitude of decrease in cognitive function or increase in behavioral problems per unit increase in blood lead level. Although fractional changes in Full Scale Intelligence Quotient (FSIQ), memory, or attention may not be consequential for an individual, they may be consequential on a population level. At that level, small lead-associated decreases in cognitive function could increase the number of individuals at additional risk of educational, vocational, and social failure. It could also decrease the number of individuals with opportunities for academic and later-life success. (EPA, 2013) Small shifts in the population mean IQ can be highly significant from a public health perspective. Such shifts could translate into a larger proportion of the population functioning at the low end of the IQ distribution, as well as a smaller proportion of the population functioning at the high end of the distribution. (EPA, 2013). Additionally, small lead-associated increases in the population mean blood pressure could result in an increase in the proportion of the population with hypertension that is significant from a public health perspective. (EPA, 2013)

Ambient Limit of 0.100 µg/m^3 is More Health Protective for Children

Establishing an ambient limit of 0.100 µg/m^3 will be more protective of children that live around facilities subject to PR 1420.2, particularly younger children. Lead poisoning is a preventable disease. No safe blood level of lead in children has been identified. (CDC, 2012a). Preventing lead exposure rather than responding after the exposure has taken place is consistent with recommendations from the Centers for Disease Control and Prevention's (CDC) Advisory Committee for Childhood Lead Poisoning Prevention, which recommends that the CDC as well as other local, state, and federal agencies "shift priorities to primary prevention." (CDC, 2012b).

Neurocognitive health effects in young children are recognized as the most sensitive endpoint associated with blood lead concentrations. Evidence continues to indicate that neurocognitive effects in young children may not be reversible and may have effects that persist into adulthood. (EPA, 2014). In addition, in a letter to EPA in 2008 the Academy of Pediatrics stated that, "No study has determined a level of lead in blood that does not impair child cognition. Further, the effects are long-lasting. Damage to a child's developing brain from lead is not reversible." (AAP, 2008). Similarly, EPA states in its 2013 Integrated Science Assessment for Lead that, "Evidence suggests that some lead-related cognitive effects may be irreversible and that the neurodevelopmental effects of lead exposure may persist into adulthood." (EPA, 2013).

Among the wide variety of health endpoints associated with lead exposures, there is general consensus that the developing nervous system in children is among the sensitive-- if not the most sensitive-endpoints. (73 FR 66976). Multiple epidemiologic studies conducted in diverse populations of children consistently demonstrate the harmful effects of lead exposure on cognitive function. The effects can be measured by IQ decrements, decreased academic performance and poorer performance on tests of executive function. (EPA, 2013). Lead-associated decline of several points might be sufficient to drop that individual into the range associated with increased risk of educational, vocational, and social failure. (EPA 2008). In addition, a study found that in a group of 7-year old children exposed to lead before the age of 3 years old, IQ continued to fall, even after the blood lead level had declined. (AAP, 2008; Chen et al, 2005).

Compounding the effects of lead on developing children are studies indicating that children are more vulnerable than adults when exposed to lead. Air-to-blood ratios are generally higher for children than those for adults, and they are higher for young children than older children. (EPA, 2014). Pre-school children or children under five years old are the most vulnerable to exposure and adverse health effects, and thereby represent the greatest at-risk population. Higher blood lead levels in pre-school aged children compared to the rest of childhood are related to behaviors that increase environmental exposure, such as hand-to-mouth activity. Children may have increased exposure to lead compared with adults because of children's behaviors and activities (including increased hand-to-mouth contact, crawling, and poor hand-washing), differences in diets, and biokinetic factors (absorption, distribution, metabolism, and excretion). (EPA, 2013).

In addition, younger children absorb substantially more lead than adults, especially children below 2 years of age. These children have a faster metabolic rate, resulting in a proportionately greater daily intake of lead through food. They also have a less developed blood-brain barrier and therefore greater neurological sensitivity; a faster resting inhalation rate; and a rapidly developing nervous system. (OEHHA, 2009). As previously referenced, multiple studies of the relationship

between lead exposure and blood lead in children have shown young children's blood lead levels reflect lead exposures from ambient air levels as well as exposure due to lead in surface dust. (EPA, 2014).

Blood lead levels are extensively used as an index or biomarker of exposure by national and international health agencies, as well as in epidemiological and toxicological studies of lead health effects and dose-response relationships. Blood lead concentrations, even those below 10 µg/dL, are inversely associated with children's IQ scores at three and five years of age, and associated declines in IQ are greater at these concentrations than at higher concentrations. (Canfield, et al, 2003). Based on a growing body of studies concluding that blood lead levels <10 µg/dL harm children, the Centers for Disease Control and Prevention (CDC) Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) recommends a reference level of 5 µg/dL to identify children with blood lead levels that are much higher than most children's levels. This level is based on the 97.5th percentile of the National Health and Nutrition Examination Survey (NHANES)'s blood lead distribution in children. This recommendation is grounded on the weight of evidence that includes studies with a large number and diverse group of children with low blood lead levels and associated IQ deficits. Effects at blood lead levels < 10 µg/dL are also reported for other behavioral domains, particularly attention-related behaviors and poorer academic achievement. Furthermore, new findings suggest that the adverse health effects of blood lead levels at less than 10 µg/dL in children extend beyond cognitive function to include cardiovascular, immunological, and endocrine effects. (CDC, 2012a).

The SCAQMD staff believes that the CDC's action to establish a reference level of 5 µg/dL, in lieu of the previous "level of concern" of 10 µg/dL, further substantiates the policy decision to establish an ambient lead concentration limit of 0.100 µg/m^3. EPA's 2014 Policy Assessment states that, "The CDC decision, while emphasizing the critical importance of primary prevention of lead exposure, provides no new guidelines or criteria with regard to the significance of specific IQ decrements…" (EPA, 2014). However, the Academy of Pediatrics cautioned against focusing solely on IQ loss or gain stating, "There are ramifications of lead exposure on other endpoints that have societal and individual implications of great importance." In addition, CASAC member Dr. Susan Korrick, stated that, "the discussion of health policy judgments needs to be carefully considered in light of the fundamental and far reaching public health value of childhood cognitive and neurobehaviorial health." (CASAC, 2013).

EPA's Children's Health Protection Advisory Committee[3] (CHPAC) is a body of external researchers, academicians, health care providers, environmentalists, state and tribal government employees, and members of the public who advise EPA on regulations, research, and communications related to children's health. CHPAC stated in a letter to USEPA Administrator McCarthy that "lead affects children's IQs at exposure levels appreciably lower than recognized…" (CHPAC, 2015). In addition, in a letter to the Administrator on June 16, 2008 regarding the Proposed Rulemaking for the National Ambient Air Quality Standards for Lead, CHPAC stated there is clear scientific evidence to support an ambient lead concentration of 0.100

[3] The legal authority for CHPAC is the Federal Advisory Committee Act (FACA), 5 USC App 2. CHPAC acts in the public interest and supports EPA in performing its duties and responsibilities under Executive Order 13045 of April 21, 1997 (62 Fed Reg 19885; April 23, 1997). CHPAC provides advice on topics such as air and water pollution regulations, chemical safety programs, risk assessment policies, and research, which reflect the wide ranging environmental issues which affect the health of children.

μg/m^3. The letter specifically referenced the special relevance of such a standard to children because there is a steeper dose-response curve for children's neurological effects at lower levels of exposure. This is due to the fact that a higher ratio of lead air-to-blood lead ratios has been observed in children at lower air lead concentrations. (CHPAC, 2008b).

Summary Conclusion

An ambient lead concentration limit of 0.100 μg/m3 will be more health protective for communities that live around metal melting facilities, particularly younger children. There is substantial scientific justification provided through EPA's development of the 2008 Lead NAAQS and the 2015 Proposed Rule to Retain the Current Lead NAAQS evidence-based framework to support the policy decision to establish an ambient limit of 0.100 μg/m^3. The above discussion provides a description of EPA's evidence-based framework to establish the 2008 Lead NAAQS of 0.15 μg/m^3 and key policy judgments made regarding the level of health protection and margin of safety for the national standard. As previously stated, there are currently no commonly accepted guidelines or criteria within the public health community that would provide a clear basis for reaching a judgment as to the appropriate degree of public health protection that should be afforded to protect against risk of neurocognitive effects in sensitive populations, such as IQ loss in children." (73 FR 67004). As a regional air agency, developing a source-specific-rule for metal melting facilities, the SCAQMD staff is recommending policy decisions that are more health protective for communities, particularly young children, that are affected by lead emissions from metal melting facilities regulated under Proposed Rule 1420.2. The above discussion substantiates the policy decision to establish an ambient lead concentration limit of 0.100 μg/m^3, with some key points of the above discussion highlighted below:

- No safe blood level of lead in children has been identified (CDC, 2012a)
- The developing nervous system in children is among the sensitive-- if not the most sensitive-endpoints. (73 FR 66976)
- Lead affects children's IQs at exposure levels appreciably lower than recognized. (CHPAC, 2105)
- Pre-school children or children under five years old are the most vulnerable to exposure and adverse health effects, and thereby represent the greatest at-risk population. (EPA, 2013)
- Younger children absorb substantially more lead than adults, especially children below 2 years of age. (OEHHA, 2009)
- No study has determined a level of lead in blood that does not impair child cognition. Further, the effects are long-lasting. Damage to a child's developing brain from lead is not reversible. (AAP, 2008)
- CASAC commented that ''a population loss of 1–2 IQ points is highly significant from a public health perspective.'' (EPA, 2008)
- Air-to-blood ratio of 1:10 is also supported by EPA's evidence based air-related IQ loss data and is even more health protective (CHPAC, 2008b)

Based on all the foregoing, the evidence supports the District's policy decision to establish a final lead limit in ambient air at 0.100 μg/m^3.

REGULATORY HISTORY

The metal melting industry has been subject to regulation regarding lead for more than two decades. Below is a chronology of regulatory activity:

- November 1970, CARB set the state ambient air quality standard for lead at 1.5 $\mu g/m^3$ averaged over 30 days.
- October 1978, the U.S. EPA adopted the NAAQS for lead, requiring attainment with a lead ambient concentration of 1.5 $\mu g/m^3$ averaged over a calendar quarter.
- September 1992, the SCAQMD adopted Rule 1420 – Emissions Standard for Lead. The rule incorporated the state ambient air quality standard and required control devices on lead emission points, control efficiency requirements for lead control devices, housekeeping, and monitoring or modeling of ambient air quality.
- October 1992, OEHHA classified lead as a carcinogenic toxic air contaminant and assigned to it a cancer potency factor and a cancer unit risk factor.
- January 1993, CARB adopted the Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting. The state regulation required control devices for lead and other toxic metal emission points, control efficiency requirements for control devices, fugitive emission control, and recordkeeping.
- June 1997, the U.S. EPA adopted the National Emissions Standards for Hazardous Air Pollutants (NESHAP) from Secondary Lead Smelting. The federal regulation required lead emission concentration limits of lead control devices, control of process fugitive emissions, monitoring, recordkeeping, and reporting.
- On July 16, 2007, EPA finalized a regulation affecting lead emissions from all lead-acid battery manufacturing facilities that are area sources. The federal regulation required lead emission concentration limits, testing, monitoring, recordkeeping, and reporting requirements.
- On October 15, 2008, the U.S. EPA signed into regulation an amended NAAQS for lead of 0.15 $\mu g/m^3$.
- November 5, 2010, the SCAQMD adopted Rule 1420.1 – Emissions Standard for Lead from Large Lead-acid Battery Recycling Facilities. The rule established requirements for total enclosures of areas used in the lead-acid battery recycling operation, ambient air lead concentration limits of 0.150 $\mu g/m^3$ averaged over any consecutive 30 days, ambient air monitoring, and housekeeping practices. Additional rule amendments followed the initial adoption in January of 2014, March of 2014, and March of 2015. In those amendments ambient air lead concentration limits were ultimately reduced to 0.100 $\mu g/m^3$.
- December 14, 2010, the U.S. EPA made final revisions to the ambient monitoring requirements for measuring lead in the air. These amendments expand the nation's lead monitoring network to better assess compliance with the 2008 National Ambient Air Quality Standards for lead.
- January 2, 2015, the U.S. EPA proposed that the ambient lead concentration standard of 0.15 $\mu g/m^3$ averaged over a rolling 3-month period remain unchanged. The 90-day comment period for this proposal ended on April 6, 2015 and the regulatory process remain ongoing.

The following provides additional background information about Rule 1420 and the 2008 NAAQS for lead.

Rule 1420

Rule 1420 was adopted in September 1992 and has not been amended since its adoption. Rule 1420 applies to facilities that process or use lead-containing materials. These include, but are not limited to, primary or secondary lead smelters, foundries, lead-acid battery manufacturers or recyclers, and lead-oxide, brass and bronze producers. Rule 1420 is based on the current state ambient air quality standard of 1.5 µg/m^3 averaged over a 30-day period. As a result, the rule needs to be updated to reflect the current NAAQS of 0.15 µg/m^3. The rule includes requirements for point source controls, monitoring, sampling, recordkeeping, and reporting. Rule 1420 requires facilities that process more than two tons of lead per year to submit a Compliance Plan that provides information on how the facility will conduct monitoring, conduct air dispersion modeling, and implement requirements to install and implement point source controls.

2008 NAAQS for Lead

Since U.S. EPA established the initial standard of 1.5 µg/m^3 in 1978, scientific evidence about lead and health has expanded dramatically. More than 6,000 new studies on lead health effects, environmental effects, and lead in the air have been published since 1990. Evidence from these health studies shows that adverse effects occur at much lower levels of lead in the blood than previously thought. As a result, U.S. EPA amended the NAAQS for lead, reducing it from 1.5 µg/m^3 to 0.15 µg/m^3. The 2008 lead NAAQS requires full attainment by each state no later than five years after final designations for attainment status are made. Demonstration of attainment is based on measurements using a rolling 3-month averaging form evaluated over a 3-year period. Measurements are to be determined by U.S. EPA-required monitoring networks within each state which consist of both source-oriented and non-source-oriented monitors. The SCAQMD has already established the required monitoring network for both source and non-source-oriented lead monitors.

Further, in May of 2014, the U.S. EPA released its "Policy Assessment for the Review of the Lead National Ambient Air Quality Standards." In January of 2015 the U.S. EPA proposed that the ambient lead concentration standard of 0.15 µg/m^3 averaged over a rolling 3-month period remain unchanged. The 90-day comment period for this proposal ended on April 6, 2015 and requires further action by the U.S. EPA in order to issue a final rule.

2008 NAAQS ATTAINMENT STATUS

The 2008 NAAQS for lead requires that each state install and operate a network of ambient air lead monitors in order to determine attainment status with the standard. As noted above, two types of monitors are required; those that are population-based (referred to as "non-source-oriented"), and those that are facility-based (referred to as "source-oriented"). The lead attainment assessment conducted by the state of California was based on data from both sets of monitoring networks. On October 14, 2009, the CARB recommended to the U.S. EPA that the South Coast Air Quality Management District portion of Los Angeles County be designated as non-attainment for the 2008 federal lead standard based on data from the ATSF and Rehrig-Pacific Street monitors for Exide Technologies (Exide). On December 31, 2010, the U.S. EPA designated a portion of Los Angeles County, excluding the high desert areas, San Clemente and Santa Catalina Islands (southern Los Angeles County), as nonattainment for the 2008 lead NAAQS and required attainment no later than December 31, 2015. As a result, the SCAQMD Governing Board adopted the 2012 Lead

State Implementation Plan (SIP) for Los Angeles County, outlining the strategies, planning and air pollution control activities to demonstrate attainment with the lead NAAQS before December 31, 2015. Rule 1420 is a control measure in the SCAQMD's 2012 SIP. Since PR1420.2 represents a subset of Rule 1420 as it proposes to regulate lead metal melting facilities that are melting more than 100 tons per year of lead, PR 1420.2 will be submitted for inclusion as part of the State Implementation Plan.

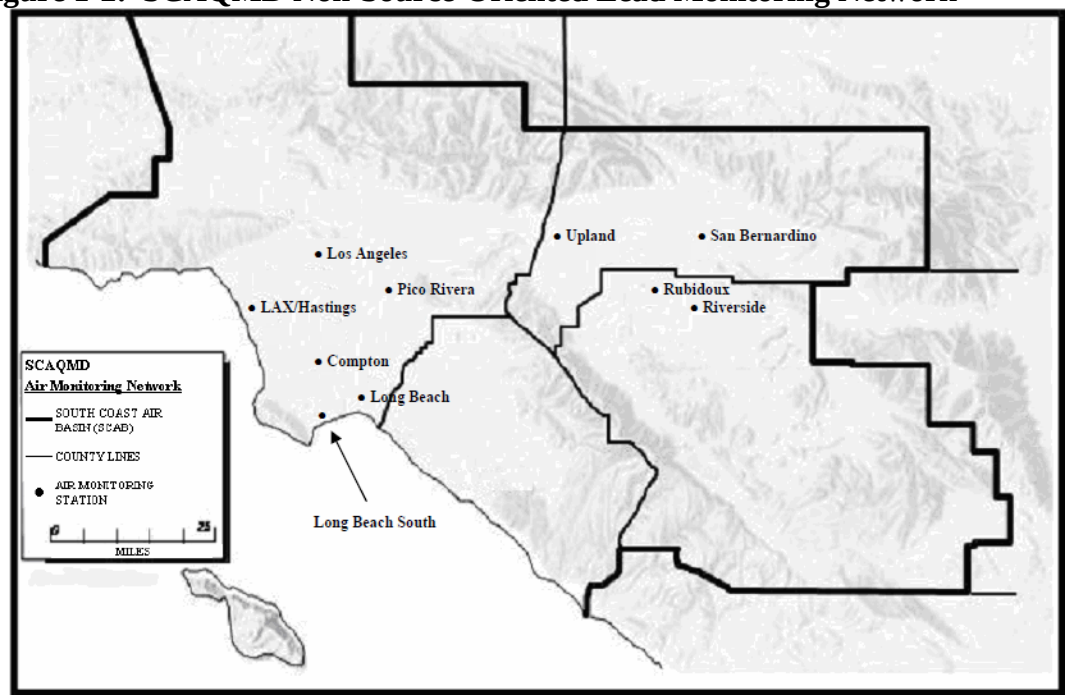
Lead Ambient Air Monitoring Requirements

On December 14, 2010, the U.S. EPA revised the ambient monitoring requirements for measuring lead in the air. Specifically, the U.S. EPA changed the emissions threshold that state monitoring agencies must use to determine if an air quality monitor should be placed near an industrial facility that emits lead (source-oriented monitor). The new lead emissions threshold is 1,000 pounds per year (lbs/yr) of lead emissions reduced from the previous threshold of 1.0 tons per year (tpy). U.S. EPA maintained the 1.0 tpy lead emissions threshold for airports. U.S. EPA also requires lead monitoring in large urban areas, Core Based Statistical Areas with a population of 500,000 people or more (non-source-oriented monitors).

Non-Source-Oriented Monitors

The SCAQMD currently operates a non-source-oriented monitoring network of 10 locations throughout the Basin. The spatial distribution of these sites is shown below in Figure 1-~~1~~2. Because the SCAQMD's current lead monitoring network meets the minimum requirements for the U.S. EPA non-source-oriented monitoring network as specified in the new lead NAAQS, data from the existing monitors were used to provide an indication of lead attainment status on a regional scale. Data values from measurements made at non-source-oriented monitors in the Basin were reviewed for years 2007 through 2013 and showed concentrations below the 2008 NAAQS for lead of 0.15 $\mu g/m^3$ and range from 0.01 $\mu g/m^3$ to 0.03 $\mu g/m^3$.

Figure 1-2: SCAQMD Non-Source-Oriented Lead Monitoring Network

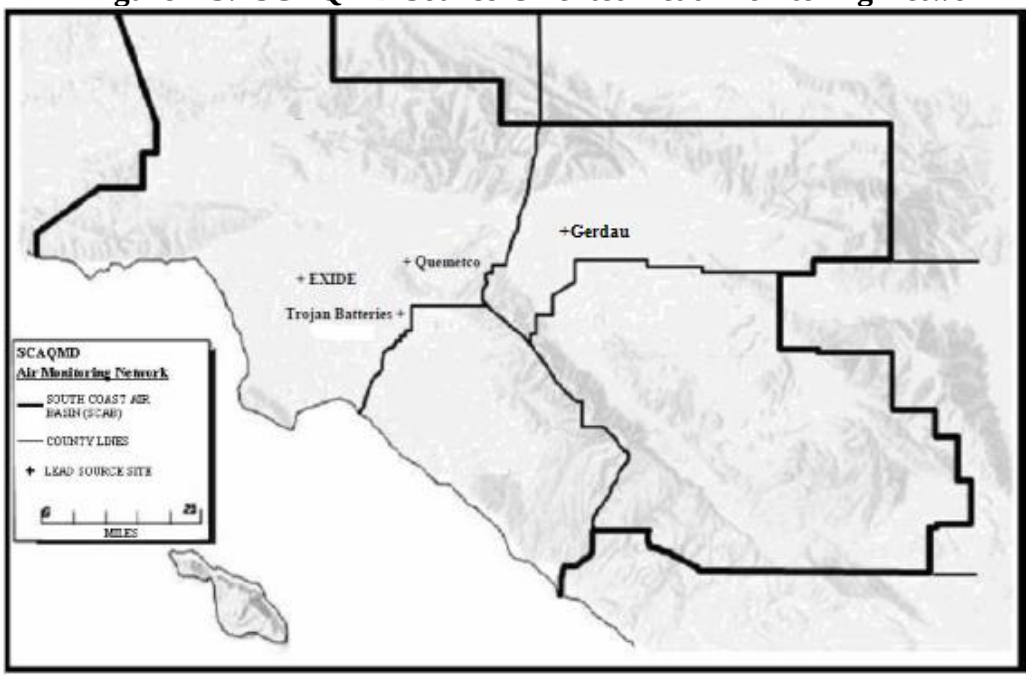


Source-Oriented Monitors

The SCAQMD currently operates existing source-oriented monitoring networks at the following four facilities: Trojan Battery Company in Santa Fe Springs, Quemetco, Inc. in the City of Industry, Exide Technologies in Vernon, and Gerdau in Rancho Cucamonga in order to meet the monitoring requirements of the new lead NAAQS. As discussed on page 1-1, high ambient air lead concentrations from source-oriented monitors at Exide prompted rulemaking to address lead emissions from large lead-acid battery recycling facilities. Consequently, Rule 1420.1 was adopted in November 2010 and established requirements for large lead-acid battery recycling facilities. The SCAQMD continues to operate source-oriented monitors at the Exide and Quemetco sites, and Rule 1420.1 requires these facilities to conduct fence line monitoring. These facilities also must meet an ambient air lead concentration of 0.100 µg/m^3 averaged over any consecutive 30 days.

The SCAQMD also established a source-oriented monitoring site at the Van Nuys Airport from January 1, 2010 to meet the monitoring requirements of the NAAQS for airports. General aviation aircraft use leaded aviation fuel, and have been identified as a source of lead emissions. Review of the data at the Van Nuys site showed no exceedances of the Pb NAAQS. Monitoring of lead emissions ceased at that site on June 4, 2013 as it was no longer necessary for the SCAQMD to monitor lead emissions at that site according to the final NAAQS for lead that went into effect on January 26, 2011. Data on lead emissions from airports is currently being collected and reviewed by the U.S. EPA. In the April 28, 2015 Federal Register, the U.S. EPA issued an "Advanced Notice of Proposed Rulemaking on Lead Emissions for Piston-Engine Aircraft Using Leaded Aviation Gasoline." Figure 1-3~~2~~ below shows the locations of SCAQMD's current source-oriented monitoring networks and their respective lead sources.

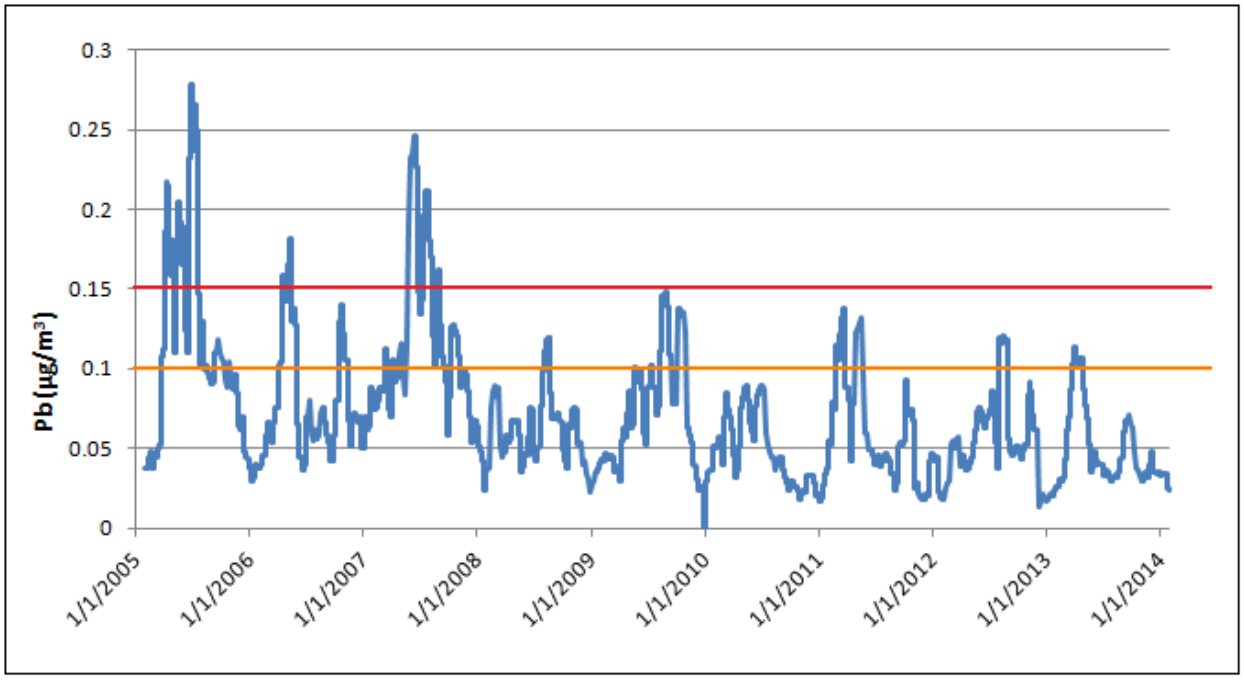
Figure 1-3: SCAQMD Source-Oriented Lead Monitoring Network



Trojan Battery (Source-oriented Monitor)

Based on data from AER reporting years 2005 through 2007, lead emissions at Trojan Battery, a battery manufacturer located in Santa Fe Springs, were reported as 29 lbs/yr and sampling was conducted at one site. The site operates on a 1-in-6 day sampling schedule and had multiple rolling 30-day averages greater than 0.15 µg/m3 between years 2005 and 2011 with the highest average of 0.28 µg/m^3 in June 2005. Additionally, in 2005 through 2007, ambient air lead concentrations showing multiple 3-month rolling averages of greater than 0.15 µg/m^3 were also measured (high of 0.21 µg/m^3). These measurements exceed the current NAAQS level for lead, although the measurements of these high ambient air lead concentrations occurred before the most recent version of the federal ambient air lead standard went into effect. Figure 1-4 below illustrates rolling 30-day averages for ambient air lead concentrations monitored by SCAQMD at Trojan Battery. Reported lead emissions data (2010 - 2013) for Trojan Battery indicate an average annual lead emissions value of 15 lbs/year. Since 2011, ambient air lead concentration levels have appreciably decreased, however, the lower levels coincide with the relocation of the SCAQMD monitor in October 2011. The monitor was relocated from its original location at the instruction of the owner of the property, as the location of the SCAQMD monitor was allegedly inhibiting business operations. As such, the lower ambient air lead concentration levels measured by the monitor since its relocation most likely do not reflect maximum ground level concentrations.

Figure 1-4: 2005-2014 SCAQMD Monitoring at Trojan Battery
(Rolling 30-~~day~~ Day Average)



AMBIENT AIR MONITORING AT PR 1420.2 FACILITIES

Two PR 1420.2 facilities currently have ambient air monitors to demonstrate compliance with the ambient air lead concentration limit of Rule 1420, or have ambient air monitors that are used by the SCAQMD for compliance demonstration with the 2008 NAAQS for lead. These two facilities are Trojan Battery (which was discussed above) and Gerdau, previously Tamco. Monitors are

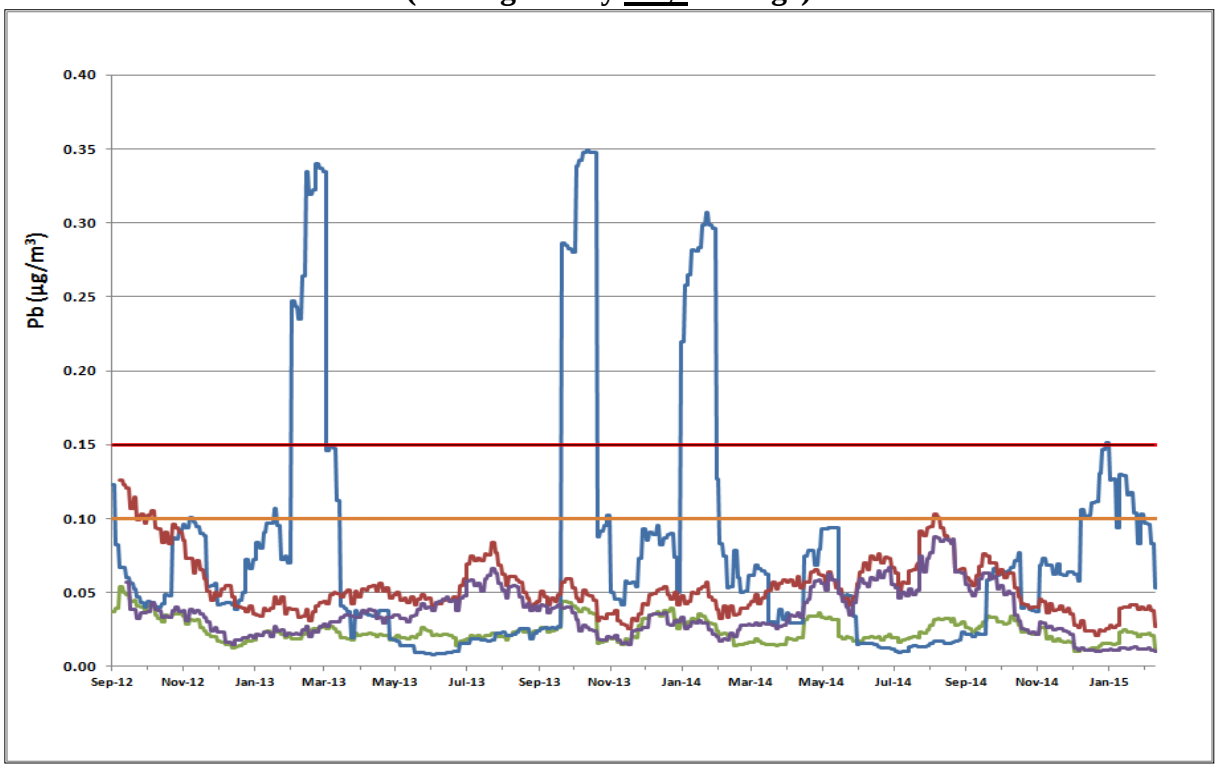
typically sited based on the maximum expected ground-level concentrations of lead at or beyond the property line of the facility. Monitoring data from these two facility types under the source category of metal melting have exhibited high ambient air lead concentration levels over the last decade, and show the high potential for exceedances of the 2008 Lead NAAQS.

Gerdau (Fence Line and Source-Oriented Monitors – Rule 1420 & Lead NAAQS)

Gerdau North America acquired the TAMCO Rancho Cucamonga steel mini mill in October 2010. In 2012, Gerdau retained an environmental consultant to perform an environmental audit and found discrepancies in reported lead emissions. Gerdau self-reported these discrepancies and SCAQMD staff conducted inspections of the facility to address issues. Since 2010, Gerdau has worked with the SCAQMD to ensure compliance with SCAQMD regulatory requirements and has invested nearly $7 million to improve emission reductions. Gerdau also has approved permits with the SCAQMD to install a $37 million state-of-the-art evacuation system that would further improve emission reductions of lead and other metals particulates. Gerdau currently monitors lead and other metals at the facility. Four onsite monitors maintained by Gerdau operate on a 1-in-3 day sampling schedule to monitor the site for compliance with Rule 1420. These monitors are generally located at four locations along the fence line of the facility. Two additional monitors are independently operated and maintained by the SCAQMD. As demonstrated by Figure 1-5 below, the SCAQMD monitors are collocated with the Gerdau SA Recycling monitor (#1) and the Gerdau south baghouse monitor (#2). Recent results of the Gerdau monitoring efforts (Figure 1-6 below) show Gerdau as a source of lead emissions that potentially could contribute to an exceedance of the NAAQS. Fence line monitoring conducted by Gerdau at one of the four monitors measuring ambient air lead pursuant to Rule 1420 shows multiple ambient air lead concentration readings (2012 to present), typically occurring during high wind events, that are well above 0.150 µg/m^3 averaged over any consecutive 30 days at monitor. Further, recent NAAQS modeling information submitted by Gerdau to SCAQMD staff demonstrates the potential for a NAAQS exceedance near the south baghouse location.

Figure 1-5: Gerdau Fence Line & Source-Oriented Monitors

Figure 1-6: 2012-2015 Gerdau Rule 1420 Fence Line Monitoring Data (Rolling 30-~~day~~ Day Average)



AFFECTED SOURCES

Based on lead emissions inventories reported to the SCAQMD AER program for years 2010 through 2012 and information available from the SCAQMD permitting database, there are approximately 13 metal melting facilities expected to be subject to PR 1420.2. Cumulatively these facilities melt more than 50,000 tons of lead annually through a combination of metal melting furnaces. These facilities manufacturer a variety of products and are classified in the North American Industry Classification System (NAICS) codes as 335911 (Storage Battery Manufacturing), 332322 (Sheet Metal Work Manufacturing) 331110 (Iron and Steel Mills and Ferroalloy Manufacturing), 331529 (Other Nonferrous Metal Foundries), 331314 (Secondary Smelting and Alloying of Aluminum), and 332439 (Other Metal Container Manufacturing Products). The facilities range in size from small to large scale operations. The universe of facilities subject to PR 1420.2 includes both foundries and secondary smelters classified in the NAICS under the codes identified in Table 1-3 below. Table 1-4 provides an overview of the estimated annual lead throughput and Table 1-5 provides annual reported lead emissions at metal melting facilities subject to PR 1420.2.

Table 1-3: Types of Facilities Subject to PR 1420.2

NAICS Code	Facility Type	# of Facilities
325998	All Other Miscellaneous Chemical Production and Preparation	1
331110	Iron and Steel Mills and Ferroalloy Manufacturing	1
331314	Secondary Smelting and Alloying of Aluminum	2
331529	Other Nonferrous Metal Foundries	1
332439	Other Metal Container Manufacturing Products	1
332322	Sheet Metal Work Manufacturing	1
335911	Storage Battery Manufacturing	6
Total Number of Facilities		13

Table 1-4: PR1420.2 Overview of Estimated Annual Lead Throughput at Metal Melting Facilities 2010-2012

Value	100 to <500 tons/year	500 to <1000 tons/year	1000 tons/year or more
# of facilities based on annual lead melted (in tons/year)	4	3	6

Table 1-5: PR1420.2 Overview of Reported Lead Emissions at Metal Melting Facilities 2010-2012

~~Industry that Typically Uses the Equipment~~Facility by NAICS Code (6-Digit NAICS Code)	Reported Maximum Annual Lead Emissions 2010-2012	Data Source
Iron and Steel Mills and Ferroalloy Manufacturing (331110)	1402.48	AER
Storage Battery Manufacturing (335911)	15.70	AER
Storage Battery Manufacturing (335911)	6	TRI
Storage Battery Manufacturing (335911)	4.15	TRI
Storage Battery Manufacturing (335911)	0.149	AER
Storage Battery Manufacturing (335911)	No Data	N/A
Storage Battery Manufacturing (335911)	No Data	N/A
Secondary Smelting and Alloying of Aluminum (331314)	1.936	AER
Secondary Smelting and Alloying of Aluminum (331314)	26.05	AER
Other Nonferrous Metal Foundries (331529)	91.1	TRI
Other Metal Container Manufacturing Products (332439)	4.18	AER
Sheet Metal Work Manufacturing (332322)	198.70	AER
All Other Miscellaneous Chemical Product and Preparation (325998)	27.72	AER

INDUSTRY PROCESS DESCRIPTION, LEAD EMISSION POINTS AND CONTROL STRATEGIES

The following paragraphs provide a general overview of the manufacturing processes and emission sources for the industry source category subject to Proposed Rule 1420.2. Specifically, SCAQMD staff has provided general operation and emissions source information for iron and steel mills, secondary metal processing, foundries, and lead-acid battery storage production.

IRON AND STEEL MILLS

Background

Steel mini-mills are the largest scrap metal recyclers in the United States. The scrap metal originates from sources such as scrapped automobiles, demolished buildings, discarded home appliances, and manufacturing returns. Mini-mills accounted for 57 percent of the national steel production in 2006. The applicable NAICS code for this industry is 331110, Iron and Steel Mills and Ferroalloy Manufacturing. Given that the industry source category for this rulemaking applies to one existing steel mini-mill in the Basin, the following process description reflects the operational characteristics at similar facilities.

Process Description

Steel is manufactured by chemical reduction of iron ore using an integrated steel manufacturing process or a direct reduction process. In conventional integrated steel manufacturing processes, iron from a blast furnace is converted to steel in a basic oxygen furnace (BOF). However, steel can also be produced using an electric arc furnace (EAF) from scrap metal. BOF is typically used for high-tonnage production of carbon steels while EAF's are used to produce carbon steels and low-tonnage specialty steels. In the BOF process, coke making and iron making precede steelmaking; these steps are not necessary with an EAF.

- Electric Arc Furnace (Metal Melting - Steel Production)
  An EAF is a cylindrical, refractory-lined container, and when electrodes are retracted from the furnace, its roof can be rotated aside to permit scrap metal charging (feeding) into the furnace. The charging material is typically scrap metal that is charged by an overhead crane. Steel production using an EAF includes stages such as charging, melting, refining, slagging, and tapping. Each of these stages are described below.

  - Charging
    During the charging stage, scrap metals are fed into the EAF. The charge can also include carbon and lime, a fluxing agent which removes chemical impurities from the metal and renders slag that is more liquid at smelting temperatures. The slag is a liquid mixture of ash, flux, and other impurities. Direct reduced iron (DRI) or other iron-bearing material can supplement the scrap metal. DRI, also known as "sponge iron", is a type of iron created by heating iron ore to burn off carbon and oxygen while the temperature is kept below iron's melting point.

  - Melting
    The furnace roof is rotated back to close the furnace and carbon electrodes are lowered through openings in the furnace roof. Electric current generates heat between the electrodes and through the scrap to melt the scrap. Oxy-fuel burners and oxygen lances may also be used to supply chemical energy. Oxy-fuel burners, which burn natural gas and oxygen, use convection and flame radiation to transfer heat to the scrap metal. Oxygen is directly injected through oxygen lances into the molten steel. Exothermic reaction with the iron and other components provides additional energy to assist in the melting of the scrap metal and excess carbon. Alloys may be added to achieve the desired composition.

- Refining
  Refining of molten steel can take place simultaneously with melting process, especially in EAF operations where oxygen is introduced. During the refining process, substances that are incompatible with iron and steel are separated out by forming a layer of slag on top of the molten metal.

- Slagging
  The slag layer consists primarily of oxides of calcium, iron, sulfur, silicon, phosphorus, aluminum, magnesium, and manganese in complexes of calcium silicate, aluminosilicates, and aluminoferrite. The slag is typically removed by tipping the furnace backwards and pouring the molten slag out through a slag door.

- Tapping
  After completion of the EAF batch process, the tap hole is opened, and the hot steel is poured from the EAF into a ladle for transfer to the next operation.

- Secondary Refining

  - Argon Oxygen Decarburization (AOD)
    AOD is a process that further refines the steel outside the EAF during the production of certain stainless and specialty steels. In the AOD process, steel from the EAF process is transferred into an AOD vessel, and gaseous mixtures containing argon and oxygen or nitrogen are blown into the vessel to reduce the carbon content of the steel. Argon assists the carbon removal by increasing the affinity of carbon for oxygen.

  - Ladle Metallurgy
    After initial smelting and refining of the steel in the EAF, molten steel is further refined in a ladle furnace undergoing chemical and thermal homogenization. The molten steel may receive alloy additions to produce the desired metallurgy.

- Casting and Finishing

  - Continuous Casting
    A ladle with molten steel is lifted to the top of a continuous caster, where it flows into a reservoir (called a tundish) and then into the molds of the continuous casting machine. Steel passes through the molds and then is cooled and solidified into semi-finished products such as blooms, billets, or slabs.

  - Ingot Casting
    Molten steel is poured into an ingot mold, where it cools and begins to solidify. The molds are stripped away, and the ingots are transferred to a soaking pit or reheat furnace where they are heated to a uniform temperature. Ingots are shaped by hot rolling into the semi-finished products such as blooms, billets, or slabs, or by forging.

- Finishing
  The semi-finished products may be further processed by a number of different steps, such as annealing, hot forming, cold rolling, pickling, galvanizing, coating, or painting. Some of these steps require additional heating or reheating. The additional heating or reheating is accomplished using furnaces usually fired with natural gas.

Process Emission Points and Controls

- EAF
  During EAF steelmaking process, metal dusts and gaseous emissions are generated from charging scrap, smelting and refining, removing slag, and tapping steel. The amount and composition of the particulate matter (PM) emitted can vary greatly depending on the scrap composition and types and amount of furnace additives such as fluxes. Iron and iron oxides are the primary components of PM. In addition, zinc, chromium, nickel, lead, cadmium, and other metals may also be present in the PM. Transfer of slag removed from the EAF is a potential source of fugitive lead-dust emissions, especially when cooled slag is loaded by a front-end loader onto a truck to be transported to a different location.

  Emissions from an EAF are generally captured using direct shell evacuation supplemented with a canopy hood located above the EAF. In general, the captured gases and particulate from the EAF are routed to baghouses for PM control. Some mini-mills have a common baghouse through which emissions from the EAF, as well as emissions from the ladle metallurgy process and/or continuous caster, are ducted and subsequently controlled. Fugitive dust emissions from slag loading can be controlled by applying dust suppressants or enclosing the loading area that has openings with overlapping flaps and then venting the dust-laden air to a dust collector.

- Secondary Refining
  The AOD vessel is a potential source of PM and gaseous emissions. A baghouse may be used to control PM emissions. The ladle furnace and ladle heater are emission sources. A roof canopy hood or a side draft hood is used to capture the emissions which are vented to a baghouse (which may be the same baghouse used for EAF emissions).

- Casting and Finishing
  Fugitive particulate emissions may be generated at the caster and emitted through a roof monitor. Control devices are not generally employed for these processes. Other potential sources of emissions include reheat furnace, annealing furnaces, and other furnaces used in the finishing processes.

SECONDARY METAL PROCESSING

Source Description

Secondary metal processing, also known as metal scrap recycling, is a large industry that processes in the U.S. alone, 56 million tons of scrap iron and steel (including 10 million tons of scrap automobiles), 1.5 million tons of scrap copper, 2.5 million tons of scrap aluminum, 1.3 million tons of scrap lead, 300,000 tons of scrap zinc, 800,000 tons of scrap stainless steel, and smaller

quantities of other metals, on a yearly basis. Secondary metal processing is the processing of metal-containing materials to recover and reuse the metal.

The NAICS codes for this industry are 331314 Secondary Smelting and Alloying of Aluminum; 331410 Nonferrous Metal (except Aluminum) Smelting; and 331492 Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum).

Process Description

The specifics of recovery processes vary depending on the type of metal being processed. Processes may even vary among facilities processing the same type of metal. The processes used by different industries may be grouped by one of the following general processes.

- Raw Material Handling
  Material handling operations include receiving, unloading, storing, and conveying the metal-containing materials and auxiliary materials required for metal processing (i.e., scrap metals, fluxes, fuels, alloys, and casting materials).

- Scrap Pretreatment
  Scrap pretreatment involves the preliminary separation of the metal of interest from other metals contained in the scrap and contaminants such as dirt and plastics. The most commonly used operations include mechanical separation, solvent cleaning, centrifugation, pyrometallurgical and hydrometallurgical cleaning, and heavy-media separation. Mechanical separation includes sorting, crushing, pulverizing, shredding, and other mechanical means to break scrap into small pieces.

- Metal Melting/Smelting
  Melting is performed to separate the metals of interest from their metallic compounds. Melting also allows the creation of an alloy and castings to be made from its molten metal. Smelting in nonferrous metal processing takes place in furnaces or heated crucibles. The furnaces may be heated with fuels or through the use of electricity.

  Pretreated scrap, fuels, and flux materials are charged to the furnace where melting takes place. The mixture of the flux materials depends on the type of metal being processed. In secondary lead processing, for example, flux materials may consist of rerun slag, scrap iron, coke, recycled dross, flue dust, and limestone. The flux may chemically react with the scrap in the presence of heat, breaking metallic-oxide bonds to produce pure metal. Also, the flux may oxidize impurities in the scrap and further purify the metal.

- Metal Refining
  Refining may take place in the melting furnace, or it may be performed in holding furnaces or other heated vessels separate from the melting furnace to further purify the metal, producing the desired properties. These furnaces are heated with fuels or with electricity. Flux materials are added to the molten metal in the furnace to remove impurities. Alloy materials are added to produce desired properties of the metal.

- Metal Forming and Finishing
  The metal may be formed to make bars and ingots, or it may be formed to a final product. Bars and ingots, such as those produced in secondary lead and aluminum industries, may be sent to another facility to make a final product. In iron and steel foundries, the metal is cast into a final product at the melting facility.

  Forming the metal into a final product requires the use of cores and molds. Cores are shapes used to make internal voids in castings. Molds are forms used to shape the exterior of castings. The formed metal is removed from the mold. If the formed metal is a final product, it may be necessary to grind or sand off rough edges. The metal may be shot-blasted to remove mold sand or scale.

Emissions and Control

Particulate or hazardous air pollution emissions are likely to result from hot processes that produce fumes (such as torching, welding, and melting in a furnace) or processes that produce dust (such as breaking, shredding, and cutting). An exhaust system, either stationary or portable, must be deployed to capture airborne hazardous metal at the source of emissions such as melting furnaces, shredders, and cutters. Cyclones, electrostatic precipitators, and fabric filters are suitable for filterable dust. Wet scrubbers are also a common control method for dust and acidic gases.

FOUNDRIES

Source Description

A foundry is a facility that produces metal castings. The metal casting industry sector includes establishments that pour molten ferrous metals (iron and steel) or non-ferrous metals under high pressure into molds to manufacture castings. Ferrous metal castings include those castings made with gray iron, white iron, ductile iron, malleable iron, and steel. Non-ferrous metal castings are predominantly aluminum, but might also be bronze, brass, zinc, magnesium, and titanium. Cast metal components are used in the manufactured goods that include engine blocks, transmission housings, and suspension parts of cars and trucks; undercarriages of farms and construction equipment; and pipes and valves for plumbing fixtures and boilers. The applicable NAICS codes for this industry sector are 331511 Iron Foundries; 331512 Steel Investment Foundries; 331513 Steel Foundries (except Investment); 331523 Nonferrous Metal Die-Casting Foundries; 332524 Aluminum Foundries (except Die-Casting); and 331529 Other Nonferrous Metal Foundries (except Die-Casting).

Process Description

Foundry operations consist primarily of pattern/mold making, melting, pouring, cooling and finishing.

- Pattern and Mold Making
  Pattern making is the first stage of developing a new casting. The pattern becomes permanent so it can be used to form a number of permanent molds. Cores are produced in conjunction with the pattern to form the interior surfaces of the casting. Cores are formed by one of the binding systems.

The mold is formed in a mold box (flask), which is typically constructed in two halves to assist in removing the pattern. The bottom half of the mold (the drag) is formed on a molding board. Cores require greater strength to hold their form during pouring. Once the core is inserted, the top half of the mold (the cope) is placed on top.

- Melting and Pouring

  Many foundries use a high proportion of scrap to make up a charge. Therefore, foundries play an important role in the metal recycling industry. The charge is weighed and introduced into the furnace. Alloys and fluxes are added to the charge to produce the desired melt. The furnaces commonly used in the industry are described below.

  Molten metal is transferred from the furnace to a ladle and held until it reaches the desired pouring temperature. The molten metal is poured into the mold and allowed to solidify. Several types of furnaces may be used:

  - Cupola Furnace

    A typical cupola furnace consists of a water-cooled vertical cylinder which is lined with refractory material. Cupolas are charged in alternating layers of scrap metal, alloying materials, limestone, and coke through an opening in the cylinder. Air is introduced into the cupola through tuyeres located at the base. The heat produced by the burning coke melts the iron, which flows down and is tapped from the bottom of the cupola. Flux combines with non-metallic impurities in the charge and forms slag, which is drawn off through holes located above the level of the metal tap hole.

  - Induction Furnace

    An induction furnace is an electric melting furnace that uses heat generated by electric induction to melt metal. These furnaces have excellent metallurgical control and are relatively pollution free in comparison to cupola furnaces. A high voltage in the primary coil induces a low-voltage, high current across the metal charge which acts as a secondary coil. Because of electrical resistance in the metal, this electrical energy is converted to heat which melts the charge. Once the metal is in its molten state, the magnetic field produces a stirring motion. In a coreless induction furnace, the refractory-lined crucible is completely surrounded by a water-cooled copper coil, which prevents the primary induction coil from overheating. In a channel induction furnace, the induction coil surrounds the inductor.

  - Electric Arc Furnace

    An EAF is another type of electric furnace used in larger foundries and mini-mills steelmaking operations. The scrap metal charge is placed on the hearth and melted by the heat from an electric arc formed between the electrodes. In a direct-arc furnace, the electric arc comes into contact with the metal; in an indirect-arc furnace, the electric arc does not touch the metal. EAFs are more tolerant of dirty scrap than induction furnaces and can be used to refine metals, allowing steel to be refined from iron charge.

- Reverberatory Furnace
  Reverberatory furnaces are designed and operated to produce a soft, nearly pure lead product. Reverberatory furnaces emit high levels of lead fume during charging and tapping lead and slag.

- Rotating Furnace
  A rotating furnace consists of a refractory-lined cylinder that rotates slowly around a horizontal axis. The charge is heated directly from an open flame, typically fed by gas or oil. Exhaust gases are extracted from the opposite end of the chamber. Rotating the furnace helps to mix the charge and utilizes heat from the whole refractory surface.

- Crucible Furnace
  Crucible furnaces are mostly used by smaller foundries or for specialty alloy lines. The crucible or refractory container is heated in a furnace, typically fired with natural gas or liquid propane.

- Cooling and Shakeout
  Once the metal has been poured, the mold is transported to a cooling area. The casting needs to cool before it can be removed from the mold. Castings may be removed manually or using vibratory tables that shake the refractory material away from the casting. Quenching baths are also used in some foundries to achieve rapid cooling of castings. The quench bath may contain chemical additives to prevent oxidation.

- Sand Reclamation
  A significant proportion of the waste sand is reclaimed mechanically or thermally for reuse. Cores, metal lumps, and binders are removed by vibrating screens and extraction, and collected in a baghouse. Thermal reclamation process heats the sand to the point where organic materials, including the binders, are driven off. The sand is returned to an "as new" state, allowing it to be used in core making.

- Finishing
  Finishing process such as fettling involves the removal of the casting from the gating systems. This is accomplished by cutting, grinding, and chiseling.

Emissions and Control

Air emissions result from various operations in foundries, including metal melting, mold making, handling foundry sand, and die-casting. The majority of metal emissions come from the metal melting operations, while most organic emissions are from handling the binder. Once the binder is combined with the sand, there may be additional PM emissions from pouring the molten metal into the casting and from breaking apart the cast. Handling foundry sand results primarily in PM emissions. Fugitive particulate can be emitted from operations of unloading, storage, transfer, and preparation.

The casting or mold pouring and cooling operations in iron and steel foundries are potentially a source of lead emissions. In addition, mold preparation and casting shakeout (removal from the mold) activities are also lead emission sources.

Baghouses and wet scrubbers are common technologies used to control lead emissions from foundry metal melting operations. Fugitive emissions from such sources are generally controlled with local hooding or building ventilation systems that are ducted to a control device (predominantly baghouses).

STORAGE BATTERY MANUFACTURING

Source Description

Today's major use of lead is in lead-acid storage batteries. The electrical systems of vehicles, ships, and aircraft depend on such batteries for start-up, lighting, and ignition (SLI) and, in some cases, batteries provide the actual motive power. The NAICS code for this industry sector is 335911 Storage Battery Manufacturing.

Process Description

Operations consist primarily of grid casting, paste mixing, pasting, burning, battery assembly, formation and lead recovery.

- Grid Casting
  Lead alloy ingots are melted in a gas-fired lead furnace at approximately 700 degrees F. The furnace is often equipped with a hood to vent the fumes to an emission control device. The molten lead flows into molds that form the battery grids. They are then ejected, trimmed, and stacked.

- Lead Oxide Production and Paste Mixing
  The paste mixing is conducted in a batch-type process to make paste for application to the grids. A mixture of lead oxide powder, water, sulfuric acid, and an organic expander (generally mixture of barium sulfate, carbon black, and organic fibers) is added to the mixer, depending on whether the paste batch is for positive or negative plates. The mixture is blended to form a stiff paste. A duct system vents the exhaust gases from the mixer and loading station to an emission control device.

- Grid Pasting
  Pasting machines force the lead sulfate paste into the interstices of the grid structure (the grids are called plates after the paste has been applied). The freshly pasted plates are transported through a temperature-controlled heated tunnel, where the surface water is removed. ~~No emission control is generally provided or needed for grid pasting and plate drying operations.~~ The floor area around pasting operations must be kept clean of paste, however, since this is a potential source of fugitive dust. After the plates are cured for up to 72 hours, they are sent to the assembly operations where they are stacked in an alternative positive and negative block formation.

- Lead Burning
  Leads are welded to the tabs of each positive plate and each negative plate, fastening the assembly (element) together. An alternative to this operation is the "cast-on-strap" process, where molten lead is poured around and between the plate tabs to form the connection. Then

a positive tab and a negative tab are independently welded to the element. The completed elements can go to either the wet or dry assembly lines.

- Battery Assembly
  In the wet battery line, elements are placed in battery cases made of durable plastic or hard rubber. Covers are sealed to the cases, and the batteries are filled with diluted sulfuric acid and made ready for formation. For dry batteries, elements are formed prior to be placed in a sealed case.

- Formation
  The inactive lead oxide-sulfate paste is chemically converted into an active electrode. Lead oxide in the positive plates is oxidized to lead peroxide; in the negative plates, it is reduced from to metallic lead. This is accompanied by placing the unformed plates in a diluted sulfuric acid solution and connecting the positive plates to the positive pole of a direct current (D.C.) source and the negative plates to the negative pole of a D.C. source.

- Lead Recovery
  Defective parts are either reclaimed at the battery plant or sent to a secondary lead smelter for recycling. Pot-type furnaces are generally used for reclaiming scrap lead at the battery manufacturing plants. Because of the relatively low operating temperatures, emission concentrations are low. Emissions generally are visible only when oily scrap or floor sweepings are charged.

Emissions and Control

Lead and other PM are generated in several operations within storage battery production. Fabric filtration is generally used as part of the process control (i.e., product recovery equipment) and to collect particulate emissions from lead oxide mills. Fabric filters have become an accepted method for controlling emissions from grid casting and lead reclamation. Specifically, cartridge collectors and high efficiency particulate air (HEPA) filters can be used in grid casting, paste mixing, lead oxide manufacturing, the three-process operation, or lead reclamation. Cyclone mechanical collectors often precede fabric filters.

CHAPTER 2: SUMMARY OF PROPOSED RULE 1420.2

OVERALL APPROACH

PROPOSED RULE 1420.2

OVERALL APPROACH

Proposed Rule 1420.2 establishes core requirements for all metal melting facilities, and if the ambient air concentration limits are exceeded, then affected facilities are required to submit a Compliance Plan with additional lead reduction measures that can be implemented to ensure compliance with the ambient air lead concentration limits. The core requirements include installation of ambient air lead monitors, compliance with ambient air lead concentration limits, point source control requirements, housekeeping and maintenance requirements, and source testing. Representatives from the Rule 1420.2 Working Group suggested that additional requirements beyond these "core requirements" be identified in a Compliance Plan and that submittal and implementation of the Compliance Plan would be required, only if needed. The objective of the Compliance Plan is to provide lead reduction measures that can be implemented, if needed, to ensure the facility can achieve the final ambient air lead concentration limit.

PROPOSED RULE 1420.2

PR 1420.2 will address lead emissions generated from metal melting facilities. The intent of the rule is to reduce lead emissions and ambient air concentrations of lead, reduce public health impacts by reducing the exposure to lead, and to help ensure attainment and maintenance of the NAAQS for lead. As a result, the rule proposes requirements for point source lead emission controls and standards and ambient air lead concentration limits. Fugitive lead emissions are addressed through housekeeping and maintenance activity requirements, and total enclosures of areas where metal melting operations and associated operations are conducted. Additionally, periodic source testing, capture efficiency testing, ambient air monitoring, and reporting and recordkeeping requirements are also being proposed to ensure continuous compliance. Metal melting facilities that exceed the ambient air lead concentration limits of PR 1420.2 will be subject to additional requirements including total enclosures with negative air, increased ambient air lead monitoring and sampling, and submittal and potential implementation of a Compliance Plan that lists additional control measures beyond those specified in the rule in order to comply with the applicable ambient air lead concentration limits of PR 1420.2.

Applicability

PR 1420.2 applies to metal melting facilities in the SCAQMD that melt 100 tons or more of lead annually. Based on SCAQMD staff analysis of compliance and permitting data, there are currently 13 facilities in the District that meet the applicability requirements of the proposed rule. Excluding large lead-acid battery recyclers, these facilities represent the largest stationary source category of reported lead emissions and ambient air concentrations in the Basin and include facilities such as scrap recyclers, iron and steel mini-mills, aerospace, and lead-acid battery manufacturers. Additionally, as discussed in Chapter 1, data from SCAQMD monitors at two metal melting facilities have shown the potential for this source category to exceed the NAAQS lead limit of 0.15 $\mu g/m^3$ averaged over a rolling 3-month period. A minimum process limit of 100 tons of lead melted a year was set as the threshold for rule applicability due to the fact that a PR 1420.2 facility melting a little over this amount resulted in high ambient air lead concentrations at the fence line (higher than 0.300 $\mu g/m^3$ averaged over 30 days). PR 1420.2 is more stringent than Rule 1420, therefore facilities that are subject to and comply with PR 1420.2 will be exempt from Rule 1420 requirements.

Definitions

PR 1420.2 includes definitions of the following terms used in the proposed rule. Please refer to subdivision (c) of PR 1420.2 for the definitions:

- Ambient Air
- Casting
- Construction or Maintenance Activity
- Duct Section
- Dust Suppressant
- Emission Collection System
- Emission Control Device
- Fugitive Lead-Dust
- Furnace
- Furnace, Refining, or Casting Area
- Lead
- Lead Point Source
- Leeward Wall
- Measurable Precipitation
- Metal
- Metal Melting Facility
- Partial Enclosure
- Process
- ~~Sensitive Receptor~~
- Slag
- Smelting
- Smelting Furnace
- Total Enclosure
- Valid 24-Hour Sample
- Windward Wall

Requirements

Subdivisions (d) through (l) of PR 1420.2 establish key "core" requirements including ambient air lead concentration limits, ambient air monitoring and sampling, point source emissions controls, total enclosures, housekeeping measures, maintenance activity requirements, source testing, recordkeeping, and reporting. Requirements for submitting and implementing a Compliance Plan are specified in subdivision (m), visible emissions are specified in subdivision (n), and subdivision (o) includes exemptions.

Subdivision (d) – Ambient Air Lead Concentration Limit

Upon adoption of PR 1420.2 until March 31, 2018, metal melting facilities that are already conducting Executive Officer-approved ambient air lead monitoring and sampling prior to adoption of the PR 1420.2 will be required to meet an ambient air lead concentration limit of 0.150 µg/m^3 averaged over any 30 consecutive days. For metal melting facilities that install a rule-required ambient air lead monitor after adoption of Rule 1420.2, the ambient air lead concentration limit of 0.150 µg/m^3 averaged over any 30 consecutive days must be met no later than 90 days from the date the Aambient ~~air~~ Air ~~monitoring~~ Monitoring and ~~sampling~~ Sampling ~~plan~~ Plan is

approved. The 90 days includes installation time for the ambient monitors and the remaining time as a grace period ~~a 30-day time period after the ambient monitors are required to be installed (60 days after approval of the plan)~~ before the 0.150 µg/m^3 lead concentration limit is effective.

On and after ~~January~~ April 1, 2018, metal melting facilities subject to PR 1420.2 will not be allowed to discharge into the atmosphere emissions which contribute to ambient air concentrations of lead that exceed 0.100 µg/m^3 averaged over any 30 consecutive days. Measurements recorded at any rule-required ambient air lead monitor, including any District-installed monitor, are subject to compliance with the limit. This requirement is designed as a preventative measure to ensure that the NAAQS will not be exceeded, and additionally to provide further protection to public health.

The objective of the proposed requirement is to be more protective of public health by limiting the lead concentration in the ambient air. By limiting the ambient air lead concentration to the 0.100 µg/m^3 by April 1, 2018, it will further reduce the accumulation of lead dust and reduce lead exposure from metal melting facilities to the surrounding community. Lowering the ambient air lead concentration is not inconsistent with studies that U.S. EPA reviewed indicating that lower ambient air lead concentrations would result in less impacts to children. According to U.S. EPA, the assessment of the currently available studies continues to recognize a non-linear relationship between blood lead and effects on cognitive function, with a greater incremental effect (greater slope) at lower relative to higher blood lead levels.[1] Chronic health effects include increased risk of cancer, nervous and reproductive system disorders, neurological and respiratory damage, cognitive and behavioral changes, and hypertension. In addition, young children accumulate lead more readily than do adults and are more vulnerable to certain biological effects of lead including learning disabilities, behavioral problems, and deficits in IQ. As discussed on Chapter 1, Section "Justification for Lowering Ambient Air to 0.100 µg/m^3," even lead levels meeting the current NAAQS may result in loss of IQ for younger children.

During the rulemaking process, a number of stakeholders requested an "escape" clause from provisions triggered by an exceedance. Based on the request, staff has revised Proposed Rule 1420.2 to include a provision under paragraph (d)(4) that would allow a facility to avoid a notice of violation of the applicable ambient lead concentration limit per subdivision (d) and the trigger provisions for submittal or implementation of a Compliance Plan per subdivision (m). This provision is voluntary for an owner or operator that elects to exercise this opportunity. This "escape" clause would be based on submission of information within 5 business days of when the owner or operator of the metal melting facility knew or should have known that the ambient lead concentration exceeded the applicable limit specified in paragraph (d)(1) demonstrating that the facility was not the primary cause of the exceedance. Pursuant to subdivision (d), an exceedance can normally be established by the District based on proof that the facility "contributed" to the exceedance. If such an exceedance can be shown within five business days of when the owner or operator of the metal melting facility knew or should have known that the ambient lead concentration exceeded the applicable limit by the facility to been primarily caused by an alternative source, then the District would allow a facility to avoid the consequences associated

[1] U.S. EPA's "Policy Assessment for the Review of the Lead National Ambient Air Quality Standards," Environmental Protection Agency, May 2014

with their contribution to the exceedance. The information to be provided by the facility would include:

- Date and time of the exceedance;
- Location of the monitor where exceedance was measured;
- Monitored ambient lead concentration levels at all of the facility's monitors for the past 30 days, including the date of the exceedance;
- Wind direction(s) during the timeframe of the exceedance;
- Description of the alleged primary cause(s) and source(s) of the exceedance including timeframe and location; and
- Evidence demonstrating that the primary cause(s) of the exceedance is not attributed to the facility's operations such as other monitored data, photographs, video.

If the Executive Officer determines that the primary cause(s) of the exceedance is not attributed to the metal melting facility, that exceedance will not be considered a violation of the applicable ambient lead concentration limit per subdivision (d) nor an exceedance requiring submittal or implementation of a Compliance Plan per subdivision (m). If the facility does not utilize the "escape" clause or the Executive Officer determines that the metal melting facility has failed to meet its burden, an exceedance can be established by the District based on proof that the facility "contributed" to the exceedance. In the event that the owner or operator exercises this opportunity to demonstrate that the facility is not the primary cause and the Executive Officer disapproves, the disapproval by the Executive Officer will not be relevant to the determination of the exceedance.

Subdivision (e) – Ambient Air Monitoring and Sampling Requirements

PR 1420.2 facilities will be required to collect and analyze ambient air lead samples to determine compliance with the ambient air quality lead concentration limits of the rule. This subdivision provides the requirements for submittal of an ambient air monitoring and sampling plan, the number of monitors, placement of monitors, and installation of monitors.

No later than March 1, 2016, facilities will be required to prepare and submit a Lead Ambient Air Monitoring and Sampling Plan for review and approval by the Executive Officer. Information required in the plan includes:

- Source test results of all lead point sources;
- Map of facility identifying the location of all lead emission sources, air pollution control devices, stacks, enclosures, openings of enclosures, storage of lead-containing materials, roadways where vehicles carrying lead-containing materials travel within the facility, vehicle egress and ingress locations, the property line of the facility, the fence line of the facility if it differs from the property line of the facility, and any areas within the property line of the facility that are publicly accessible; and
- Number and locations for sampling sites that meet the requirements of paragraph (e)(2).

No later than 90~~60~~ days after approval of a Lead Ambient Air Monitoring and Sampling Plan, facilities will be required to install and conduct ambient air lead monitoring and sampling. Samples must be collected from a minimum of three sites with locations of the sampling sites based on maximum expected ground level lead concentrations, at or beyond the property line, as determined by Executive Officer-approved air dispersion modeling calculations and emission estimates from all lead point sources and fugitive lead-dust sources, and other factors including, but not limited to, population exposure and seasonal meteorology.

The Executive Officer may require a facility to relocate existing monitors or install additional monitors to those required as specified above in order to measure ambient air lead concentrations at locations that may contribute to the exceedance of an ambient air lead concentration limit specified in subdivision (d). The basis for relocating existing monitors or requiring installation of additional monitors shall be based on information showing:

- A new or existing lead source that was not previously identified or fully disclosed;
- An increase in lead emissions from an existing source where existing monitors are not capturing the potential ambient air lead concentration; or
- None of the existing monitors are capturing the maximum expected ground level lead concentrations.

Paragraph (e)(5) requires facilities to collect samples at a more stringent frequency than the 1-in-6 days if any of the following exceedances occur:

Effective Date	Ambient Air Concentration of Lead~~, micrograms per cubic meter~~ (µg/m^3), averaged over any 30 consecutive days	Sampling Frequency at the Affected Monitor
On or Before March 31 ~~January 1~~, 2018*	0.150 - 0.300	1-in-3 days
	> 0.300	Daily
~~Beginning January~~ On or After April 1, 2018	0.100 – 0.150	1-in-3 days
	> 0.150	Daily

*Effective date for facilities with approved monitors prior to adoption of the PR 1420.2. Effective date for all other facilities is 90 days from the date of approval of a Lead Ambient Air Monitoring and Sampling Plan.

For facilities that are conducting ambient air monitoring and sampling pursuant to paragraph (e)(2), the effective date of the table above is 90 days after approval of a Lead Ambient Air Monitoring and Sampling Plan, and date of rule adoption for facilities conducting ambient air monitoring and sampling pursuant to paragraph (e)(3). Monitoring under the more stringent schedule shall remain in effect until monitoring results at each affected monitoring station are at or below the ambient air lead concentration limit specified in subdivision (d) for a period of 30 consecutive days.

A facility must conduct daily sampling pursuant to subparagraph (e)(5)(C) if:

- The Executive Officer has approved a Health Risk Assessment for the facility after January 1, 2015 that exceeds the action risk level specified in District Rule 1402; and

- After 12 months prior to rule adoption, has exceeded an ambient air lead concentration of 0.120 µg/m^3 averaged over any 30 consecutive days.

Daily ambient air monitoring and sampling under subparagraph (e)(5)(C) is to begin no later than three calendar days after approval of the Health Risk Assessment, no later than three calendar days from the time the facility knew or should have known of the exceedance, or by date of PR 1420.2 adoption, whichever is latest.

PR 1420.2 requires that 24-hour lead samples be collected and requires that samples be collected midnight-to midnight at all sites, but does allow for a different sampling schedule based on approval of the Executive Officer. Approval of an alternative schedule shall be granted if it demonstrated to the Executive Officer that the alternative schedule is adequate to routinely collect valid 24-hour samples, as defined in the rule, and is conducted using the sampling methods referenced in paragraph (e)(8). Facilities will also be required to continuously monitor wind speed and direction as described in the approved plan for the ambient air quality monitoring system at all times to supplement data analysis of the samples collected. Approval shall be based on guidelines for wind and speed direction monitoring as provided in the "*SCAQMD Rule 403 Implementation Handbook – Chapter 6: On-Site Wind Monitoring Equipment*," or other relevant EPA reference documents such as the "*Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV, Meteorological Measurements*."

Personnel approved by the Executive Officer, or facility personnel trained and certified to conduct ambient air monitoring demonstrated through successful completion of a course offered or approved by the Executive Officer will be allowed to conduct ambient air quality monitoring. Monitoring and sampling equipment shall be operated and maintained in accordance with U.S. EPA-referenced methods.

Cleaning activities, such as wet washing and misting, that could result in damage or biases to samples collected, will not be allowed within 10 meters of any sampling site required by the rule. Additionally, all ambient air quality monitoring systems collecting daily samples pursuant to paragraph (e)(5)(C) will be required to be equipped with a backup, uninterruptible power supply sufficient to power monitors for use during a power outage in order to ensure that a valid 24-hour sample can be collected. Installation and operation of the backup power will be required no later than 30 days after daily sampling under subparagraph (e)(5)(C) is required.

Any existing ambient air monitoring network currently in use for Rule 1420 shall be used for compliance with PR 1420.2 so long as all rule requirements for sampling and monitoring have been met.

Subdivision (f) – Lead Point Source Emission Controls

Lead point sources are defined by the proposed rule as any process, equipment, or total enclosure used at a melting facility whose lead emissions pass through a stack or vent designed to direct or control its release into the ambient air. All lead emissions from lead point sources are required to be vented to a lead control device. Proposed requirements for lead point source emission controls will be effective beginning March 1, 2016 in order to give facilities ample time to apply for permits and construct all necessary lead control devices.

PR 1420.2 requires that lead point source emission controls meet a minimum lead reduction efficiency of 99 percent or meet an outlet mass lead emissions rate of less than 0.00030 pounds per hour. The 99 percent lead reduction efficiency is more stringent than the 98 percent lead reduction efficiency requirement of Rule 1420. Upon review of District-approved source tests of lead point sources, SCAQMD staff determined that the more stringent 99 percent lead reduction efficiency for this source category is achievable with controls available today.

Subsequent to the initial source test, in lieu of having to conduct an inlet and outlet source test to demonstrate control efficiency, PR 1420.2 allows the owner or operator of a metal melting facility to alternatively demonstrate that the lead point source outlet emission rate is no greater than a total mass lead outlet emission rate requisite to achieve 99% control efficiency. The requisite total mass lead outlet emission rate shall be calculated using the most recent District-approved source test conducted at the inlet and outlet of the lead emission control device showing compliance with a 99% control efficiency for lead, or meet an outlet mass lead emission rate of less than 0.00030 pounds per hour.

The SCAQMD staff recognizes that some lead point sources with very low uncontrolled emissions may have difficulty demonstrating the 99 percent lead reduction efficiency requirement due to low inlet loading. Therefore, in lieu of complying with the 99 percent lead reduction efficiency, PR 1420.2 allows the owner or operator to demonstrate an outlet mass lead emission rate of less than 0.00030 pounds per hour. This low lead emission rate represents a level of lead emissions that is a full magnitude lower than the most stringent lead emission rate established or proposed by any SCAQMD rule for the control of lead.

All filters and filter bags used in any lead control device are required to be rated by the manufacturer to achieve a minimum of 99.97% capture efficiency for 0.3 micron particles, or made of polytetrafluoroethylene membrane material. Any other material that is equally or more effective for the control of lead emissions may be used so long as it is approved by the Executive Officer.

Paragraph (f)(5) requires a periodic smoke test to be conducted at least once every 3 months using procedures set forth in Appendix 2 of PR 1420.2. The purpose of this test is to ensure the efficacy of the emission collection system for any lead point source. Emission control efficiency at the exhaust of an add-on air pollution control device is related to capture efficiency at the inlet of the ventilation system, and for this reason, it is imperative that 100% capture efficiency is maintained. The periodic smoke test requirement of PR 1420.2 will not be required if performing such test presents an unreasonable risk to safety to the person conducting the test. An example of such unreasonable risk to safety includes having to conduct a smoke test at collection sites that would be extremely dangerous for somebody to work in, or would be in violation with OSHA requirements for worker safety.

Subdivision (g) – Total Enclosures

No later than March 1, 2016, the specified areas below will be required to be located within a total enclosure. The areas may be enclosed individually or in groups. The intent of this requirement is to provide maximum containment and minimize fugitive lead-dust emissions generated in areas where melting, processing, handling and storage of lead-containing materials occur. Areas to be located within a total enclosure will include:

- Furnace, refining, or casting areas; and
- Lead oxide production and pasting areas.

Cross-draft conditions of a total enclosure shall be minimized by closing any openings that result in a decrease in the collection of lead emissions for an emission collection system, including, but not limited to, vents, windows, passages, doorways, bay doors, and roll-ups during metal melting operations. To provide additional clarification, the proposed rule also states that, "acceptable methods to minimize cross-draft conditions include closing doors or openings when not in use, using automatic roll-up doors, installing plastic strip curtains, or installing vestibules." Alternative methods to closing openings ~~(plastic strip curtains, vestibules, etc.)~~ may be used if the owner or operator can demonstrate to the Executive Officer equivalent or more effective ways to minimize cross-draft conditions.

Facilities will be required to provide negative air for a total enclosure if:

- The facility has a Health Risk Assessment approved by the District after January 1, 2015 that exceeds the action risk level specified in District Rule 1402; and
- After [12 months prior to the adoption of PR 1420.2], any facility that exceeds an ambient air lead concentration of 0.120 µg/m^3 averaged over any 30 consecutive days measured by any monitor installed pursuant to subdivision (e), by any District-installed monitor collocated with a monitor installed pursuant to paragraph (e), or by any District-installed monitor located beyond the property line of a metal melting facility that measures lead concentrations resulting from the facility.

Total enclosures with negative air subject to paragraph (g)(3) will be required to be installed, maintained, and operated no later than 2 years after approval of the Health Risk Assessment referenced above, no later than 2 years after the exceedance of 0.120 µg/m^3 that occurred after approval of a Health Risk Assessment referenced above, or by ~~January~~ April 1, 2018, whichever is latest. The Executive Officer may approve a request for an extension of the compliance deadline date in subparagraph (g)(3)(B) if the facility can demonstrate that it timely filed all complete permit applications and is unable to meet the deadline due to reasons beyond the facility's control. The request shall be submitted to the Executive Officer no later than 30 days before the compliance deadline date.

Subdivision (h) – Housekeeping Requirements

The following housekeeping requirements are proposed to minimize fugitive lead-dust emissions. All requirements will be effective within 30 days of rule adoption with the exception of the requirements to conduct semi-annual roof top cleanings and to pave with concrete or asphalt, or otherwise stabilize all facility grounds with dust suppressant, which will be effective 180 days after rule adoption.

- Clean by wet wash or vacuum particles in a manner that does not generate fugitive lead-dust, the areas listed below (1-4) at the specified frequencies, unless located within a total enclosure vented to a lead emission control device. Days of measurable precipitation in the following areas occurring within the timeframe of a required cleaning frequency may be counted as a cleaning.
    1. Quarterly cleanings of roof tops, no more than 3 calendar months apart, on structures ≤ 45 feet in height that house areas that are associated with the processing, handling, or storage of lead-containing materials capable of generating

any amount of fugitive lead-dust, excluding areas associated with the storage of raw unprocessed lead-containing materials or finished lead-containing products;

2. Semi-annual cleanings, no more than 6 calendar months apart, of roof tops on structures > 45 feet in height that house areas associated with the processing, handling, or storage of lead-containing materials capable of generating any amount of fugitive lead-dust, excluding areas associated with the storage of raw unprocessed lead-containing materials or finished lead-containing products;
3. Weekly cleanings by wet wash, vacuum, wet-mop, or stabilization with a dust suppressant of all areas where lead-containing wastes generated from housekeeping activities are stored, disposed of, recovered or recycled, and surfaces that accumulate lead-containing dust subject to foot traffic; and
4. Initiate immediate cleaning, no later than one hour, after any construction or maintenance activity or event including, but not limited to, accidents, process upsets, or equipment malfunction, that causes deposition of fugitive lead-dust onto areas specified in the rule. If the facility can demonstrate that delays were due to unreasonable risks to safety ~~posed by earlier cleaning~~, or inability to reasonably obtain equipment required to implement this requirement, immediate cleanings of rooftops shall be completed within 72 hours.

- Inspect all total enclosures for gaps, breaks, separations, leak points or other possible routes for fugitive emissions from the total enclosure and permanently repair any potential source of fugitive emissions within 72 hours of discovery.
- Pave with concrete or asphalt all facility grounds, or use of dust suppressants at a frequency specified by the manufacturer, for the purpose of providing a surface that accommodates ease of cleaning or minimizes the generation of fugitive lead-dust.
    - An alternative frequency to apply dust suppressants may be used based on recommendations by the vendor or installer if the facility can provide information to the Executive Officer demonstrating that the alternative frequency is more appropriate for the specific application at its facility, including factors such as the type of use of the dust suppressant, physical properties of the lead containing material, exposure, and adjacent uses.
    - Facility grounds used for plant life that are less than a total surface area of 500 square feet, and landscaped areas within and beyond facility parking lots or perimeter landscaped areas shall not be subject to paragraph (h)(3) (e.g., paving with concrete or asphalt).
    - Facility grounds that cannot be paved with concrete or asphalt, or otherwise stabilized with dust suppressants in order to comply with city or other municipal permits, ordinances, ~~or~~ requirements ~~of~~ of ~~for~~ the State Water Control Board, or any other state or federal agency requirement, shall not be subject to paragraph (h)(3).
    - Facility grounds requiring removal of existing pavement, concrete, asphalt or other forms of stabilization, necessary for construction and maintenance purposes shall not be subject to paragraph (h)(3) while undergoing work, and shall be paved with concrete or asphalt, or otherwise stabilized with dust suppressants immediately after all required work is completed. All work shall be conducted in accordance with subdivision (i).

  - Undeveloped facility grounds where no activities or operations are conducted are not subject to (h)(3).
- Removal of weather caps on any stack that is a lead emissions source.
- Storage of all materials capable of generating any amount of fugitive lead-dust in sealed, leak-proof containers, or stabilize such materials using dust suppressants approved in writing by the Executive Officer, unless located within a total enclosure. Examples of materials include slag, spent filters used in lead control devices, and lead-containing waste generated from housekeeping requirements.
- Transport all materials capable of generating any amount of fugitive lead-dust emissions within closed conveyor systems or in sealed, leak-proof containers, or stabilize such materials using dust suppressants approved in writing by the Executive Officer, unless conducted within a total enclosure. This requirement is not applicable to the transport of high temperature materials exceeding 500 degrees Fahrenheit (e.g., transport of hot slag prior to solidifying) where implementation of the specified control requirements is infeasible.
- Facility grounds cleaning using ~~onsite~~ mobile wet scrubbers or vacuum sweepers or vacuums equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles. Facilities will be required to vacuum sweep all facility areas subject to vehicle and foot traffic with a vacuum or an ~~onsite~~ mobile vacuum sweeper that complies with District Rule 1186. Proposed Rule 1420.2 allows purchasing, leasing, using an outside contracting service to conduct sweeping or scrubbing, or any other method to clean facility grounds using a mobile wet scrubber or vacuum sweeper.
  - Wet scrubbing or ~~V~~vacuum sweeping will be required once per operating shift, when lead processing is occurring, with each event not less than four hours apart, unless located within a total enclosure vented to a lead control device. Wet scrubbing or vacuum sweeping shall not be required in parking spaces occupied by parked vehicles or between parked vehicles.
  - Wet scrub or vacuum sweep parking lots that border administrative offices once per week. However, any parking lot that borders an administrative office(s) and is used to transport, handle, or store lead containing materials that have the potential to generate fugitive lead-dust shall be wet scrubbed or vacuum sweept in accordance with subparagraph (h)(7)(A).
  - Immediately wet scrub or vacuum sweep any area specified in subparagraph (h)(7)(A), no later than one hour after any construction or maintenance activity or event including accidents, process upsets, or equipment malfunction that results in the deposition of fugitive lead-dust.
- The cleaning requirements for paragraphs (h)(1) and (h)(7) (periodic cleanings, mobile sweepings, wet scrubbing) will not be required on any day where the onsite measured rain amount is greater than 0.01 inches in any 24-hour calendar day. Facilities may use locally recorded and reported measured rain amounts.
- Except when inside a total enclosure, all lead-containing trash and debris shall be placed in covered containers that remain covered at all times except when trash or debris is actively transferred. Trash and debris shall be free of liquid or dust leaks.
- Post signs at all entrances and truck loading and unloading areas indicating a facility speed limit of 5 miles per hour or less on any roadway located within 75 feet of the perimeter of

a total enclosure and 15 miles per hour or less on any roadway located at more than 75 feet from the perimeter of a total enclosure.

- For each of the housekeeping measures identified above, the proposed rule allows an alternative housekeeping measure be used provided the owner or operator demonstrates and receives written approval from the Executive Officer. The alternative measures must meet the same objective and effectiveness as the housekeeping measure that it is replacing. For example, if a facility desired to reduce speed at entrances and truck loading/unloading areas by installing speed bumps, that would satisfy both the objective and effectiveness of posting speed limit signs. The facility would provide the necessary information to explain how the alternative measure satisfies the objective and effectiveness of the prescribed measure. The description of the alternative measure and information explaining how it meets the objective and effectiveness need not be overly detailed, just sufficient to meet the requirements of the proposed rule. The purpose of this provision is to provide the operator with additional flexibility to identify other measures that may not have been known at the time of rule adoption, and to provide the process in which the Executive Officer will review and approve an alternative measure. The operator must implement the housekeeping requirement(s) specified in Proposed Rule 1420.2 until they receive confirmation from the Executive Officer to use an alternative housekeeping measure. The proposed rule includes a table in Appendix 3 (and reproduced below) which provides the objective and effectiveness of each housekeeping measure to facilitate submittal of alternative housekeeping measures.

Subdivision (i) – Construction or Maintenance Activity Requirements

The construction or maintenance activity requirements of PR 1420.2 are effective upon rule adoption. For purposes of the proposed rule, maintenance activity is defined as any of the following activities conducted outside of a total enclosure with negative air that generates fugitive lead-dust:

- Building construction, demolition, or the altering of a building or permanent structure, or the removal of one or more of its components;
- Replacement or repair of refractory, filter bags, or any internal or external part of equipment used to process, handle, or control lead-containing materials;
- Replacement of any duct section used to convey lead-containing exhaust;
- Metal cutting or welding that penetrates the metal structure of any equipment used to process lead-containing material, and its associated components, such that lead dust within the internal structure or its components can become fugitive lead-dust;
- Resurfacing, repair, or removal of ground, pavement, concrete, or asphalt; or
- Soil disturbances, including but not limited to, soil sampling, soil remediation, or activities where soil is moved, removed, and/or stored.

The owner or operator of a metal melting facility will be required to conduct any construction or maintenance activity and subsequent clean-up that is not done in a total enclosure under negative air, using one or more of the following control measures:

- Inside a temporary negative air containment enclosure, vented a District-permitted negative air machine equipped with a filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles, that encloses all affected areas where fugitive lead-dust generation potential exists.

- In a partial enclosure, using wet suppression or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles, at locations where the potential to generate fugitive lead-dust exists.

If conducting construction or maintenance activity and subsequent clean-up inside a partial enclosure creates conditions posing physical constraints, limited accessibility, or unreasonable risks to safety, construction or maintenance activity may be conducted using wet suppression or a vacuum equipped with a filter(s) at locations where the potential to generate fugitive lead-dust exists.. Vacuum filters shall be rated by the manufacturer to achieve 99.97% control efficiency for 0.3-micron particles.

In addition to the above, the following requirements regarding construction or maintenance activity shall apply:

- Construction or maintenance activities must be stopped immediately if instantaneous wind speeds are 20 miles per hour or greater, unless conducted within a temporary negative air containment enclosure or partial enclosure. Construction or maintenance work may be continued if it is necessary to prevent the release of lead emissions;
- All concrete or asphalt cutting or drilling performed outside of a total enclosure with negative air shall be performed under 100% wet conditions; and
- Grading of soil shall only be performed on soils sufficiently wet to prevent fugitive dust.

All lead-contaminated equipment and materials used for any construction or maintenance activity requires immediate storage or cleaning after completion of work, by wet wash or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles. Storage and cleaning must be done in a manner that does not generate fugitive lead-dust.

Subdivision (j) – Source Tests

The proposed rule will require annual source tests for all lead control devices in order to demonstrate compliance with the lead control reduction efficiency for any lead point source emission control of 99%. Initial source tests for new and modified lead control devices with an initial start-up date on or after the adoption date of the proposed rule will be required within 60 days of initial start-up. Existing lead control devices in operation before the adoption date of the rule will require a source test no later than six months after adoption of the rule. An existing source test, for existing lead control devices, conducted on or after January 1, 2014 may be used as the initial source test as long as the test:

- Is the most recent conducted since January 1, 2014;
- Demonstrated compliance with the applicable control standard;
- Is representative of the method to control emissions currently in use; and
- Was conducted using applicable and approved test methods.

The rule lists the following applicable test methods:

- SCAQMD Method 12.1;
- ARB Methods 12 and 436; and
- EPA Method 12.

Use of an alternative or equivalent test method will be allowed as long as it is approved in writing by the Executive Officer, in addition to the California Air Resources Board, or the U.S. EPA, as applicable. Facilities will be required to submit a pre-test protocol to the Executive Officer at least

60 calendar days prior to conducting the source test. Notification to the Executive Officer in writing shall also be required one week prior to conducting the source test.

The proposed rule provides an incentive for lead control devices that demonstrate exemplary lead emission rate source test results. If an annual source test to demonstrate compliance with the lead point source emission standards of subdivision (f) demonstrate a 99% or greater reduction of lead emissions, and total facility mass lead emissions of less than 0.020 pounds per hour, then the next test for all lead point sources shall be performed no later than 24 months after the date of the most recent test. In 2008, the U.S. EPA determined that facility lead emissions (point source and fugitives) of 0.5 tons per year represents an estimate of the lowest lead emission rate that could result in lead concentrations exceeding the NAAQS for lead. SCAQMD staff assumed an operation schedule of 24 hours/day, 365 days/year to arrive at an hourly lead emission rate from the facility of 0.114 pounds/hour. PR 1420.2 proposes a final ambient air lead concentration limit of 0.100 $\mu g/m^3$, therefore the 0.114 pounds/hour lead emission rate was scaled down proportionately resulting in an emission rate limit of 0.080 pounds/hour. The 0.020 pounds per hour lead emission rate was selected as it represents 25% of the lead emission rate of 0.080 pounds/hour.

Subdivision (k) – Recordkeeping

PR 1420.2 will require records indicating amounts of lead-containing material melted at the facilities to be maintained by the facility. Examples of records include purchase records, usage records, results of lead content analysis, or other SCAQMD-approved verification to indicate processing amounts. Some facilities, particularly those that melt scrap metal, have difficulty determining the amount of lead contained in the scrap based purchase records or limited lead analyses. As such, the Executive Officer may approve other alternative methods to calculate the amount of lead melted, including the percentages of lead contained within the melted metal. Records for all rule-required housekeeping, construction or maintenance activity, ambient air lead monitoring, wind monitoring, and lead control device inspection and maintenance must also be maintained. All records shall be maintained for five years, with at least the two most recent years kept onsite.

Subdivision (l) – Ambient Air Monitoring Reports

Under the proposed rule, facilities will be required to submit reports for monthly ambient air monitoring results for lead and wind data measured at each sampling location on a monthly basis. Beginning no later than ~~30~~ 90 days after receiving Executive Officer approval of a Lead Ambient Air Monitoring and Sampling Plan, reports must be submitted by the 15th of each month for the preceding month, and must include the results of individual 24-hour samples and 30-day averages for each day within the reporting period. Facilities that are conducting ambient air monitoring and sampling already approved by the Executive Officer and meets the requirements in paragraph (e)(3), shall begin reporting no later than 30 days after rule adoption. In addition, any exceedance of the ambient air quality concentration shall be reported to the Executive Officer (1-800-CUT-SMOG) within 24 hours of receipt of completed sample analysis, followed by a written report to the Executive Officer no later than three business days after the notification.

Subdivision (m) – Compliance Plan

Compliance with PR 1420.2 is primarily based on ambient air concentrations of lead at fence line monitors. The proposed rule is designed to control lead point source emissions and fugitive lead-dust emissions to achieve the ambient air concentration limits. The Compliance Plan under Proposed Rule 1420.2 represents contingency measures that would be implemented, only if the facility exceeded the ambient lead concentrations limits specified in the proposed rule. Depending on monitored ambient lead concentrations and point source emissions, a lead melting facility may not be required to submit a Compliance Plan. Under PR 1420.2, an owner or operator of a metal melting facility is required to submit a Compliance Plan only if one or more of the following occurs:

- the ambient air lead concentration is greater than 0.120 µg/m^3 averaged over 30 consecutive days on and after July 1, 2016;
- the ambient air lead concentration is greater than 0.100 µg/m^3 averaged over 30 consecutive days on and after ~~January~~ April 1, 2018; or
- the point source emission rate for all lead sources is greater than 0.080 pound per hour on and after July 1, 2016.

The purpose of this provision is to address those facilities that still may have difficulty demonstrating compliance with the ambient air lead concentration limit even after implementation of PR 1420.2 basic core requirements. In response to comments made by the Battery Council International, the information required in the Compliance Plan and implementation of the Compliance Plan have been modified as discussed below.

The Compliance Plan must be submitted to the Executive Officer for review and approval within 30 calendar days of exceeding any of the submittal thresholds stated above. Paragraphs (m)(7), (m)(8), and (m)(9) specify requirements for updating, fees to review and approve, and notification of approval and disapproval of a Compliance Plan.

Information Required in a Compliance Plan

The purpose of the Compliance Plan is to have a series of measures that have been identified and approved by the Executive Officer that can be implemented if there is an exceedance of the applicable ambient lead concentration limit. The SCAQMD staff believes that having a set of contingency measures identified and ready to implement is a more proactive approach as compared to identifying these measures after an exceedance occurs. The Compliance Plan will identify additional lead emission reduction necessary to avoid future exceedances of the applicable ambient air lead concentration limits specified in subdivision (d). Based on comments from the Battery Council International, the measures that are required to be included in the Compliance Plan will be focused on those needed to address an exceedance has occurred or where it is reasonably foreseeable that an exceedance could occur based on ambient lead monitoring data. An operator that is required to submit a Compliance Plan shall consider the following categories for those lead emission sources that may have contributed to any monitor that has measured an ambient air lead concentration greater than 0.070 µg/m^3 averaged over any 30 consecutive days: ~~measures to be potentially implemented and at a minimum, each Compliance Plan submittal shall include:~~

- ~~A comprehensive list of additional short term and long term lead emission reduction measures that may need to be implemented in the event that ambient air concentrations of lead exceed 0.150 µg/m^3 averaged over any 30 consecutive days from January 1, 2017, or~~

~~exceed 0.100 µg/m^3 averaged over any 30 consecutive days after January 1, 2018. Additional lead emission reduction measures must include, but are not limited to, the following, as necessary to attain the applicable ambient air lead concentration limits specified in subdivision (d):~~

- More stringent housekeeping measures, such as installation and maintenance of vehicle wet wash areas additional areas for cleaning, and increased cleaning frequencies;
- Total enclosures with negative air pursuant to the requirements in Appendix 1 of PR 1420.2;
- Modification to total enclosures under negative air (e.g., increased inward face velocities at openings, more stringent differential pressure averaging periods) and lead point source control devices, including but not limited to process and/or operational changes, and maintenance of lead point source control devices to increase the capture and/or control efficiency;
- Installation of multi-stage lead emission control devices , including but not limited to devices that use filter media other than a filter bag(s), such as HEPA and cartridge-type filters rated by the manufacturer to achieve a minimum of 99.97% control efficiency for 0.3 micron particles;
- Process changes including reduced throughput limits;
- Conditional curtailments including, at a minimum, information specifying the curtailed processes, process amounts, and length of curtailment; and

The Compliance Plan shall explain how the owner and operator will identify and implement the ~~Identification of~~ lead emission reduction measures necessary to be implemented relative to increasing ranges of exceedance levels of the ambient air concentration limit. The owner or operator is required to identify initial measures necessary to achieve the applicable ambient air lead concentration specified in subdivision (d) ~~of 0.100 µg/m^3 averaged over any 30 consecutive days, as well as~~ and how additional measures to will be evaluated and implemented in the event of a subsequent exceedance~~. s of the applicable 0.100 µg/m^3 averaged over any 30 consecutive days.~~

Under Proposed Rule 1420.2, the owner or operator is required to specify the schedule and prioritization of each lead emission reduction measure identified in the Compliance Plan. For each category of measures in the Compliance Plan, the owner or operator can specify a variety of measures that can be implemented to address reasonably foreseeable exceedance(s). Paragraph (m)(5) previously required that the operator prioritize lead emission reduction measures in order from the lowest to highest potential lead emissions reductions. Paragraph (m)(5) has been modified to require that the operator "categorize the lead emission reduction measures based on the potential cause of a reasonable foreseeable exceedance(s) and prioritize each measure based on the time needed to implement the measure, with the highest priority given to those measures that can be implemented within the shortest amount of time." SCAQMD staff revised this language to provide additional clarity.

The implementation schedule must also identify the length of time needed to implement each lead emission reduction measure. The implementation schedule shall take into consideration the timeframe needed for engineering design, permitting, installation, and commissioning of equipment, if applicable. The Executive Officer may require implementation of additional lead

emission reduction measures prior to the completion of implementation of the initial measures if there is information demonstrating that implementation of the initial measures is not enough to avoid a subsequent exceedance of the applicable ambient lead concentration limit in subdivision (d).

Implementation of the Compliance Plan

The triggers to implement the Compliance Plan are different than the triggers to submit a Compliance Plan. The owner or operator shall implement ~~one or more of~~ the appropriate measure(s) ~~of the~~ described in the approved Compliance Plan necessary to attain the applicable ambient air concentration limit specified in subdivision (d) if lead emissions discharged from the facility contribute to an exceedance of the ambient air concentrations levels below:~~of lead that exceeds any of the following~~:

- One exceedance of 0.150 µg/m^3 averaged over any 30 consecutive days ~~on or after~~ January 1, 2017 – March 31, 2018, measured at any monitor pursuant to subdivision (e) or at any District-installed monitor; or
- Three exceedances of 0.100 µg/m^3 averaged over any 30 consecutive days that occurs over a rolling 24-month period on or after ~~January~~ April 1, 2018, measured at any monitor pursuant to subdivision (e) or at any District-installed monitor.

~~In considering the measure(s) that the owner or operator shall implement that are necessary to attain the applicable ambient air lead concentration limit, the Executive Officer shall consider the cause, magnitude, and duration of the exceedance, as well as past exceedances, if applicable.~~ Implementation of each measure shall be based on the implementation schedule of paragraph (m)(5) in the approved Compliance Plan. If lead emissions discharged from the facility contribute to ambient air lead concentrations that exceed the levels identified in the previous paragraph, the owner or operator shall implement the appropriate measure(s) described in the approved Compliance Plan necessary to attain the applicable ambient air concentration limit specified in subdivision (d).

~~Under Proposed Rule 1420.2, the owner or operator is required to specify the schedule and prioritization of each lead emission reduction measure. For each category of measures in the Compliance Plan, the owner or operator can specify a variety of measures that can be implemented. As specified in paragraph (m)(5), the prioritization of lead emission reduction measures should be in order from the lowest to highest potential lead emissions reductions.~~

~~Specifies a schedule that identifies the length of time needed to implement each lead emission reduction measure. The implementation schedule shall take into consideration the timeframe needed for engineering design, permitting, installation, and commissioning of equipment, if applicable. The Executive Officer may require implementation of additional lead emission reduction measures prior to the completion of implementation of the initial measures if there is information demonstrating that implementation of the initial measures is not enough to avoid a subsequent exceedance of the applicable ambient lead concentration limit in subdivision (d)~~
~~Implementation of measure(s) will be based on the lead emission source that caused the exceedance, the magnitude of the exceedance, number of exceedance(s), and the selection of measure(s) that will avert a future exceedance. In some situations, there may be a need if there are subsequent exceedances of the ambient air concentration limits to implement one or more lead emission reduction measures prior to the completion of the implementation of the initial measures.~~

~~If there is information to support the determination that implementation of the initial measures will not ensure that there will not be a subsequent exceedance of the ambient concentration limit of 0.100 µg/m^3 averaged over any 30 consecutive days, the Executive Officer may require that additional lead emission reduction measures be implemented prior to the completion of the implementation of the initial~~

In specific situations where the total facility lead point source emission rate, as determined through a source test, is greater than 0.080 pound per hour, measures to reduce lead point source emissions must be implemented first. Please refer to subdivision (m) for more details regarding the implementation schedule for lead reduction measures, updating a Compliance Plan, and other requirements.

Subdivision (n) – Visible Emissions

Under PR 1420.2, facilities are not to discharge into the atmosphere fugitive lead-dust emissions that exceed Ringlemann 0.5, or 10 percent opacity, for more than three minutes aggregate in any 60-minute period. This is a current requirement of Rule 1420 and is being required in PR 1420.2 since facilities subject to PR 1420.2 will be exempt from Rule 1420.

Subdivision (o) – Exemptions

PR 1420.2 provides exemptions to the ambient air monitoring and point source control requirements of the proposed rule depending on certain criteria being met. Paragraph (~~n~~o)(1) allows facilities to be exempt from the ambient air monitoring requirements set forth in subdivision (e) if the facility can demonstrate ambient lead concentration levels of less than or equal to 0.070 µg/m^3 averaged over 30 consecutive days, measured during normal operating conditions representative of the facility. A facility shall be granted exemption upon Executive Officer approval of an air monitoring relief plan contains all of the following:

- Air dispersion modeling analysis that demonstrates an ambient air lead concentration of ≤ 0.070 µg/m^3 averaged over 30 consecutive days representative of normal facility operations; and
- One (1) year of ambient air lead monitoring data without a single day exceeding an ambient air lead concentration of 0.070 µg/m^3 averaged over 30 consecutive days; and
- The facility's most recent source tests approved by the District demonstrate a total facility mass lead emission rate from all lead point sources of less than 0.040 pounds per hour. The lead emission rate of 0.040 pounds per hour represents 50% of the 0.080 pounds per hour lead emission rate discussed above under *Subdivision (j) – Source Tests*.

Any violation of the ambient air lead concentration limits required by subdivision (d) or any permit modification to equipment or processes that results in an increase in lead emissions that can be shown to cause an exceedance with the ambient air lead concentrations required by subdivision (d) shall result in revocation of the air monitoring relief plan. Upon revocation of the air monitoring relief plan, the owner or operator of a metal melting facility shall comply with the requirements of subdivision (e) no later than 180 days after revocation of the air monitoring relief plan.

Paragraph (o~~n~~)(2) of PR 1420.2 ~~allows~~ relieves facilities ~~to not be subject to~~ from the requirements of subdivision (f) for any lead point source that has an uncontrolled emission rate of 0.005 pounds

per hour provided that a source test pursuant to subdivision (j) is conducted for the lead point source at least once every 24 months.

Paragraph (o~~n~~)(3) allows facilities as described in subdivision (b) to be exempt from PR 1420.2 if the amount of lead melted at the facility has been reduced to less than 50 tons per year. This amount shall be based on lead melting limits specified in facility permit conditions, and facility lead processing records required under subdivision (k) of this rule or subdivision (i) of Rule 1420 – Emission Standards for Lead. A facility that is exempt from PR 1420.2 shall be subject to the requirements of Rule 1420.

Further, paragraph (~~n~~o)(4) exempts any metal melting facility subject to the PR 1420.2 from the requirements of Rule 1420. PR 1420.2 goes beyond the requirements of Rule 1420 and effectively supersedes the requirements set forth in Rule 1420. A Rule 1420 Compliance Plan that has been issued to the owner or operator of a metal melting facility prior to adoption of PR 1420.2 shall be subsumed into the requirements of this rule and be considered a Rule 1420.2 Compliance Plan, for which the owner or operator shall continue to comply with all conditions stated within the plan. Any additional requirements triggered pursuant to subdivision (m) shall be included in the subsumed Compliance Plan.

Appendix 1 – Total Enclosures with Negative Air (Conditional Requirement)

Appendix I specifies the requirements for total enclosures with negative air that are required to be included in the Compliance Plan. As specified in Appendix A, areas with a total ground surface area of 10,000 square feet or more require a minimum of three digital differential pressure monitors: one at the leeward wall of the total enclosure, one at the windward wall, and one at an exterior wall that connects the leeward and windward wall at a location defined by the intersection of a perpendicular line between this wall and a straight line between the other two monitors in order to account for shifts in draft direction throughout the enclosure. Each total enclosure is required to be maintained at a negative pressure of at least 0.02 mm of Hg (0.011 inches H_2O) and an in-draft velocity of at least 200 feet per minute at any opening such as vents, windows, passages, doorways, bay doors, and roll-ups. Differential pressure shall be based on a rolling 15-minute average in order to determine compliance with a negative pressure requirement of at least 0.02 mm of Hg (0.011 inches H_2O). For smaller enclosures, at least one differential pressure monitor, continuously measuring the negative pressure of the total enclosure, is required to be installed on the leeward wall. In-draft velocities for each total enclosure shall be determined by placing an anemometer, or an equivalent device approved by the Executive Officer, at the center of the plane of any opening of the total enclosure.

Digital differential pressure monitors must be capable of measuring and displaying negative pressure in the range of 0.01 to 0.2 mm Hg (0.005 to 0.11 inches H_2O) with a minimum increment of measurement of plus or minus 0.001 mm Hg (0.0005 inches H_2O). Digital differential pressure monitoring systems will need to continuously record, at a minimum, 1-minute data for differential pressure measurements which are to be used to calculate rolling 15-minute averages. The monitors will also need to be equipped with a continuous strip chart recorder or electronic recorder approved by the Executive Officer. If the facility elects to use an electronic recorder, the recorder will need to be capable of writing data on a medium that is secure and tamper-proof. The recorded data needs to be readily accessible upon request by the Executive Officer. A copy of any software that

is not readily available to the Executive Officer and required to access the recorded data, including all subsequent revisions, must be provided to the Executive Officer at no cost. If a device is needed to retrieve and provide a copy of such recorded data, the device must be maintained and operated at the facility.

Additionally, to ensure availability of data that may be useful in determining reasons for changes in ambient air lead concentrations during power outages, installation of a backup, uninterruptible power supply will be required on all digital differential pressure monitors. The amount of backup power supplied must be capable of sufficiently powering the monitors until processes and equipment at the facility can be safely brought down if the power outage is for a substantial period.

Alternative monitoring methods and procedures to those specified in Appendix 1 may be submitted by the facility for review and approval by the Executive Officer. Approval shall be granted if it is demonstrated that the alternative method or procedure is equally or more effective than the methods or procedures prescribed in Appendix 1.

Appendix 2 – Periodic Smoke Test

Appendix 2 specifies the requirements for periodic smoke tests to demonstrate capture efficiency for ventilation systems of add-on air pollution control device(s) pursuant to paragraph (f)(5). The periodic smoke test requirement of PR 1420.2 will not be required if performing such test presents an unreasonable risk to safety. An example of such unreasonable risk to safety includes having to conduct a smoke test at collection sites that would be extremely dangerous, if not deadly, for somebody to work in that collection zone. Refer to PR 1420.2 for detailed information on smoke test procedures.

Appendix 3 –Objectives of Housekeeping Requirements Set-forth in Paragraph (h)

Housekeeping Measure/Paragraph	**Objective**	**Effectiveness**
(h)(1)	To clean or remove accumulated lead dust on surfaces specified under subparagraph (h)(1)(A), (h)(1)(B), and (h)(1)(C).	Any method that can clean or remove accumulated lead dust for the areas specified in paragraph (h)(1) at a frequency that provides for the same or better efficiency than implementing the required housekeeping measure and ensures that lead dust will not be generated by the alternative measure
(h)(2)	To ensure that total enclosures or structures specified in paragraph (h)(2) are free from gaps, breaks, separations, leak points or other possible routes for emissions of lead or fugitive lead dust.	Any method that can identify possible routes for emissions of lead or fugitive dust that are as or more effective than visually inspecting.

(h)(3)	To minimize fugitive lead-dust emissions from facility grounds used for operational activities.	Any method that is equally or more effective as encapsulation or physical or chemical containment of lead dust from facility grounds.
Housekeeping Measure/Paragraph	**Objective**	**Effectiveness**
(h)(4)	To minimize accumulation near lead emission point sources.	Demonstrate that use of a weather cap does not impact the dispersion of lead dust or increase the accumulation of lead dust in and around facility more than the removal of a weather cap.
(h)(5)	To minimize fugitive lead-dust emissions from the storage of materials capable of generating fugitive lead-dust emissions specified under paragraph (h)(5).	Any method that is equally or more effective as a sealed-leak proof container or physical or chemical containment of lead dust from areas specified under paragraph (h)(5).
(h)(6)	To minimize fugitive lead-dust emissions from the transport of materials capable of generating fugitive lead-dust emissions from areas specified under paragraph (h)(6).	Any method that is equally or more effective as a closed conveyor system, sealed-leak proof container, or physical or chemical containment during transport of lead dust from areas specified under paragraph (h)(6).
(h)(7)	To clean or remove accumulated lead dust on surfaces specified under paragraph (h)(7).	Any method that can clean or remove accumulated lead dust for the areas specified in paragraph (h)(7) at a frequency that provides for the same or better efficiency than implementing the required housekeeping measure and ensures that lead dust will not be generated by the alternative measure
(h)(8)	To minimize fugitive lead-dust emissions from all lead-containing trash and debris.	Any method that can contain lead-containing trash and debris that is as or more effective than a covered container.
(h)(9)	To notify persons that are operating vehicles within the facility the speed limit to minimize fugitive lead-dust emissions from vehicular movement.	Any method that effectively reduces vehicle speed to, or communicates to persons operating vehicles within the facility, the speed limit specified in paragraph (h)(9).

CHAPTER 3: IMPACT ASSESSMENT

EMISSIONS IMPACT

CALIFORNIA ENVIRONMENTAL QUALITY ACT

SOCIOECONOMIC ASSESSMENT

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

ALTERNATIVE ANALYSIS

REGULATORY COMPARATIVE ANALYIS

EMISSIONS IMPACT

PR 1420.2 affects 13 metal melting facilities that melt more than 100 tons of lead annually. Source categories include scrap recyclers, aerospace, iron and steel mini-mills, and lead-acid battery manufacturing. These facilities are currently regulated by various federal NESHAPs and state ATCMs and they have installed point source emission controls in order to comply with applicable federal and state requirements to reduce lead emissions. Implementation of PR1420.2 will reduce point and fugitive emissions. Quantifying the point source emission reductions is difficult as many sources do not have current source tests and quantifying emission reductions from fugitive sources is difficult. Implementation of PR 1420.2 will require an ambient air lead concentration of 0.150 µg/m^3 from the date of adoption for facilities that already have an ambient air monitoring system approved by the Executive Officer that meets the requirements of the proposed rule. For facilities that do not already have an ambient air monitoring system approved by the Executive Officer, the ambient air concentration limit of 0.150 µg/m^3 averaged over any 30 consecutive days will be effective 90 days after approval of Aambient Aiair monitoring Monitoring and sampling Sampling sites Plan by the Executive Officer. The final ambient air lead concentration limit of PR 1420.2 is 0.100 µg/m^3 averaged over any 30 consecutive days and is effective beginning January April 1, 2018.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

PR 1420.2 is considered a "project" as defined by the California Environmental Quality Act (CEQA), and the SCAQMD is the designated lead agency. Pursuant to the California Environmental Quality Act (CEQA) Guidelines 15252 and SCAQMD Rule 110, the SCAQMD staff evaluated the proposed project and prepared a Draft Environmental Assessment (EA), which was circulated for a 32-day public review and comment period from July 17, 2015 to August 18, 2015. Subsequently, a Revised Draft EA, which included formatting changes to Appendix B, was released for a 30-day public review and comment period from July 21, 2015 to August 19, 2015. The SCAQMD received one comment letter regarding the environmental analysis in the Draft EA during the public comment period and has responded to those comments in the Final EA.

The public workshop meeting also solicited public input on any potential environmental impacts from the proposed project. Comments received at the public workshops on any environmental impacts were considered when developing the final CEQA document for this rulemaking. No significant adverse environmental impact was identified.Pursuant to the CEQA and SCAQMD Rule 110, the SCAQMD staff evaluated the proposed project and prepared a Draft Environmental Assessment (EA), which was circulated for public review from July 17, 2015 to August 18, 2015. On July 21, 2015, a Revised Draft EA was circulated for public review and the original comment period was extended to August 19, 2015. The public workshop meeting also solicited public input on any potential environmental impacts from the proposed project. Comments received at the public workshop on any environmental impacts were considered when developing the final CEQA document for this rulemaking.

SOCIOECONOMIC ASSESSMENT

A socioeconomic analysis has been conducted and was released for public review and comment on August 5, 2015, with an update version released on September 2, 2015. The main requirements

of the proposed rule that have cost impacts for affected facilities would include ambient air monitoring and sampling, point source emissions controls, total enclosures, housekeeping measures, maintenance activity requirements, source testing, recordkeeping, and reporting. The total annual compliance costs of PR1420.2 are estimated to range from $6.5 to $7.2 million, depending on the real interest rate assumed (1%-4%). Gerdau, a steel mini mill, would bear the largest share of compliance costs (71% or approximately $5.1 million annually based on 4% real interest) due to installing a complete baghouse replacement to achieve ambient lead levels compliant with PR 1420.2. Although Gerdau's meltshop/baghouse project received air permits from the SCAQMD on July 24, 2014, prior to the 1420.2 rulemaking process, the socioeconomic analysis nonetheless analyzed the cost of the meltshop/baghouse given that it will help Gerdau achieve ambient lead levels compliant with Rule 1420.2 and implementation of a Risk Reduction Plan required under Rule 1402.

In response to a request from the Battery Council International to provide cost assumptions to each affected facility, SCAQMD staff scheduled meetings with affected facilities to review cost assumptions. Based on meetings with facility operators, the cost assumptions for the cost of equipment, monitoring and sampling, source tests, preparation of plans, implementation of housekeeping and maintenance provisions, and SCAQMD review fees did not change significantly. Some operators provided SCAQMD staff with information of compliance approaches that the SCAQMD staff did not capture in the socioeconomic estimate. Based on input from operators, staff conservatively estimates that a one-time capital cost increase would primarily come from upgrading pollution controls at two facilities, adding an additional sweeper for one facility, and installation of rain gutters at one facility representing a total of $1.6 million or $196,800 per year when annualized over 10-years with the real interest rate of 4 percent. During the individual facility meetings, a number of operators provided SCAQMD staff with information that decreased the estimates of annual recurring costs. Based on information from the operators, annual recurring costs will decrease primarily from reducing the number of PTFE bags needed at four facilities and a lower number of required source tests due to staff overestimates of lead emission point sources at two facilities. The estimated reduction in annual recurring cost is $576,047, which will more than offset the increase in annualized capital cost of $196,800 resulting in a net annual cost reduction of $379,247.

Table 3-1 – Facility Meetings to Discuss Costs and Proposed Rule Language

Meeting Date	Facility Name
8/20/2015	Concorde Battery
8/21/2015	Senior Aerospace
8/28/2015	Ramcar Battery Inc
8/28/2015	Exide Technologies
9/7/2015	Liberty Manufacturing Inc.
9/10/2015	P. Kay Metals
9/15/2015	Gerdau
9/15/2015	US Battery
9/16/2015	Ace Clearwater
9/16/2015	Trojan Battery
9/18/2015	Atlas Pacific

9/23/2015	Teledyne Battery
9/24/2015	Industrial Battery Engineering

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings
California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the SCAQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report.

Necessity
PR 1420.2 is needed to further protect public health by reducing lead emissions from metal melting facilities. For a toxic air contaminant, such as lead, for which there is no level of exposure that can yet be identified with confidence, as clearly not being associated with some risk of deleterious health effects, the intent of this proposed rule is to reduce emissions to the lowest level achievable through the most effective feasible control method. The proposed rule will reduce ambient lead emissions from point sources as well as fugitive emissions from facility operations. In addition, the proposed rule will help ensure that violations of the NAAQS do not occur.

An ambient lead concentration limit of 0.100 $\mu g/m^3$ will be more health protective for communities that live around metal melting facilities, particularly younger children. There is substantial scientific justification provided through EPA's development of the 2008 Lead NAAQS and the 2015 Proposed Rule to Retain the Current Lead NAAQS evidence-based framework to support the policy decision to establish an ambient limit of 0.100 $\mu g/m^3$. The above discussion provides a description of EPA's evidence-based framework to establish the 2008 Lead NAAQS of 0.15 $\mu g/m^3$ and key policy judgments made regarding the level of health protection and margin of safety for the national standard. As previously stated, there are currently no commonly accepted guidelines or criteria within the public health community that would provide a clear basis for reaching a judgment as to the appropriate degree of public health protection that should be afforded to protect against risk of neurocognitive effects in sensitive populations, such as IQ loss in children." (73 FR 67004). As a regional air agency, developing a source-specific-rule for metal melting facilities, the SCAQMD staff is recommending policy decisions that are more health protective for communities, particularly young children, that are affected by lead emissions from metal melting facilities regulated under Proposed Rule 1420.2. The above discussion substantiates the policy decision to establish an ambient lead concentration limit of 0.100 $\mu g/m^3$, with some key points of the above discussion highlighted below:

- No safe blood level of lead in children has been identified (CDC, 2012a)
- The developing nervous system in children is among the sensitive-- if not the most sensitive-endpoints. (73 FR 66976)
- Lead affects children's IQs at exposure levels appreciably lower than recognized. (CHPAC, 2105)

- Pre-school children or children under five years old are the most vulnerable to exposure and adverse health effects, and thereby represent the greatest at-risk population. (EPA, 2013)
- Younger children absorb substantially more lead than adults, especially children below 2 years of age. (OEHHA, 2009)
- No study has determined a level of lead in blood that does not impair child cognition. Further, the effects are long-lasting. Damage to a child's developing brain from lead is not reversible. (AAP, 2008)
- CASAC commented that ''a population loss of 1–2 IQ points is highly significant from a public health perspective.'' (EPA, 2008)
- Air-to-blood ratio of 1:10 is also supported by EPA's evidence based air-related IQ loss data and is even more health protective (CHPAC, 2008b)

Based on all the foregoing, the evidence supports the District's policy decision to establish a final lead limit in ambient air at 0.100 $\mu g/m^3$.

Authority
The SCAQMD Governing Board has authority to adopt PR 1420.2 pursuant to the California Health and Safety Code Sections 39002, 39650 et. seq., 40000, 40001, 40440, 40441, 40702, 40725 through 40728, 41508, 41700 and 41706.

Clarity
PR 1420.2 is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

Consistency
PR 1420.2 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication
PR 1420.2 will not impose the same requirements as any existing state or federal regulations. The proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the SCAQMD.

Reference
By adopting PR 1420.2, the SCAQMD Governing Board will be implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 40001 (rules to achieve and maintain ambient air quality standards), 41700 (nuisance), 41706(b) (emission standards for lead compounds from non-vehicular sources), Federal Clean Air Act (CAA) Section 112 (Hazardous Air Pollutants), and CAA Section 116 (more stringent state standards).

ALTERNATIVE ANALYSIS

Health and Safety Code Section 40440.5, subsection (c)(3) requires an analysis of alternative control measures. Proposed Rule 1420.2 was developed with input with the Proposed Rule 1420.2 Working Group which includes industry, environmental, and agency stakeholders. Throughout

the rule development process, the SCAQMD staff worked with stakeholders to develop the overall control strategy and approach. For example, earlier versions of the proposed rule had a series of control strategies that facilities were required to implement. Working Group members suggested a different approach that had basic core requirements, and additional requirements that could be implemented through a compliance plan only if a facility exceeded the ambient lead limits specified in the proposed rule. The SCAQMD staff also looked at alternative point source requirements, monitoring and sampling frequencies, housekeeping provisions, and exemptions from specific requirements such as monitoring and sampling.

REGULATORY COMPARATIVE ANALYSIS

Health and Safety Code section 40727.2 requires a comparative analysis of the proposed rule with any Federal or District rules and regulations applicable to the same source. See Table 3-~~1~~2 below.

Table 3-~~1~~ 2: Comparison of PR 1420.2 with SCAQMD Rule 1420, the CARB 1998-12-30 Non-Ferrous Metal Melting ATCM, the 2008 Lead NAAQS, and the NESHAP for Secondary Lead Smelters

Rule Element	PR 1420.2	SCAQMD Rule 1420	CARB 1998-12-30 Non Ferrous Metal Melting ATCM	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
Applicability	Facilities that melt 100 tons or more of lead in any calendar year	Facilities that use or process lead-containing materials	Facilities that melt non-ferrous metals including lead	All States	Secondary lead smelters
Ambient Air Quality Standard	Beginning [Date of Adoption], for facilities that already have an ambient air monitoring system approved by the Executive Officer, meet an initial limit of 0.150 µg/m^3 averaged over 30 consecutive days. All other facilities must meet the initial limit no later than 90 days after approval of ~~ambient~~ Ambient ~~air~~ Air ~~monitoring~~ Monitoring and ~~sampling~~ Sampling ~~sites~~ Plan by the Executive Officer. On and after ~~January~~ April 1, 2018, all facilities must meet 0.100 µg/m^3 averaged over 30 consecutive days.	1.5 µg/m^3 averaged over 30 days	None	0.15 µg/m^3: 3-month rolling average Demonstrated over a 3-year period.	None
Total Enclosures	Total enclosure for furnace, refining, casting, lead oxide production and pasting areas	None	Enclosed storage area for dust-forming material including, but not limited to, dross, ash, or feed material	None	Total or partial enclosures for: - Smelting furnace and dryer charging hoppers, chutes, and skip hoists;

Rule Element	PR 1420.2	SCAQMD Rule 1420	CARB 1998-12-30 Non Ferrous Metal Melting ATCM	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
					- Smelting furnace lead taps, and molds during tapping; - Refining kettles; - Dryer transition pieces; and Agglomerating furnace product taps
Emission Standard and Requirements for Lead Control Devices	99% control efficiency for lead or meet an outlet mass lead emission rate of less than 0.00030 lbs/hr	99% control efficiency for particulate matter; or 98% control efficiency for lead	99% control efficiency	None	Concentration of 2.0 mg/dscm
Compliance Plan	Only required if a facility exceeds ambient lead concentration limit of 0.120 µg/m^3 from July 1, 2016 to ~~December~~ March 31, ~~2017~~ 2018 or 0.100 µg/m^3 on or after ~~January~~ April 1, 2018, or total facility point source emissions greater than 0.080 lb/hour after July 1, 2016. Identifies additional lead control measures beyond the rule.	Specifies general facility information	None	None	None
Ambient Air Monitoring Requirements	- Minimum of three monitors at facility locations	Minimum of two monitors at facility locations approved	None	For states, a minimum of:	None

Rule Element	PR 1420.2	SCAQMD Rule 1420	CARB 1998-12-30 Non Ferrous Metal Melting ATCM	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
	approved by the Executive Officer - Provisions included for monitor failure - One year sample retention - Samples collected once every three days or daily depending on the exceedance of ambient air concentration limits, and the severity. Provisions included to cease monitoring if lead concentration is below 0.070 µg/m^3 average over 30 consecutive days, no single day exceeding 0.070 for one full, and total facility mass lead emissions are less than 0.040 lb/hour. - Results reported monthly	by the Executive Officer Samples collected every six days Results reported quarterly		- One source-oriented monitor at all facilities emitting 1.0 tons of lead/year; and - One non-source-oriented monitor in urban areas with a population of at least 500,000 people - Samples collected every six days	
Housekeeping and Maintenance Requirements	- Requirements for storage of dust-forming material - Daily cleaning of surfaces subject to vehicular traffic - Storage and disposal, lead or lead-containing wastes in closed containers - Posted facility vehicle speed limit of 5 miles per hour on any roadway located within 75 feet of total enclosure; 15	Requirements for storage of dust-forming material; weekly cleaning of surfaces subject to vehicular or foot traffic; and storage, disposal, recovery, and recycling of lead or lead-containing wastes	Surfaces subject to vehicular or foot traffic shall be vacuumed, wet mopped or otherwise maintained	None	Periodic wash down of plant roadways (lower frequency than Rule 1420.1); wet suppression of battery breaking area storage piles; vehicle wet washing of vehicles exiting

Rule Element	PR 1420.2	SCAQMD Rule 1420	CARB 1998-12-30 Non Ferrous Metal Melting ATCM	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
	miles per hour speed limit for roadways located more than 75 feet from total enclosure - All outside concrete or asphalt cutting performed under 100% wet conditions - Grading of soil only on soils sufficiently wet to prevent fugitive emissions	generated from housekeeping activities			the materials handling and storage areas
Reporting Requirements	- Monthly ambient air monitoring reports - Exceedances of ambient air concentration to be reported within 24 hours - Failure to collect 24 hour sample to be reported within 2 hours of knowing the sample was not collected - Source test results to be reported within 90 days	Ambient air lead and wind monitoring for any lead-processing facility that is required or elects to do ambient air monitoring	- Source test results Amount of metal processed if requesting exemption	For states: - State Implementation Plan submittal; - Periodic emissions reports from stationary source monitors; - Ambient air quality data and associated assurance data	- Lead control alarm/failure reports including fugitive dust control measures performed during failures

REFERENCES

REFERENCES

AAP, 2005. Lead Exposure in Children: Prevention, Detection, and Management. *Pediatrics* Vol. 116 No. 4. American Academy of Pediatrics Committee on Environmental Health, October 2005

AAP, 2008. Letter to Administrator Stephen L. Johnson. American Academy of Pediatrics Committee on Environmental Health, January 16, 2008.

AAP, 2012. "AAP Commends CDC for Recognizing That for Children, There is No Safe Level of Lead Exposure", AAP Press Room, American Academy of Pediatrics Committee on Environmental Health, May 16, 2012. https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/AAP-Statement-CDC-Revised-Lead-Exposure-Guidelines.aspx

"Air Quality Criteria Document for Lead, Volumes I-II," Environmental Protection Agency, Office of Air Quality Planning And Standards, October 2006.

"AP 42, Fifth Edition, Volume I; Chapter 12: Metallurgical Industry," Environmental Protection Agency, Office of Research and Development, October 1996.

Bergeson & Campbell, 2013. Letter from Bergeson & Campbell on behalf of RSR Corporation to the Oficer of Air and Radiation Docket, United States Environmental Protection Agency. Re: Docket ID No. EPA-HQ-OAR-2010-0108. February, 2013

Brunekreef, et. al., 1983. Blood lead levels of Dutch city children and their relationship to lead in the environment. J. Air Pollut. Control Assoc. 33: 872-876. Brunekreef, B.; Noy, D.; Biersteker, K.; Boleij, J. (1983).

Budtz-Jorgensen, et. al., 2013. "An International Pooled Analysis for Obtaining a Benchmark Dose for Environmental Lead Exposure in Children," Risk Analysis, Vol. 33, No. 3, 2013. DOI: 10.1111/j.1539-6924.2012.01882.x. Budtz-Jorgensen E, Bellinger D, Lanphear B, and Grandjean P., 2013.

Canfield, et. al., 2003a. "Intellectual impairment in children with blood lead concentrations below 10 ug per deciliter," New England Journal of Medicine 348: 1517-1526. Canfield RL, Henderson CR, Cory-Slechta DA, Cox C, Jusko TA, and Lanphear BP, 2003.

Canfield, et. al., 2003b. Intellectual impairment in children with blood lead concentrations below 10 micrograms per deciliter. *N Engl J Med*. 2003;348(16):1517-1526. Canfield RL, Henderson CR, Jr., Cory-Slechta DA, Cox C, Jusko TA, Lanphear BP, 2003.

CASAC, 2013. CASAC Review of the EPA's "Policy Assessment for the Review of the Lead National Ambient Air Quality Standards (External Review Draft – January 2013," (CASAC) Environmental Protection Agency, June 4, 2013.

CDC, 2012a. "Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention, Report of the Advisory Committee on Childhood Lead Poisoning Prevention of the

Centers for Disease Control and Prevention," Centers for Disease Control and Prevention (CDC), January 2012.

CDC, 2012b. "CDC Response to Advisory Committee on Childhood Lead Poisoning Prevention Recommendations in "Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention," Centers for Disease Control and Prevention (CDC), January 2012.

CDC, 2012c. CDC Response to Advisory Committee on Childhood Lead Poisoning Prevention Recommendations in "Low Level Lead Exposure Harms Children: A Renewed Call of Primary Prevention", Centers for Disease Control and Prevention, June 7, 2102. Page 5.

CHPAC, 2008b. Letter to Stephen L. Johnson, Administrator of United States Environmental Protection Agency Regarding Proposed Rulemaking for the National Ambient Air Quality Standard for Lead. Children's Health Protection Advisory Committee, (CHPAC), June 16, 2008.

CHPAC, 2008b. Letter to Stephen L. Johnson, Administrator of United States Environmental Protection Agency Regarding OAQPS Final Staff Paper/Policy Assessment of Scientific and Technical Information and Advanced Notice of Proposed Rulemaking for Lead NAAQS, Children's Health Protection Advisory Committee, (CHPAC), January, 2008.

CHPAC, 215. Letter to Gina McCarthy, Administrator of United States Environmental Protection Agency. RE: National Ambient Air Quality Standards for Lead, Children's Health Protection Advisory Committee, (CHPAC), January 2015.

Chen, et. al., 2005. IQ and blood lead from 2 to 7 years of age: are the effects in older children the residual of high blood lead concentrations in 2-year-olds? *Environ Health Perspect*. 2005;113(5):597-601. Chen A, Dietrich KN, Ware JH, Radcliffe J, Rogan WJ, 2005.

EPA, 2001. "Prioritization of Toxic Air Contaminants Under the Children's Health Act," United States Environmental Protection Agency, Office of Environmental Health Hazard Assessment, October 2001.

EPA, 2006. "Air Quality Criteria Document for Lead, Volumes I-II," United States Environmental Protection Agency, Office of Research and Development, October 2006.

EPA, 2007. "Lead: Human Exposure and Health Risk Assessments for Selected Case Studies." United States Environmental Protection Agency, October 2007.

EPA 2008a. "Responses to Significant Comments on the 2008 Proposed Rule on the National Ambient Air Quality Standards for Lead." United States Environmental Protection Agency, May 2008.

EPA, 2008b. "National Ambient Air Quality Standards for Lead; Final Rule," 40 CFR Parts 50, 51, 53, and 58, Federal Register Volume 73, No. 219, 66964-67062, United States Environmental Protection Agency, November 2008.

EPA, 2009. "Lead in Air," United States Environmental Protection Agency, (*http//www.epa.gov/air/lead.html*), June 12, 2009.

EPA, 2013. "2013 Final Report: Integrated Science Assessment for Lead." United States Environmental Protection Agency, June 2013.

EPA, 2014. "Policy Assessment for the Review of the Lead National Ambient Air Quality Standards." United States Environmental Protection Agency, May 2014

EPA, 2015. "National Ambient Air Quality Standards for Lead." United States Environmental Protection Agency, January 2015.

Hayes, et. al., 1994. "Long-term trends in blood lead levels among children in Chicago: Relationship to air lead levels," Pediatrics 93: 195-200. Hayes, EB, McElvaine, MD, Orbach HG, Fernandez AM, Lyne, S, and Matte, TD, 1994.

Henderson, R., 2008. Letter from Dr. Rogene Henderson, Chair, Clean Air Scientific Advisory Committee, to Administrator Stephen L. Johnson. Re: Clean Air Scientific Advisory Committee's (CASAC) Review of the Notice of Proposed Rulemaking for the NAAQS for lead. July 18, 2008.

"Integrated Science Assessment for Lead," United States Environmental Protection Agency, June 2013.

Lanphear, et. al. 2005a.) "Low-level environmental lead exposure and children's intellectual function: An international pooled analysis," Environmental Health Perspectives 113: 894-899. Lanphear BP, Hornung R, Khoury J, Yolton K, Baghurst P, Bellinger DC, Canfield RL, Dietrich KN, Bornschein R, Greene T, Rothenberg SJ, Needleman HL, Schnaas L, Wasserman G, Graziano J, and Roberts R, 2005.

Lanphear, et. al. 2005b. Low-level environmental lead exposure and children's intellectual function: an international pooled analysis. *Environ Health Perspect*. Jul 2005;113(7):894-899. Lanphear BP, Hornung R, Khoury J, et. al., 2005.

"Lead in Air," Environmental Protection Agency, (*http//www.epa.gov/air/lead.html*), June 12, 2009.

Lubischer, 2015. Letter from James T. Lubischer to Gina McCarthy, Administrator of United States Environmental Protection Agency, M.D., Pediatrician to , RE: Docket ID No. EPA-HQ-OAR-2010-0108 (40 CFR Part 50, National Ambient Air Quality Standards
for Lead; Proposed Rule - Federal Register / Vol. 80, No. 2 / Monday, January 5, 2015, p 278-324.), March, 2015.

"National Ambient Air Quality Standards for Lead; Final Rule," 40 CFR Parts 50, 51, 53, and 58, Environmental Protection Agency, November 2008.

"National Ambient Air Quality Standards for Lead, Proposed Rule, 40 CFR 50" United States Environmental Protection Agency, January 2015.

OEHHA, 2009. "Revised California Human Health Screening Levels for Lead," Office of Environmental Human Health (OEHHA). September 2009.

"Policy Assessment for the Review of the Lead NAAQS," United States Environmental Protection Agency, May 2014.

"Prioritization of Toxic Air Contaminants Under the Children's Health Act," Environmental Protection Agency, Office of Environmental Health Hazard Assessment, October 2001.

RSR, 2015. Letter from RSR Corporation to the Office of Air and Radiation Docket, United States Environmental Protection Agency. Re: Docket ID No. EPA-HQ-OAR-2010-0108. April, 2015.

Schwartz, J., and Pitcher, H. (1989). The relationship between gasoline lead and blood lead in the United States. J Official Statistics 5(4):421-431. Schwartz, J., and Pitcher, H., 1989.

South Coast Air Quality Management District, SCAQMD's Annual Emission Reporting (AER) program, AER/AB2588 - Search, Reporting Years 2010 – 2013. <http://www3.aqmd.gov/webappl/aersearch/search.aspx>.

"STAFF Report for BAAQMD Regulation 12, Rule 13: Foundry and Forging Operations," Bay Area Air Quality Management District, February 2013.

"Staff Report for Proposed Rule 1420: Emissions Standards for Lead," South Coast Air Quality Management District, September 1992.

"Staff Report for Proposed Rule 1420.1: Emission Standards for Lead from Large Lead-Acid Battery Recycling Facilities," South Coast Air Quality Management District, November 2010.

"Toxicological Profile for Lead," U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, August 2007.

WHO, 2015. , "Lead poisoning and health", http://www.who.int/mediacentre/factsheets/fs379/en/, World Health Organization, Media Centre, Fact Sheet, 2015

APPENDIX A: COMMENTS AND RESPONSES

Comments and Responses

PURPOSE:

1. Comment: From the data that we have been able to acquire, the battery manufacturers industry's contribution to lead emissions in the South Coast Air Basin is almost negligible. Based on data we acquired, Exide's contribution to lead emissions in the South Coast Air Basin accounted for 85% of the total emissions inventory for battery manufacturing, lead oxide manufacturing and lead smelting sources. As a result, the need to lower the ambient air concentration limit to achieve attainment with the Lead NAAQS in LA County appears to be unnecessary.

Response: The relative contribution of the battery industry's contribution to lead emissions in comparison to those from other industries is not the only factor that should be taken into consideration when determining impacts to the ambient air lead concentration. For instance, Trojan Battery, a lead-acid battery manufacturer in Santa Fe Springs, reported low annual emissions, but SCAQMD ambient air monitoring data for the facility during the same emissions reporting period shows that a facility that reports low stack emissions can have high ambient air concentrations of lead that can exceed federal ambient air quality standards. For this reason, it is important that regulations exist to set requirements for ambient air concentration limits, and control measures for both stack and fugitive lead emissions through performance standards for point sources and best management practices to control and minimize fugitive emissions and the accumulation of fugitive lead dust. SCAQMD staff has developed Proposed Rule 1420.2 in order to address these issues in order reduce the exposure of lead to the public for health protection in addition to helping ensure attainment and maintenance of the National Ambient Air Quality Standard (NAAQS) for lead. Cumulatively the metal melting facilities subject to PR 1420.2 melt more than 50,000 tons of lead annually. Lead is classified as a "criteria pollutant" under the federal Clean Air Act. The Office of Environmental Health Hazard Assessment (OEHHA) also identifies it as a carcinogenic toxic air contaminant (TAC). Chronic health effects include problems such as nervous and reproductive system disorders, neurological and respiratory damage, cognitive and behavioral changes, and hypertension. Exposure to lead can also potentially increase the risk of contracting cancer. Young children are especially susceptible to the effects of environmental lead because their bodies accumulate lead more readily than do those of adults, and because they are more vulnerable to certain biological effects of lead including learning disabilities, behavioral problems, and deficits in IQ.

APPLICABILITY

2. Comment: Despite our efforts to minimize the amount of lead containing scrap introduced to the furnace, negligible amounts of lead (in comparison with the total mass of ferrous scrap) are introduced to the furnace. As a result, we have estimated the lead content in the incoming scrap by analyzing its collected baghouse dust for lead. Based on our estimation the accidental lead content of the ferrous scrap processed at our facility is 0.03% resulting in lead throughputs ranging from 73 tons in 2009 to 117 tons in 2013.

Response: Based on your analysis, your facility would be subject to the provisions of the rule. The rule applies to all persons who own or operate a metal melting facility that melts 100 tons or more of lead a year based on any of the five calendar years prior to the date of adoption, or any year thereafter. If further analysis demonstrates that the lead throughput is less than 50 tons per year, your facility may be exempt from the rule provided you meet the criteria established in paragraph (o)(3) in the proposed rule. However, this analysis assumes that there is 100 percent collection efficiency and there are no fugitive emissions.

3. Comment: We request that the SCAQMD staff provide the basis for defining entities as among the class of "metal melters," and for prioritizing attention to those entities above those documented to be releasing far more lead into the air.

Response: During the rule development process for PR 1420.2, the SCAQMD staff conducted a comprehensive review of lead emissions data taking into consideration multiple data sources including emissions reports from the SCAQMD AER Program, U.S. EPA's Toxic Release Inventory (TRI) database, permitting data, compliance data, source test results garnered from the AB 2588 Air Toxics Program, and ambient air lead monitoring data. Facilities were categorized based on criteria such as high lead emissions, amounts of lead processed, ambient air monitoring data, and similar process types. Based on this review, SCAQMD staff determined that high emissions or high ambient air lead concentrations were exhibited by facilities that shared the common metallurgical process of metal melting through the use of various types of furnaces, including casting and refining operations. Thus, these facility types were collectively categorized and termed metal melting facilities. SCAQMD has also imposed stringent requirements on large lead-acid battery recyclers through Rule 1420.1. During the review of available lead emissions data for years 2010-2013, SCAQMD staff also identified several petroleum refineries, a municipal trash incinerating facility, and a glass making facility with high reported emissions of lead. However, the majority of the lead emissions reported by these sources were emissions calculated using default lead emission factors from U.S. EPA's *Compilation of Emission Factors (AP-42)* for the combustion of fuels containing trace amounts of lead. Additionally, fugitive lead emissions reported by these

facilities to the TRI database use conservative calculations such as mass balance equations considering the amount of lead brought on-site minus the amount of lead in the final product, the amount released in wastewater, and the amount disposed as solid waste. Lastly, there was no available ambient air lead monitoring data for these facility types showing elevated levels. For these reasons the SCAQMD prioritized the regulation of metal melters as well as facilities subject to Rule 1420.1. The other lead sources are currently subject to Rule 1420 and the lead emissions from these source categories will be further reviewed and addressed in a future amendment to Rule 1420.

DEFINITIONS

4. Comment: We are concerned about the definition of Fugitive Lead Dust in PR 1420.2, specifically, PR 1420.2 defines Fugitive Lead Dust as any solid particulate matter containing lead that is in contact with ambient air and has the potential to become airborne. We recommend that SCAQMD consider a definition more aligned with Rule 1420 for PR 1420.2, which sets a lead content threshold for fugitive lead-dust emissions, as well as a particle size range for dust-forming material.

Response: The definition of "Fugitive Lead-Dust" is the same as is contained in Rule 1420.1 – Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Recycling Facilities. The definition in Rule 1420 – Emission Standards for Lead includes a lead content threshold of 0.5% by weight. However, as the ambient monitors for the proposed rule measure total lead deposited, the exclusion of low-lead content particles from the definition of fugitive lead-dust could result in higher ambient results because of improper handling of low-lead content dust. Thus, excluding low-lead particles may provide some relief from housekeeping and maintenance requirements, but result in a greater chance for ambient air lead concentration exceedances. The fugitive lead dust definition in Rule 1420 does not discriminate by particle size range.

5. Comment: There may be a need to define a de minimis lead concentration level below which a point source will be required to be controlled or source tested.

Response: The proposed rule contains language in paragraph (o)(3) that exempts any lead point source that has an uncontrolled lead emission rate of 0.005 pounds per hour from the Lead Point Source requirements of subdivision (f). However, it still requires that a source test be conducted at least once every 24 months to ensure that the level of emissions still qualify for exemption.

6. Comment: Please clarify the definition of "lead containing materials." Specifically, we request that the SCAQMD staff identify the types of materials included in this definition. For example, does the definition include semi-finished

batteries (i.e., uncharged dry batteries without vent caps but that have covers).

Response: It is not possible for District staff to predict all types of materials a facility may have on its premises that contain lead. A facility can assume that if the material contains greater than trace amounts of lead, and that the lead-containing material has the potential to generate fugitive lead dust, that the material should be considered a "lead containing material". This consideration was taken into account for many of the requirements of PR 1420.2 regarding lead-containing materials, as those requirements imply that a control measure is necessary if the lead-containing material has the potential to generate fugitive lead dust. Examples of some lead-containing materials that have the potential to generate fugitive lead dust include lead-oxide paste/powder, furnace slag, dross, and flue dust. Semi-finished batteries that are fully enclosed in the battery casing, but without vent caps would not be considered a lead-containing material that has the potential to generate fugitive lead dust.

AMBIENT AIR LEAD CONCENTRATION LIMITS

7. Comment: Dispersion modeling results for our new baghouse and melt shop evacuation shop estimated a maximum monthly average lead concentration of 0.064 $\mu g/m^3$ at the fence line. Therefore, we have no concerns about meeting 0.10 $\mu g/m^3$ over any consecutive 30 days after the new baghouse, as planned and permitted, is in operation.

Response: Staff looks forward to verifying your future compliance with the proposed ambient air concentration limits of PR 1420.2.

8. Comment: We are concerned that our facility would be held accountable for elevated ambient air concentrations of lead even when the background levels of ambient air lead concentrations are high. These very low levels of background concentrations will not significantly affect companies.

Response: Data values from measurements conducted by SCAQMD at non-source-oriented monitors operated in the Basin were reviewed for years 2007 through 2013 and showed background concentrations which are of 0.01 $\mu g/m^3$ to 0.03 $\mu g/m^3$ and well below the final ambient lead concentration limits in PR 1420.2 which is 0.100 $\mu g/m^3$ by ~~January~~ April 1, 2018.

9. Comment: We request that the SCAQMD staff identify the statutory mandate that requires adoption of regulatory requirements based on technical feasibility as opposed to protection of public health.

Response: The purpose of PR 1420.2 is to protect public health by reducing emissions and ambient air concentrations of lead, reduce public health impacts by

reducing the exposure to lead, and to help ensure attainment and maintenance of the NAAQS for lead. Technical feasibility was evaluated in order to ensure that the proposed measures can be accomplished by facilities subject to the proposed rule.

AMBIENT AIR MONITORING REQUIREMENTS

10. Comment: We support daily monitoring for facilities melting more than 1,000 tons per year of lead, or if the ambient air concentration exceeds 0.11 µg/m^3 over any 30 consecutive days. We also support an off-ramp provision for monitoring based on meeting the proposed 0.100 µg/m^3 limit over a certain period of time, upon written approval from SCAQMD.

Response: PR 1420.2 has been modified to require a base requirement of 1-in-6 day sampling for all facilities regardless of annual lead melting amounts. However, facilities that have an approved HRA and have monitored ambient lead concentration(s) above 0.120 µg/m^3 are required to monitor daily. Facilities will be required to increase the monitoring frequency to 1-in-3 days (if lead concentration are 0.150 – 0.300 micrograms per cubic meter averaged over any 30 consecutive days on ~~and after~~or before ~~January~~ March 31, 2018 and if the lead concentration are 0.100 – 0.150 micrograms per cubic meter averaged over any 30 consecutive days on or after April 1, 2018~~)~~) and in some cases daily ambient air monitoring (if lead concentrations are greater than 0.300 micrograms per cubic meter averaged over any 30 consecutive days before ~~January~~ March 31, 2018 or are greater than 0.150 micrograms per cubic meter averaged over any 30 consecutive days on and after ~~January~~ April 1, 2018) based on the ambient lead thresholds and dates specified in paragraph (e)(5) of the proposed rule. An off-ramp provision for monitoring has also been included in paragraph (o)(1) if air dispersion models predict no exceedances of 0.070 µg/m^3, one year of monitoring results indicate an ambient air lead concentration below 0.070 µg/m^3, and the total facility mass lead emission rate is less than 0.040 pounds per hour.

11. Comment: In light of U.S. EPA's ongoing proceeding that proposes to retain the NAAQS for lead at 0.15 µg/m^3, additional emission limitations, operational requirements and lowered ambient levels SCAQMD proposes to adopt, raises issues of fundamental national importance and merit more substantive attention than the SCAQMD is devoting to them. For example, SCAQMD has yet to present any scientific justification for the reduced ambient standard or, indeed, for the rule as a whole.

Response: Please refer to Chapter 1, Section "Justification for Lowering the Ambient Air to 0.100 µg/m^3.

12. Comment: The SCAQMD staff estimated that the proposed ambient air monitoring requirements would result in an estimated annual cost of $80,000 to $100,000. However, we believe that this cost is significantly underestimated by as much as half the actual cost. Further, we do not believe that proposed monitoring results yielding these significant costs provide a public benefit given that U.S. EPA has completed an extensive evaluation of the effects of lowering the NAAQS limit below 0.15 µg/m^3 and concluded that there would be "no meaningful health benefit" to lowering the limit below this level.

Response: SCAQMD staff has acknowledged that initial estimated costs for the original proposal for ambient air monitoring did not include operational and maintenance cost, and was therefore underestimated. PR 1420.2 has significantly modified the ambient air monitoring and sampling requirements since the original draft rule language. Modifications include a reduced sampling frequency of once every 6 days versus daily monitoring, removal of back-up power for general monitoring, and allowances for the facility personnel approved by the Executive Officer to conduct various aspects of ambient air monitoring and sampling. In order to estimate costs for the current proposal for ambient air monitoring, cost estimates were obtained from three separate companies in the Basin that currently provide services to conduct measurements of ambient air lead and analyze samples. The proposed ambient air monitoring costs are based on the purchase of ambient air monitors and back-up power, laboratory costs to analyze the samples, labor, maintenance, filter replacement and reporting. Staff provided detailed costs to the working group for discussion. SCAQMD staff estimates the cost of annual ambient air monitoring to be in the range of $62,000 to $72,000, which includes a sampling schedule of 1-in-6 days, and 30 days of daily sampling which is required during the first month of operation. For facilities triggering daily ambient air monitoring on an ongoing basis, cost was estimated to be approximately $287,500.

Staff disagrees with the conclusion reached by the commenter that there would be "no meaningful health benefit" to lowering the limit below 0.15 µg/m^3. Please refer to Chapter 1, Section "Justification for Lowering the Ambient Air to 0.100 µg/m^3" for the detailed discussion.

13. Comment: There is a provision for ambient sampling to be done every three days (after the first 30 days) if the annual amount of lead melted is less than 1000 tons. For "*Facilities that melt 1000 tons of lead per year or more shall collect a 24-hour, midnight-to-midnight, sample collected daily, on a schedule approved by the Executive Officer"*. Does that imply that facilities melting 1000 tons of lead per year or more may be provided the same option depending on our first 30 days of results? Also, can facilities conduct sampling ourselves or will we need to hire a 3rd "independent" party?

Response: PR 1420.2 has been modified to require a base requirement of 1-in-6 day sampling for all facilities regardless of annual lead melting amounts. However, facilities that have an approved HRA and have monitored ambient lead concentration(s) above 0.120 $\mu g/m^3$ are required to monitor daily. Facilities will be required to increase the monitoring frequency to 1-in-3 days and in some cases daily ambient air monitoring based on the ambient lead thresholds and dates specified in paragraph (e)(5) of the proposed rule. Facilities are allowed to conduct sampling themselves provided the sampling staff have been trained pursuant to paragraph (e)(11) of the proposed rule, which states that the monitoring shall be conducted by persons approved by the Executive Officer, or facility personnel trained and certified to conduct ambient air quality monitoring demonstrated through successful completion of a course offered or approved by the Executive Officer..

14. Comment: What kind of meteorological data will need to be recorded per (m)(1)(B)? Our facility has an on-site weather station that can record hourly readings.

Response: The meteorological data required by the proposed rule are wind speed and wind direction. The wind speed and direction information is required to be capable of determining minute-data in order to calculate and report an hourly average.

15. Comment: What will facilities need to do to conduct 24-hour sampling on a schedule different than midnight to midnight (if that's possible).

Response: The option to conduct sampling on an alternative schedule must be approved by the Executive Officer. It must be demonstrated that the alternative schedule is adequate to routinely collect valid 24-hour samples and is conducted using the sampling methods referenced in paragraph (e)(8) of the proposed rule.

16. Comment: What do we need to do to have our Environmental Health and Safety Specialist take the samples as opposed to hiring a third party to do the work?

Response: Persons, including facility staff, may conduct ambient monitoring if they are trained and certified to conduct ambient air quality monitoring demonstrated through successful completion of a course offered or approved by the Executive Officer. A list of courses will be made available to the public after adoption of PR 1420.2.

POINT SOURCE EMISSIONS CONTROLS

17. Comment: Our facility fully supports the purpose for PR 1420.2. Since 2010 we have spent $2.4 million on preliminary engineering design, planning and

permitting of an upgrade project that will cost a total of $37 million. The upgrade project will replace our baghouse and melt shop evacuation system.

The new EAF baghouse project will be fitted with PTFE bags and will have a guaranteed filterable PM outlet concentration of 0.0012 gr/dscf. This concentration is approximately four times lower than the New Source Performance Standard for PM from an EAF. The PM outlet concentration from our EAF baghouse would be the lowest permitted concentration for an EAF baghouse. Further, no other steel mill has proposed or successfully implemented any different controls than fabric filtration.

Response: The SCAQMD staff appreciates your comment and support of the proposed rule.

18. Comment: Our facility would not be able to meet the emissions rate limit proposed in PR1420.2 (consistent with Rule 1420.1) even with the installation of a new baghouse and melt shop evacuation system. However, our facility can comply with a lower ambient fence line standard and meets all the required AB 2588 health risk reductions without meeting the emission rate limit in 1420.2. Therefore, emission rate limits are not needed to achieve the objective of 1420.2.

A "one-size fits-all" approach for the point source emission rate is inappropriate given the diverse nature of facilities subject to the proposed rule. The point source emissions limit should be evaluated against industry specific equipment and performance. Specifically, if a lead point source emissions rate is included in PR 1420.2 it should be based on:

- Dispersion modeling to verify the rate required to ensure and maintain compliance with the lead NAAQS, and
- HRA tools (e.g., AB 2588 guidelines) to protect public health.

Response: PR 1420.2 no longer has a requirement to only meet a lead point source emission rate and instead requires that lead point sources reduce lead emissions by 99% or meet an outlet mass lead emission rate of less than 0.00030 lbs/hr as determined by a source test conducted pursuant to subdivision (j). This requirement is readily achievable utilizing baghouse technology. Point source lead emission rates specified in the proposed rule are only included as criteria requiring provisions such as submitting a Compliance Plan, determining source testing schedules, and applicability for the ambient air monitoring exemption. A facility-specific point source lead emission rate may be required only if a facility triggers the need to implement a control measure of a Compliance Plan that necessitates the need to have a facility-specific point source emission rate in order to attain the ambient air lead concentration limits of subdivision (d).

19. Comment: We are concerned that the uncertainty regarding a point source emission rate limit will delay construction and startup of our proposed new baghouse and melt shop evacuation upgrades.

Response: PR 1420.2 no longer requires a base requirement for a point source emission rate limit. See Response to Comment #18 above**.**

20. Comment: We recommend that the SCAQMD consider foregoing a mass lead emissions rate for facilities that comply with all other air quality measures required by PR 1420.2. If a mass lead emissions rate is required by PR 1420.2, it should be facility and industry specific. Otherwise, the final rule could render larger facilities unviable.

Response: The mass lead emission rate has been replaced with a control efficiency requirement. See Response to Comment #18 above.

21. Comment: Given the process differences between steel mini-mills and lead recyclers from which the PR 1420.2 emission limit was derived, as well as the many process differences between the 15 facilities subject to PR 1420.2, it is fundamentally unfair to apply the same, non-health effects derived emission rate on all of these facilities. For steel mini-mill operations, we propose a facility-wide mass lead emissions limit of 0.313 lb/hr. This rate is based on the estimated lead emissions from (our) new baghouse.

Further, in order to capture the variability between the different processes of the 15 potentially subject facilities, we propose that the rule require that affected facilities submit a Compliance Plan to the SCAQMD. The Compliance Plan shall include a proposal for a facility-wide point source emission limit, listing equipment subject to the limit, the expected emissions, and the maximum ambient concentration impact from the proposed emission limit based on dispersion modeling approved by the Executive Officer. Upon approval by the Executive Officer, the limit will be incorporated into the facility permit(s).

Response: See Response to Comment #18 above.

22. Comment: To meet an emission rate limit of 0.023 lb/hr, our facility would be required to reduce lead emissions from a planned new state of the art baghouse and melt shop evacuation system by over 92%. We are exploring the addition of High Efficiency Particulate Air (HEPA) filtration or a wet electrostatic precipitator (WESP). However, based on discussions with filtration and WESP vendors they could not guarantee a 92% reduction of lead emissions from our planned upgrade project. Also, due to potentially very high particle loading on HEPA filter media and an exponential rise in pressure drop across filters we estimate that filters would need to be replaced every 10 days. Additionally, HEPA filtration has not been used as a post-

baghouse control in the steel industry. Even if technically feasible both HEPA and WESP control technologies would be cost prohibitive. The capital cost for a HEPA filtration system would be roughly $8 to $12 million in addition to approximately $6.8 million per year in operating cost. Further, a WESP would cost as much as $165 million (this cost exceeds the purchase cost of the entire steel mill). Therefore, we believe a facility specific emissions limit determined by the affected facility and SCAQMD permitting staff following submittal of a Compliance Plan would be more appropriate.

Response: An emission rate limit of 0.023 lb/hr is not a requirement in the proposed rule, and PR 1420.2 no longer requires a mass lead emission rate. See Response to Comment #18 above. The emission rate limit in the proposed rule has been replaced by a 99% control efficiency measuring inlet versus outlet at the lead control device, or an outlet mass lead emissions rate of less than 0.00030 lbs/hr. This level of particulate control is readily achievable utilizing baghouse technology and does not specifically require HEPA or WESP control technologies as the only options to satisfy the base requirements of the proposed rule. The cost estimates for such equipment is included in the Socioeconomic Assessment for PR 1420.2.

23. Comment: We are concerned that PR 1420.2 would require control devices be installed on all lead point sources, even low-lead emitting point sources at a metal melting facility, including natural gas-fired water heaters and space heaters. Lead concentrations in the uncontrolled stacks at our facility are already below controlled emission sources at other facilities, and it would be infeasible to install emission controls to reduce emissions by 99.97% as proposed in the PR 1420.2 language. Therefore, we recommend that SCAQMD include the following exemption:

Exempt Process Source - is any combustion source fired on natural gas only in which metal melting does not take place or source where moisture content exceeds 10% by volume in the exhaust gas. Exempt process sources include but are not limited to reheat furnaces, dryers, and ladle heaters. These sources are not subject to the requirements of lead emission controls.

Response: The proposed rule has been modified to address the concern presented by the commenter. Any lead point source that has an uncontrolled emission rate of 0.005 pounds per hour or less, such as natural gas-fired water heaters and space heaters will be exempt from the requirements of subdivision (f) of this rule provided that a source test pursuant to subdivision (j) is conducted for the lead point source at least once every 24 months.

24. Comment: The PR 1420.2 draft language appears to require that baghouse bags meet a 99.97% control efficiency. This is more stringent than is required by Rule

1420.1. Therefore, we recommend requirements similar to PR 1420.1 as follows:

- Standards for Emission Control Devices- For any emission control device that uses filter media other than a filter bag(s), including, but not limited to, HEP A and cartridge-type filters, the filter(s) used shall be rated by the manufacturer to achieve a minimum of 99.97% capture efficiency for 0.3 micron particles.

- Maintenance: "Conduct maintenance in negative air enclosure vented to a negative air machine fitted with filters rated at 99.97% capture efficiency for 0.3 micron particles."

Response: The recommended language has been incorporated into the proposed rule.

25. Comment: We cannot move forward on the upgrade project before PR 1420.2 is finalized, however, we expect that our baghouse upgrade project will be completed two years from adoption of PR 1420.2. Further, we anticipate that the total enclosure for the facility will be completed three months after completion of the baghouse upgrade project. Also, if secondary controls (e.g., HEPA filtration) are required for the baghouse and the secondary controls are feasible, we anticipate that these controls could be installed one year from completion of the baghouse upgrade project.

Response: SCAQMD staff has acknowledged the logistical constraints that the previous version of PR 1420.2 presented to your facility's baghouse project. Through multiple working group meetings and input from stakeholders, PR 1420.2 has been significantly revised resulting in not only a modification to the overall structure of the rule, but also the omission of specific provisions, such as base requirements for additional controls. Additionally, compliance deadlines for construction of total enclosures with negative air have been modified to provide schedules that would allow facilities to comply with the new deadlines based on information to SCAQMD staff.

26. Comment: The District should be aware that to properly conduct daily sampling for a 24-hour period that two (2) sampling units would be required. Typical daily sampling involves recovering and charging one sampler while another sampler is operating. The use of a single sampler for daily sampling would result in not collecting a 24-hr for any sampling day as a minimum 15 minutes would be needed to allocate for the removal and charging of the sampler. Therefore, a second sampler should be included in the estimated monitoring cost (e)(4).

Response: The sample collection methodology in Title 40, CFR 50 Appendix B - *Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)* provides sufficient flexibility to

allow for removal of filter media and charging of the sampler during the 24-hour sampling period. Sampling run time may be no less than 23 hours and no longer than 25 hours and thus can be done with one sampling unit. Nevertheless, regarding the cost analysis for facilities anticipated to conduct daily sampling, SCAQMD staff included costs for a second sampler at each monitor location required by the proposed rule.

27. Comment: Please clarify that the "one miss" allowed over a 30 day consecutive period refers to the facility as a whole or is to the specific sampling location. If it is applied to the entire facility, 1 miss in 30 sampling events (3 samplers x 10 sampling days) would require a 96.7% success rate in sampling. If daily sampling is being required, then the required success rate increases to 98.9% (3 samplers x 30 days).

Upon researching recent sampling ambient events conducted by the District at Exide from January 1 to September 30, 2014 (from District website regarding Exide ambient program) a total of 687 samples were attempted with 32 events labeled as "no sample". This correlates to a 95% success rate. Therefore, some accommodations should be allocated to the additional sampling events for daily sampling (e)(6)(B).

Response: Each monitor is allowed one miss over a 30-day consecutive period. It is not applied to the facility as a whole. Language has been included in the proposed rule for clarification.

28. Comment: The draft rule requires that samples be submitted within three days. This condition is subject to the whim of the laboratories accepting the samples. Currently the two certified labs are accepting samples on Saturday. If the lab decides to close on Saturdays, or for long weekends, the three day criteria could be difficult or impossible to meet. Since the samples are under chain of custody by a District approved firm, we believe the three day criteria should not be specified. The timing of the reporting of the results would not be effected. (e)(7)

Response: The three calendar day sample submittal schedule is the same as required in Rule 1420.1. Facilities subject to Rule 1420.1 have been able to comply with the proposed requirement despite holidays and long weekends.

29. Comment: Regarding paragraph (e)(7), – Should this refer to "spilt" samples? What would be a "duplicate" sample?

Response: The proposed rule intended to mean "duplicate" samples to mean "split" samples, therefore, paragraph (e)(7) has been modified to say, "Split samples shall be made available and submitted to the District upon request by the Executive Officer."

30. Comment: Under what conditions would a sampling period other than "midnight to midnight" be approved? Cost? Convenience? (e)(10)

Response: It must be demonstrated that the alternative schedule is adequate to routinely collect valid 24-hour samples and is conducted using the sampling methods referenced in paragraph (e)(8) of the proposed rule. See Response to Comment # 15.

31. Comment: The wording in the rule is unclear how long the back-up power should be able to last. The rule language is identical to that found in Rule 1420.1, which has been interpreted by the SCAQMD to be 24 hrs. If the Rule intent is to have the back-up power for a more limited period (e.g. 3 hrs) then it should be made clear. Otherwise, this provision is subject to interpretation and could require back-up generators to be installed at each location. Also, please note, most power losses that we have seen are the results of circuit overloads or "electrical shorts" and not facility "power outages" which are less common. (e)(12)

Response: While most power outages or losses are for a more limited period, the back-up power supply must be able to supply power to the monitor to ensure that a valid 24-hour sample can be collected.

32. Comment: The annual cost shown for sampling every three days does not include labor, maintenance and reporting. This would be estimated to be about $50,000 to $60,000 annually with daily sampling maybe an extra $80,000 to $100,000 more. Additionally, the daily sampling premium does not include the procurement of three (3) additional samplers.

Response: See Response to Comment #12 and #26.

33. Comment: Given that approval of an emissions control system or an emission collection system does not require written approval we request the SCAQMD staff clarify that the approval would not include oral conditions.

Response: PR 1420.2 has been modified to require that approvals by the Executive Officer shall be shall be done in writing.

TOTAL ENCLOSURES

34. Comment: We believe that we can maintain a negative pressure on our openings consistent with the requirements of PR 1420.2. However, we recommend that the negative pressure requirements of PR 1420.2 only be applicable during operation of the furnace and maintenance. Limiting the negative pressure requirements to operation and maintenance periods will avoid maintaining negative pressure when no fugitive emissions are present.

Response: The SCAQMD staff believes that fugitive lead emissions can be generated inside a total enclosure even during periods where the furnace is not being operated or maintained. Process fugitives and other forms of lead-containing materials that can generate fugitive lead-dust can accumulate on surfaces within the total enclosure. When the furnace is not in operation, the decrease in negative pressure for the total enclosure can potentially allow for fugitive emissions of lead outside through openings or weather conditions such as high wind events.

35. Comment: We are concerned that requiring a total enclosure forces employees to work inside emissions control equipment, significantly increasing their exposure to toxic substances. In addition, a total building enclosure can increase heat stress to intolerable levels that may result in safety hazards by reducing visibility. Further, we believe that it is bad public policy to endanger one group of citizens (workers vs. public beyond fenceline) in order to protect another, especially when SCAQMD has the means to protect both. Therefore, we strongly recommend that local exhaust ventilation be substituted for the proposed total enclosure requirement with appropriate monitoring to ensure air quality standards are met.

Response: The proposed rule is not designed to endanger any person(s). Total enclosures under negative air have been utilized in similar operations (lead-acid battery recycling facilities) providing improved fugitive emission control while not jeopardizing the health of facility employees. PR 1420.2 has added language in subdivision (g) to require total enclosures to be designed in a manner that does not conflict with requirements set forth by the Occupational Safety & Health Administration regarding worker safety.

36. Comment: Require enclosure and total enclosure requirements for material handling areas only if the material handled meets the "lead containing material" definition proposed above.

Response: Regarding total enclosure requirements for material handling areas, PR 1420.2 has been modified from requiring total enclosures of furnace, refining, casting, lead oxide production areas, and materials storage and handling areas, to only require total enclosures of furnace, casting, refining, lead oxide production and pasting areas.

37. Comment: We request that the SCAQMD staff provide additional clarification of areas that do not require enclosures. For example, the rule states that areas where raw unprocessed lead-containing materials are stored will not be subject to enclosures. However, we would like clarification that within this exclusion are small soldering operations (processing less than 30 lbs/day of lead), formation, water treatment and lead oxide truck unloading areas.

Response: The proposed rule has been revised to specify which areas require enclosures. These areas are furnace, refining, and casting areas as well as lead oxide production and pasting areas. Thus, the areas specified by the commenter would not be subject to the general requirements for total enclosures unless the specified areas occurred in the furnace, casting, refining, lead oxide production and/or pasting areas.

38. Comment: We have done preliminary ambient monitoring at 4 "fenceline" locations and the results indicate we will have no issues meeting the 0.05 ug/m^3 objective. Upon proof with "official" data, will there still be requirements to install more enclosures? We currently have all lead processing areas in ventilated total enclosures but there are other portions of the facility that are not totally enclosed. For example, we unload lead oxide trucks from our roadway that runs through the perimeter of the facility, which is not totally enclosed. Our ambient monitoring results indicate the unloading process is not contributing any fugitive lead emissions. Will we possibly be required to enclose this area somehow?

Response: See Response to Comment # 37.

39. Comment: Section (g)(3)(B) accelerates the deadline by which we must complete our meltshop/baghouse project. Specifically, this section would require the total enclosure with negative air to be installed and operational within two years after approval of a HRA. The total enclosure with negative air cannot be completed until the installation of the new baghouse and decommissioning of the old baghouse as footprint of the total enclosure will overlap the footprint of the old baghouse.

Moreover, in a project of this size, it would be imprudent not to anticipate the schedule to slip over the course of construction and startup. Although, Section (g)(3)(C) would allow for an extension based on weather-related factors other potential causes of delay may not be so easily identified and quantified. For example, the availability of contractors and subcontractors could impact an already tight schedule.

We anticipate that a directive to prepare a risk reduction plan will accompany the imminent approval of our HRA. However, the SCAQMD has given us no assurance that it will approve a risk reduction plan built around the meltshop/baghouse project as currently designed. We see no reason why the rule requires a second enforceable deadline for completion of the meltshop/baghouse, but if one is included, at a minimum the time should be calculated from approval of the risk reduction plan rather than the HRA.

Response: SCAQMD staff revised paragraph (g)(3)(B) of PR 1420.2 to require the total enclosure to be constructed no later than two years after approval of

the HRA specified in clause (g)(3)(B)(i), or by ~~January~~ April 1, 2018, whichever date is later. Based on information given to the SCAQMD staff by the commenter, the modified compliance deadline provides sufficient time for completion of the total enclosure with negative air. PR 1420.2 also allow facilities to receive approval for an extension to the deadline due to reasons beyond the facility's control, if the facility can demonstrate that it timely filed all complete permit applications.

40. Comment: We have serious concerns regarding the monitoring requirements set forth in Appendix 1 of PR 1420.2. Primarily, it is not clear that any monitoring gauge exists that can withstand the extremely high ambient air temperature of a steel mill melt shop. Our own experience using magnahelic gauges for other monitoring purposes suggests that the gauges routinely fail when exposed to the harsh meltshop environment. Even if a gauge exists that can endure the temperatures of the meltshop, other requirements of Appendix 1 are problematic. For example, Appendix 1 does not include an averaging time for the differential pressure monitoring data and without an averaging time, one moment of positive pressure (due to a transient weather event or temporary obstruction of a monitor) could lead to violation of the rule. Therefore, if sustainable monitoring gauges exist, some type of averaging period should be incorporated into the rule.

Response: Differential pressure monitors of the proposed rule are not required to be placed directly on the furnace or other equipment that have extremely high temperature zones. Monitors are to be placed at the three separate wall locations specified in Appendix 1. Based on experience with pressure monitors at other facilities that have high ambient indoor temperatures, placement of these monitors on the subject walls have not posed problems resulting in malfunction due to high heat. Additionally the transducer for the differential pressure monitor does not need to be directly subjected to a high temperature environment. The monitor can be placed remotely via lines to a hole or tap where the pressure is actually measured. PR 1420.2 provides the owner or operator to submit an alternative to any monitoring method or procedure for approval if the facility can demonstrate that the alternative method or procedure is equal to or more effective than the methods prescribed in Appendix 1.

Regarding, averaging periods, the SCAQMD staff has revised Appendix 1 to require 15-minute averaging periods for the differential pressure monitoring gauges, which is consistent with the federal NESHAP for secondary lead smelting.

HOUSEKEEPING

41. Comment: Our facility could not sustain its operations if limited to 5 mph throughout the entire site. A reduced speed limit of 5 mph speed limit during operations

would result in over $50 million of lost revenue annually. Also, it is unclear how a lowered facility speed limit would achieve the objective of PR 1420.2 given that a majority of lead containing material at the facility is concentrated in a very specific area, in the melt shop and baghouse. Therefore, we do not support a facility wide speed limit of 5 mph.

Response: The speed limit is included in the proposed rule to minimize fugitive lead dust that has been entrained in roadways surrounding the facility. The proposal has been revised to require a 5 mph speed limit within 75 feet of a total enclosures and 15 mph beyond.

42. Comment: For facilities spread out over a substantial land area, the proposed 5 mph speed limit could substantially hamper production while providing negligible air quality benefits. Therefore, we recommend that any required speed limit be set higher than 5 mph or be redacted from the proposed rule for facilities that are spread out over a substantial land area. A single blanket speed limit may have vastly different impacts on different facilities and could result in a de facto bias against larger facilities.

Response: See Response to Comment #41

43. Comment: It is not practical for our facility to sustain its operations if limited to 5 mph throughout the entire site. Moving scrap to the EAF with a 5 mph speed limit would result in almost 90,000 tons of lost capacity annually, or over $50M in lost revenue. Further, it is unclear to us how a lower facility-wide speed limit would achieve the objectives of PR 1420.2 given that the majority of lead containing material and source of lead emissions at the site are concentrated in a very specific area, in the melt shop and baghouse. Also, based on U.S. EPA AP-42 entrained road dust emission calculations a lower speed limit will not reduce emissions. Therefore, we cannot support a facility-wide speed limit of 5 mph and do not believe such a speed limit would be an effective way to achieve the objectives of PR1420.2.

Response: See Response to Comment # 41

44. Comment: We request that SCAQMD staff clarify that the vacuum sweeping requirements set-forth in Section (h)(7) of PR 1420.2 are not intended to require vacuum sweeping of dedicated pedestrian walkways such as a curbed walkway along an administration building, or walkways that traverse the facility. Given the physical configuration (K-rails) of these dedicated walkways, it is not feasible to vacuum sweep these walkways.

Response: SCAQMD staff has revised paragraph (h)(7) to relieve facilities from having to vacuum sweep dedicated walkways with a mobile vacuum sweeper. Instead facilities will be allowed to sweep these confined and narrow walkways smaller less cumbersome and affordable sweepers, such

as, a handheld vacuum sweeper, and similar to Rule 1420, at a frequency of once per week rather than once per operating shift.

45. Comment: The frequency that soil stabilizers are applied is determined by use, exposure, and other factors. Therefore, the manufacturer's frequency recommendation is not always the most appropriate. As a result, we recommend clarification of the rule that allows for frequency recommendation by "vendors" and "installers," since these groups are generally most familiar with both the stabilizer properties as well as the specific application environment.

Response: SCAQMD staff revised paragraph (h)(3) to allow for an alternative frequency of applying stabilization with dust suppressants based on recommendations by the vendor or installer if the facility can provide information to the Executive Officer that the alternative frequency is more appropriate for the specific application at the facility. Factors considered during approval of the alternative frequency will include the type of use for the dust suppressant, the physical properties of the lead that the dust suppressant is being applied to, exposure of the dust suppressant to weather, and adjacent uses.

SOURCE TESTS

46. Comment: During the April 7, 2015 workshop, the SCAQMD staff provided rule language for the use of existing source testing in lieu of performing tests within the first year of the rule as long as the tests were performed after January 1, 2014. However, our new baghouse source test was performed in July 2013 (within the 120 day requirement). Would it be possible for this test to be accepted along with the others, as the "initial source test"?

Response: The proposed rule retains the January 1, 2014 date requirement. It would not be possible to use a test conducted earlier than January 1, 2014 as an initial source test. The rule requires source testing at least once every two years and a source test prior to January 1, 2014 would likely have been conducted more than two years ago.

47. Comment: Does only the initial source test used to demonstrate facility wide emissions need to be done in triplicate? Will subsequent periodic emission tests be done using a single run, or will the annual source test require triplicate tests be requires as implied in (f)(4). Shouldn't triplicate tests be required under section (j)(10) to show lead emissions as required by (f)(4) and (m)(1)?

Response: Initial and subsequent periodic emission tests shall be shall be determined based on the average of triplicate samples pursuant to paragraph (f)(4). Subparagraph (j)(10)(B) requires compliance with subdivision (f) including the triplicate and averaging provisions of paragraph (f)(4).

RECORDKEEPING

48. Comment: Our facility has no way of calculating the amount of lead in the scrap it receives; instead we analyze lead in the emissions and in the finished metal and use a formula to determine the amount of lead melted. Therefore, we recommend adding a provision that allows for an "other approved method" of reporting the amount of lead material processed.

Response: The SCAQMD staff has added a provision to the rule allowing an "other approved method," intended to provides alternative methods for calculating the amount of lead material processed.

EXEMPTIONS

49. Comment: We recommend that SCAQMD set a de-minimis or exempt level to define a lead point source that would require control or source testing under PR1420.2.

Response: See Response to Comment # 23.

50. Comment: We recommend that the SCAQMD restrict the housekeeping and enclosure requirements of PR 1420.2 to areas where lead containing materials are present. Lead containing materials should be defined as any solid material containing lead with a lead content equal to or greater than 320 mg/kg (ppm) as measured by ICP/MS (EPA 6020) for lead that is in contact with ambient air and has the potential to become airborne.

Response: See Response to Comment #36.

51. Comment: We look forward to meaningful, substantive exploration of many specific issues. These include the need for clearly described and economically feasible off-ramps by which unnecessary and expensive compliance activities can be avoided; avoidance of unnecessarily alarming and disruptive public notices of occasional exceedances; and the need for explicit steps to be taken in the event that no-off ramp is applicable and exceeedances of some sort arise.

Response: The proposed rule includes off-ramps for facilities that can demonstrate low ambient air lead concentrations, low point source emissions and dispersion modeling that indicate low expected ambient concentrations. A provision for a Compliance Plan is included in the rule to implement further measures when exceedances arise. Finally, there are no public notification requirements included in the proposed rule.

52. Comment: PR 1420.2 would relieve facilities from the proposed monitoring requirements if the facility can demonstrate an ambient air lead concentration limit for lead below 0.050 µg/m^3 based on one year of ambient air monitoring. We recommend that the ambient air monitoring period be reduced to three months.

Response: SCAQMD believes that a full year monitoring ambient lead concentrations is necessary to ensure that, under normal circumstances, no further ambient exceedances would be expected indefinitely. PR 1420.2 has been revised to increase the threshold for the monitoring off ramp from 0.050 to 0.070 µg/m^3. A compliance time-frame of three months may preclude changes in weather patterns (e.g. Santa Ana winds, winter storms, etc.) that could impact ambient air lead concentrations. Varying levels of lead processing operations conducted at the facility throughout the year could also impact fluctuations of ambient air lead concentrations resulting from the facility.

APPENDIX 2

53. Comment: Staff clarified in the Working Group Meeting that our facility is not going to be required to conduct smoke tests in our new baghouse based on the safety provision in this section, we would appreciate staff's confirmation.

Response: The commenter raised a valid concern given the configuration and operating conditions of some control devices. For example, at the facility operated by the commenter the baghouse operates under intense heat conditions that could pose direct safety concerns, therefore, paragraph (f)(5) states "…a periodic smoke test shall be conducted, unless performing such test presents an unreasonable risk to safety…" An example of such unreasonable risk to safety includes having to conduct a smoke test at collection sites that would be extremely dangerous for somebody to work in that collection zone, or would be in violation with OSHA requirement for worker safety.

OTHER

54. Comment: We do not believe that the current rule schedule allows for meaningful input to SCAQMD staff, adequate time for you to complete necessary work prior to formal proposal or Board consideration, or adequate time for the consideration of and/or action on any formal proposal.

Response: The SCAQMD staff respectfully disagrees and believes there has been meaningful input and sufficient time. The staff has worked through an extensive public process for development of this rule, including 6 working group meetings and a public workshop. Based on input from stakeholders, several iterations of the proposed rule have been drafted which have resulted in modifying not only the overall structure of the rule, but also specific provisions that reduced cost impacts. Furthermore, sufficient time has been allocated to receive and address comments from public workshops and

meetings. The SCAQMD Governing Board will hear the proposed rule, at which time evidence will be taken and all interested persons will be heard by the SCAQMD Board. At the conclusion of the public hearing, the SCAQMD Board may make other amendments to the proposed rule which are justified by the evidence presented, or may decline to adopt it.

55. Comment: Is the reference to an OEHHA analysis at page 1-3 to the May 14, 2009 "Revised California Human Health Screening Level for Lead (Review Draft)? If not, what is the reference?

Response: The reference to the OEHHA analysis is from U.S. EPA's Policy Assessment for the Review of the Lead NAAQS, May 2014, and is included in the "References" section of this staff report.

56. Comment: What information has SCAQMD obtained from CARB or other authorities about plans to address lead emissions from aircraft or otherwise associated with airports? Can you share it with us?

Response: Data on lead emissions from airports is currently being collected and reviewed by the U.S. EPA. In the April 28, 2015 Federal Register, the U.S. EPA issued an "Advanced Notice of Proposed Rulemaking on Lead Emissions for Piston-Engine Aircraft Using Leaded Aviation Gasoline."

57. Comment: With regard to the information on "Affected Sources" appearing at pp. 1-9 and 1-10, do you have a spreadsheet or other document that identifies the emissions attributed to each of the 14 facilities and the source of that information (e.g., if from the SCAQMD permitting data base, which permits?) Can you share it with us?

Response: Table 1-5 in Chapter 1 has been included in this report and list reported emissions by each facility represented by NAICS code.

58. Comment: Which facility is referred to on page 2-1 as being the basis for the 100 ton threshold?

Response: A minimum process limit of 100 tons of lead melted a year was set as the threshold for rule applicability based on data showing that Gerdau in Rancho Cucamonga (iron and steel mini-mill) melted a little over 100 tons per year and had high ambient air lead concentrations at the fence line.

59. Comment: Has SCAQMD staff prepared a critique of, or received advice from any outside expert, regarding the endorsement by the EPA CASAC Lead Review Panel of EPA's conclusion that "there is appreciable uncertainty associated with drawing conclusions regarding whether there would be reductions in blood lead levels from alternative levels as compared to the level of the current standard" [Consensus Response to Charge Questions on

EPA's Policy Assessment for the Review of the Lead National Ambient Air Quality Standards (External Review Draft—January 2013), transmitted to EPA on June 4, 2013, at p. 6] and that Panel's independent conclusion that "the extent to which the blood PB levels observed in children are linked to ambient air lead levels below the current standard (as opposed to other sources of PB in the environment) has not been established" [Id. at pp. 7-8]? If so, could you provide us with copies of any such critiques or advice?

Response: Please refer to Chapter 1, Section "Justification for Lowering the Ambient Air to 0.100 µg/m^3" for the detailed discussion.

60. Comment: SCAQMD staff has no independent support to dispute – that "current air" emissions are rarely, if ever, a significant source of children's or anyone else in the community's lead exposures. And we believe the data demonstrates that this certainly is the case as to emissions from battery manufacturers.

Response: Please refer to Chapter 1, Section "Justification for Lowering the Ambient Air to 0.100 µg/m^3" for a detailed discussion regarding children and community lead exposures. Also see Response to Comment #1 regarding high ambient air lead concentrations from a lead-acid battery manufacturer.

61. Comment: We think there is a better way for the Board and its staff to approach its continuing lead concerns. We know a lot about lead sources, about potential human health impacts, and about control mechanisms. We are prepared to share that expertise. We also are prepared to work with the District to assist in developing mechanisms to find and monitor true potential "hot spots." But putting the proposed rule on the agenda for September 4 will not allow us to develop those ideas with the staff.

Response: SCAQMD staff has received meaningful input from multiple stakeholders through the development of this rule (6 working group meetings, 1 public workshop). Although SCAQMD has received input from the commenter throughout the rule development process questioning the need and applicability of the rule, SCAQMD staff had only received input regarding rule modifications in the last month of this writing. Nonetheless, the SCAQMD staff has incorporated many of the suggestions from the commenter in the current version of the proposed rule.

62. Comment: We have been told that documents scheduled for release – such as the socioeconomic analysis, environmental assessment, and response to our previous comments from the May 14 Public Workshop—will help explain a rationale. But the timing of this release (August 5) adds to our concern. The already short period between the release date and the September 4 proposed public hearing falls in a month that is typically one of the most difficult of the year for government and private sector schedules due to vacations. This short period provides affected companies with little to no

opportunity to evaluate the District's explanations, meet with District staff about real-world costs, explain why the monitoring provisions of a rule specifically designed to address the problem of fugitive lead emissions from secondary lead smelters are often illogical and irrelevant for the entirely battery manufacturing industry, or address other issues raised by the back-up documentation or post-workshop changes to the draft rule.

Response: See Response to Comment #54 and #61. Staff is willing to meet with industry representatives to discuss these issues after release of the rule proposal.

63. Comment: The operations of the battery manufacturing facilities that would be covered by PR 1420.2 are very different from those of secondary smelters, such as Quemetco or Exide. Among other things, potential lead emissions from the battery manufacturing process are far lower than potential emissions from the breaking, smelting, and refining processes involved in secondary smelting.

Response: The original draft of PR 1420.2 was very similar to Rule 1420.1. However, PR 1420.2 has been significantly revised after much input from affected facilities, and establishes requirements more appropriate for this industry segment. PR 1420.2 is an update to Rule 1420 for this industry segment. PR 1420.2 is similar to Rule 1420 in terms of the regulatory structure and general requirements. However, PR 1420.2 includes more prescriptive requirements that have been proven effective at reducing fugitive lead emissions in light of the amended Pb NAAQS.

64. Comment: Why is SCAQMD is mandating that the facilities that it has categorized as "metal melting" should be required to demonstrate not only that the ambient air in their areas meets the federal National Ambient Air Quality Standard, but within three years will be 1/3 lower. BCI is aware of no scientific basis for this requirement. As best we can tell, the 0.10 $\mu g/m^3$ number has been proposed because it is what the operators of the Quemetco lead smelter told the SCAQMD staff that it can meet, and the staff concludes that a lower number is always better.

Response: See Response to Comment #12. Also please refer to Chapter 1, Section "Justification for Lowering the Ambient Air to 0.100 $\mu g/m^3$" for the detailed discussion.

65. Comment: Perhaps the District might consider slowing down the current regulatory rulemaking process in order to obtain both more scientific data and more input from industry on how to best achieve compliance without placing Southern California plants at a disadvantage with plants located in other parts of our country.

In light of that fact, and out of concern for the many jobs and families in my district, I sincerely ask that you reconsider your proposed regulatory change and adopt only those regulatory changes that will, in fact, provide real health benefits to my constituents, as demonstrated by hard scientific data, and also limit any negative impacts on the lead battery facilities which may be impacted by the proposed regulation.

Response: See Response to Comment #12 and #60. Also, SCAQMD staff has worked with the lead-acid battery manufacturers in your district and have made further modifications to PR 1420.2 based on input received from the Battery Council International.

66. Comment: The ambient air concentration limits of subdivision (d) should be based on 1 exceedance of 0.150 µg/m^3 averaged over any 30 consecutive days beginning date of rule adoption, and 3 maximum annual exceedances of 0.100 µg/m^3 averaged over non-overlapping 30-day periods. This proposed revision reflects an effort to compromise between our view that the 0.100 standard is scientifically unsound and the staff's contrary view. It would have the regulation trigger automatic additional requirements upon a single exceedance of a standard tighter than the federal lead NAAQS (because it incorporates the 30-day measurement period) and also trigger the additional requirements upon repeated exceedances of the 0.100 standard, but still using less than the Federal 90 day rolling average measurement period.

Response: The SCAQMD staff appreciates the commenters effort to provide a compromise regarding the 0.100 µg/m^3 However, establishing the ambient lead limit based on a non-overlapping 30-day average over an annual period would allow the operator to only have one violation in a month, where for the remaining portion of the month there would be no limit and each exceedance during that period would not result in a violation. In addition, "restarting the clock annually" could potentially allow a facility to exceed for 60-days with no violation. The objective of the 0.100 µg/m^3 ambient concentration limit is to be more health protective. SCAQMD staff has added additional information in the Staff Report to substantiate the ambient concentration limit.

67. Comment: We also are aware – as we know is the SCAQMD staff – of another potentially relevant data set. It is ambient air lead monitoring data from a monitor adjacent to the largest lead-acid battery manufacturer in the District. That facility reports no fugitive emissions in the TRI data, but 11 to 16 pounds of lead emissions from its stacks (in compliance with its permits). And the monitor reveals no current exceedances of the federal National Ambient Air Quality ("NAAQS") standard of 0.15 µg/m^3, even when measured on a monthly basis (rather than the quarterly basis embodied in the NAAQS itself). We have heard anecdotally that SCAQMD staff is concerned about a single 2007 reading from that monitor, but are confident

that if they pursue any inquiry about it they will find that it was an aberration that did not indicate any ongoing fugitive dust issue.

Response: Contrary to the commenter's understanding of the ambient air monitored data set at Trojan Battery, multiple high readings were exhibited over multiple periods between 2005 and 2011. Refer to "Trojan Battery (Source-oriented Monitor) in Chapter 1 of this Staff Report for further details.

68. Comment: SCAQMD staff estimates the annual cost of just the monitoring required by PR 1420.2 at $96,071 to $351,982. And the proposed rule would require hundreds of thousands of dollars more in expenditures at facilities near which ambient monitors revealed lead levels one-third lower than the federally-established National Ambient Air Quality Standard

Response: See Response to Comment #12. Additionally, regarding exceedance with 0.100 µg/m^3 triggering implementation of a Compliance Plan, PR 1420.2 has been modified to trigger implementation of a Compliance Plan after either an exceedance with 0.150 µg/m^3 averaged over any 30 consecutive days, or 3 exceedances with 0.100 µg/m^3 after ~~January~~ April 1, 2018. The facility would only be required to implement those controls in the Compliance Plan necessary to attain the applicable standard in subdivision (d). Compliance Plan requirements allow flexibility to improve efficacy of existing controls (more frequent bag cleanings, increase in ventilation), before implementing installation of costly new equipment.

69. Comment: My understanding is that the District is considering imposing additional, expensive monitoring obligations on industrial facilities that use lead in their products, such as battery manufacturers, despite that fact that there may be little reason to suspect those facilities of excessive emissions. I am told that the District has estimated the first-year cost of that monitoring to be as much as $352,000 per facility. In addition, I am told that the District is proposing to impose further, expensive reconstruction and operation obligations on facilities at levels one-third lower than the federally-established National Ambient Air Quality Standard for lead (and which are 94% lower than the current California standard set the Air Resources Board).

I do agree, however, that the District should have monitoring capabilities to make sure that facilities meet critical ambient air standards for lead and other pollutants. But it is also my understanding that after an extensive recent review, a federal government scientific advisory panel recommended that to assure protection of the most sensitive populations (young children) the appropriate lead air emission standard should in fact remain at the current standard of 0.15 micro-grams per cubic meter.

Response: It is correct that the United States Environmental Protection Agency (EPA) recently retained the current National Ambient Air Quality Standard (NAAQS) for lead of 0.15 µg/m^3. However, based on the scientific evidence, it is SCAQMD's position that there is evidence of health impacts associated with exposures to ambient air concentrations of lead below the NAAQS. An example that SCAQMD staff has referenced in order to support this position includes EPA's own *Policy Assessment for the Review of the Lead NAAQS* (May 2014). The assessment states that there is no existing safe threshold for blood in lead and shows that there is a range of IQ loss resulting from exposures to less than the NAAQS level of 0.15 µg/m^3. Please refer to Chapter 1, Section "Justification for Lowering the Ambient Air to 0.100 µg/m^3" for a further detailed discussion**.** The SCAQMD staff believes that the proposed lower limit will further reduce lead emissions and thus limit lead exposure and accumulation in communities nearby these facilities. Furthermore, the proposed limit has been demonstrated to be achievable by facilities that process much larger amounts of lead, namely large lead-acid battery recycling facilities, and is consistent with the limit adopted by the SCAQMD Governing Board for Rule 1420.1 – Emission Standards for Lead from Large Lead-acid Battery Recycling Facilities.

Regarding the cost of ambient air monitoring and sampling required by the proposed rule, SCAQMD staff continues to work with stakeholders through an extensive public process for development of this rule. Based on input from stakeholders including the battery manufacturing industry, modifications have been made to the monitoring requirements which significantly reduce the associated costs. The costs for ambient air lead monitoring were initially estimated to be $352,000 annually based on daily sampling at four fence line locations at the facility. The most recent draft of the proposed rule now requires sampling once every six days and at a reduced three locations, with an estimated cost of $62,000 - $72,000 for the first year, which includes monitoring 1 in 6 days, and daily sampling for the first 30 days during the commissioning of the monitors. In addition, the proposed rule contains a provision that provides an exemption for ambient lead monitoring if a facility can demonstrate that measured concentrations are below 0.070 µg/m^3 for all 30 consecutive day averages based on data for the first year of monitoring.

Regarding the proposed ambient air concentration limit, the SCAQMD staff has already adopted the more health protective ambient lead concentration limit for large lead-acid battery recycling facilities. Lead is a neurotoxin that has serious health effects, particularly for children. The ambient lead concentration limit of 0.100 µg/m^3 has been demonstrated achievable by facilities that process much larger amounts of lead, namely large lead-acid battery recycling facilities. PR 1420.2 aims to reduce lead emissions to the

maximum extent feasible in order to further limit the exposure and amounts of lead accumulated in communities nearby these facilities

70. Comment: The proposed rule includes provisions allowing the Executive Officer to require a facility to relocate monitors or install additional monitors. This provision should be removed because it is redundant. The number and placement of monitors is sufficiently detailed directly prior to this provision. If this provision is retained, a standard for when relocation may be required by the Executive Officer should also be included

Response: The provision referenced by the commenter refers to situations where existing monitors were not capturing the maximum ground level concentrations of lead, or a new source of lead emissions that was not previously identified or fully understood requires monitoring. In order to provide clarification for this provision, PR 1420.2 has been modified to provide detail and criteria for the justification to add or relocate monitors by the Executive Officer.

71. Comment: Please confirm and include a reference to the testing protocol that allows a 24-hour sample to be valid if the actual sampling period is 23 hours or more. Otherwise, there will be an additional burden of having to put two monitors at each sampling location. Additionally, please confirm that a daily sample can occur at other time periods besides midnight to midnight.

Response: PR 1420.2 now includes a definition for "VALID 24-HOUR SAMPLE" that confirms allowing samples that are no less than 23 hours or no more than 25 hours. Additionally, paragraph (e)(10) allows facilities to conduct 24-hour sampling on a schedule different than midnight-to-midnight if it is demonstrated and approved by the Executive Officer that the alternative schedule is adequate to routinely collect valid 24-hour samples and is conducted using the sampling methods referenced in paragraph (e)(8).

72. Comment: To avoid unnecessary costs, ambient sampling should be conducted less frequently than daily for facilities that exceed the ambient air lead concentrations in subdivision (d). We propose sampling once every three days or on an approved schedule.

Response: PR 1420.2 has been modified paragraph (e)(5) to require sampling once every three days as suggested by the commenter, however, based on the severity of the exceedance, some facilities may be required to sample daily.

73. Comment: The requirements for recording wind information are already included in the referenced Title 40, CFR 50 Appendix B. To maintain consistency, paragraph (e)(9) should refer to the EPA-approved method

Response: Title 40, CFR 50 Appendix B does not provide requirements for recording wind information. However, staff states in the Section "Ambient Air Monitoring and Sampling Requirements" found in Chapter 2 of this staff report, that approval criteria for wind direction and speed monitoring shall be based on guidelines provided in the "*SCAQMD Rule 403 Implementation Handbook – Chapter 6: On-Site Wind Monitoring Equipment*," or other relevant EPA reference documents such as the "*Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV, Meteorological Measurements*."

74. Comment: Approval of individuals by the Executive Officer to conduct air quality monitoring is unnecessarily cumbersome. SCAQMD should just identify a reasonable training regime that it expects regulated entities to have use.

Response: See Response to Comment #16.

75. Comment: Mechanical ventilation testing using the procedures set forth in 29 CFR §1910.1025(e)(4) should be allowed as an alternative to smoke testing. Battery manufacturers already conduct mechanical ventilation testing to determine the efficiency of ventilation. Therefore, smoke testing is still necessary in the proposed rule.

Response: Although the referenced mechanical ventilation testing may verify whether ventilation equipment is providing a velocity or static pressure designed for the emission collection system, it does not take into consideration factors such as cross-draft conditions, correct placement/position of hoods, or other elements that would impact capture or collection of emissions from a furnace.

76. Comment: Metal melting operations at battery plants are continuous and openings (doors, windows, roll-ups, etc.) cannot be closed during operations. This provision should be removed for battery plants as other mechanisms, such as the use of heavy curtains over openings, minimize cross-draft conditions.

Response: Paragraph (g)(2) has been modified as suggested by the commenter. A provision was added in paragraph (g)(2) that states, "Acceptable methods to minimize cross-draft conditions include closing doors or openings when not in use, using automatic roll-up doors, installing plastic strip curtains, or installing vestibules." ~~and~~ In addition, this paragraph still allows alternative methods to closing openings if the facility can demonstrate to the Executive Officer equivalent or more effective ways to minimize cross-draft conditions.

77. Comment: A total enclosure with negative air should only be required if the ambient lead limits in paragraph (d)(1), as modified by the commenter (see Comment #66), are exceeded.

Response: Requirements for a total enclosure with negative air are set forth in paragraph (g)(3) and require not only an exceedance with 0.120 µg/m^3 averaged over any 30 consecutive days, but also that a facility has a Health Risk Assessment approved by the Executive Officer that exceeds the action risk level of Rule 1402.

78. Comment: Housekeeping requirements should not be included for facilities where there is no evidence of a problem. Only facilities that have been required to submit a Compliance Plan pursuant to subdivision (m) should be required to comply with the housekeeping provisions in the rule

Response: In 2013, lead wipe sampling conducted by SCAQMD staff at 4 lead-acid battery manufacturing facilities showed high concentrations of lead at building openings, roofs, and roof vents. Without baseline requirements for housekeeping, fugitive lead dust may significantly impact the ambient air lead concentrations. Facilities are currently subject to the housekeeping requirements of Rule 1420 which includes provisions for storage of lead dust-forming material, cleaning of surfaces that accumulate dust subject to vehicular or foot traffic, and handling procedures for lead or lead-containing waste. PR 1420.2 builds on the general requirements of Rule 1420 by enhancing existing provisions with additional measures proven effective to control fugitive lead dust. Many of the housekeeping provisions under PR 1420.2 are based on those under Rule 1420.1, with modifications to reduce the frequency or other modifications based on input from the Working Group.

79. Comment: The extension of 72-hour time period to repair total enclosures in paragraph (h)(2) is garbled. The extension should be granted if the request was made before the 72-hour period has expired

Response: Paragraph (h)(2) has been modified as suggested by the commenter.

80. Comment: Maintenance provisions in the rule should be limited to activities that, absent controls, could generate fugitive lead dust.

Response: **"**Construction or maintenance activity" is already defined in PR 1420.2 to be specified activities listed in paragraph (c)(3) that are conducted outside of a total enclosure with negative air that generate or have the potential to generate fugitive lead-dust.

81. Comment: As reflected in the Secondary Smelter NESHAPs, there are many situations where conducting maintenance within total enclosures is not feasible or is counterproductive. The important thing is to provide flexibility and allow a variety of maintenance options, each of which is designed to ensure that fugitive dust is minimized. Maintenance activities should be allowed

outside of permanent or temporary enclosures if one or more dust control measures are performed.

Response: Paragraph (i)(1) has been modified to allow some flexibility by providing a menu of options including using either 1) a temporary total enclosure under negative air; 2) a partial enclosure using wet suppression or vacuum; or 3) wet suppression or vacuum alone, if a partial enclosure creates conditions posing physical constraints, limited accessibility, or unreasonable risks to safety.

82. Comment: The requirement to collect daily 24-hour samples because maintenance is occurring would impose unnecessary costs.

Response: PR 1420.2 has been modified to omit the referenced requirement.

83. Comment: Inspection and maintenance of fabric filters should not be required to take place within a total enclosure. Used fabric filters shall be placed in sealed plastic bags prior to removal from a baghouse.

Response: See Response to Comment #81.

84. Comment: Source testing every two years is costly. Source testing should be allowed once every 48 months if no significant increase in capacity or major process change has occurred and the previous source test indicated greater than 99% lead reductions and a total facility mass lead emissions rate of less than 0.020 pounds per hour.

Response: Based on SCAQMD staff knowledge and experience concerning air pollution control equipment, if control equipment is tested infrequently, long periods of time can elapse before degradation of control equipment or decreases to the efficacy of emission control. Based on this knowledge and experience, staff believes that allowing 24 months between source tests if the facility demonstrates a total facility mass lead emission rate of less than 0.020 pounds per hour is an adequate period.

85. Comment: Battery manufacturers should be allowed to assume that metal melted is 100% lead and not be required to record lead content.

Response: Staff believes that the recordkeeping requirements of subparagraph (k)(1)(A) allows this since lead ingots are near 100% lead (99.9% lead).

86. Comment: Reports requiring the results of individual 24-hour samples and 30-day rolling averages should be limited to each day that monitoring was conducted.

Response: The ambient air concentrations limits of PR 1420.2 apply to all rolling 30-day averages in the year, and not just to days where monitoring and sampling was conducted. Thus, reports require that facilities calculate a rolling 30-day average for every day in the reporting period.

87. Comment: The Compliance Plan should be required if there is any exceedance of the 0.150 µg/m^3 limit or three exceedances in a one year period of the 0.100 µg/m^3 limit. Additionally, a Compliance Plan would be required if two exceedances of 0.120 µg/m^3 occurred in a one year period.

Response: SCAQMD staff believes that submittal of a Compliance Plan is necessary as currently proposed based on ambient air concentration levels that approach 1 exceedance of an ambient limit in order establish measures that would be necessary in the event that the ambient limits are exceeded. However, subdivision (m) has been modified to require implementation of a Compliance Plan as follows:

Effective Date	Ambient Air Concentration of Lead~~, micrograms per cubic meter~~ (µg/m^3), averaged over any 30 consecutive days	Total # of exceedances (within any rolling 24-month period)
Beginning January 1, 2017 – March 31, 2018	0.150	1
Beginning ~~January~~ April 1, 2018	0.100	3

88. Comment: The Compliance Plan contents of PR 1420.2 are too prescriptive.

Response: The Compliance Plan is only prescriptive in that it lists general elements that are to be considered/included by the facility. Facilities have the flexibility to develop facility specific controls for each element. Additionally, facilities do not have to implement all the control measures identified in the Compliance Plan, only those that are necessary to attain the applicable ambient air lead concentration limits of subdivision (d).

89. Comment: Air dispersion modeling showing that the ambient lead limits contained in paragraph (d)(1), as modified by the commenter (See Comment #66), should be sufficient when considering exemption from air monitoring. The proposed 0.050 µg/m^3 ambient concentration does not recognize the legitimacy of air dispersion modeling.

Response: It is difficult to quantify amounts and locations for facility fugitive lead emissions when conducting air dispersion modeling. In order to more accurately confirm with confidence that a facility would not exceed the ambient air concentration limits of the proposed rule, it is necessary to have both modeled data and actual measured ambient data.

90. Comment: An increase in processing throughput of five percent or more should not result in the revocation of the air monitoring relief plan. Emissions are not related to production at the time of a source test, and these two concepts should be decoupled. Production levels and emissions are unrelated—at least within the battery industry— to compliance with stack test emissions. Moreover, battery manufacturers seek to grow their businesses and production levels. They should not be penalized for additional production, especially where production is not correlated with emissions.

Response: Paragraph (o)(1) of PR 1420.2 has been modified to replace language regarding the 5% operational increase and now says "any permit modification to equipment or processes that results in an increase in lead emissions that can be shown to cause an exceedance of the ambient air lead concentrations required by subdivision (d)…"

91. Comment: Alternative methods to ensure continuous negative pressure should be allowed including flow differential monitoring and those approved by the Executive Officer. We are comfortable meeting reasonable performance standards, but there should be flexibility on how that can be done. Many battery manufacturers operate interconnected buildings, and require larger areas devoted to combustion than in secondary smelters. As a result, other methods for ensuring and monitoring negative pressure within a total enclosure are more relevant and useful indicators that emissions are ventilated within the facility.

Response: PR 1420.2 provides that the owner or operator can submit an alternative to any monitoring method or procedure for approval if the facility can demonstrate that the alternative method or procedure is equal to or more effective than the methods prescribed in Appendix 1.

92. Comment: The District is proposing an ambient lead concentration limit of 0.100 $\mu g/m^3$ averaged over 30 consecutive days based on policy decisions that it is more protective of human health than the choices made by EPA in proposing to retain an ambient concentration limit of 0.15 $\mu g/m^3$. However, we believe that the policy decisions need to be re-addressed because the fundamental basis for these decisions is the 2008 Lead NAAQS Review (Page 1-5 of the Draft Staff Report) and ignores information that is more recent. Specifically, more recent information provided by the U.S. EPA during the 2014 Lead NAAQS Review reinforces that there is no reason to change the 1:7 air to

blood level ratio and references additional studies that support an air to blood ratio closer of 1:7. For example, on page 299 of the recently published Federal Notice for proposed rule pertaining to the Lead NAAQS dated January 5, 2015, the U.S. EPA cites a study that dates from the end of or after the phase-out of leaded gasoline usage and reports on children living near a lead smelter, which is more representative of conditions in the United States today (Effect of Smelter Emission Reductions on Children's Blood Lead Levels, Hilts, S.R., 2003). The study reports an air to-blood ratio of 1:6, however, a U.S. EPA analysis of the air and blood data from the study for certain periods yields a ratio of 1:7. Therefore, SCAQMD should base the ambient concentration limit on the most recent information provided by U.S. EPA's 2014 Lead NAAQS Review that supports a 1:7 air to blood ratio.

Response: SCAQMD staff has reviewed the information from the U.S. EPA's recent 2014 Lead NAAQS Review and is aware of the additional studies referenced by the commenter located on page 299 of the recent proposed rulemaking to retain the Lead NAAQS dated January 5, 2015[1]. However, upon a complete review of the recently proposed Lead NAAQS, the reader will discover that on page 300 of the Federal Notice, the U.S. EPA states that these new studies do not appreciably alter the scientific conclusions reached in the 2008 Lead NAAQS Review "regarding relationships between Pb in ambient air and Pb in children's blood" or the range of ratios of 1:5 to 1:10. Although the U.S. EPA has reviewed additional studies and conducted a more focused analysis of these studies since the previous NAAQS review in 2008, it does not consider the air to blood ratio range of 1:5 to 1:10 irrelevant and instead the U.S. EPA reinforces this range in its most recent conclusions regarding blood lead and air lead relationships. Further, on page 300 of the Federal Notice the U.S. EPA states that the "currently available evidence continues to indicate ratios relevant to the population of young children in the U.S. today…to be generally consistent with the approximate range of 1:5 to 1:10 given particular attention in the 2008 NAAQS decision…" Therefore, the basis for SCAQMD's policy decisions regarding the proposed ambient lead concentration limit of 0.100 $\mu g/m^3$ remains and reinforces the determination that a 1:10 air to blood ratio is more health protective.

93. Comment: Given the very low ambient limits proposed in the rule there is a need for flexibility, therefore, the trigger to submit a Compliance Plan should be based on a single exceedance of 0.150 $\mu g/m^3$ or two exceedances of 0.100 $\mu g/m^3$.

Response: The purpose of the Compliance Plan is to develop and establish control measures that would be ready for timely implementation in the event that the ambient limits of the proposed rule are exceeded. The SCAQMD staff believes that submitting a Compliance Plan after a single exceedance is more proactive and ensures these control measures are identified up front in the

[1] Proposed Rule Notice for 2014 Lead NAAQS available at: http://www.gpo.gov/fdsys/pkg/FR-2015-01-05/pdf/2014-30681.pdf

event of an exceedance. As a result, the SCAQMD staff disagrees that a Compliance Plan should be submitted upon two exceedances of 0.100 µg/m^3 as opposed to a single exceedance. Earlier submission of the Compliance Plan provides adequate time and review of the proposed measures for approval by the Executive Officer. Having these approved control measures established in an approved Compliance Plan will allow for immediate implementation of lead control measures in the event that exceedances of the proposed ambient air lead concentration limits occur.

94. Comment: Given the very low ambient limits proposed in the rule, the trigger to implement a Compliance Plan should be based on a single exceedance of 0.150 µg/m^3 or three exceedances of 0.100 µg/m^3.

Response: SCAQMD staff has modified the rule language and the requirements for implementation of the Compliance Plan are those suggested by the commenter.

95. Comment: A future exceedance of the proposed ambient air lead concentration limits at a metal melting facility may not be related to the facility and could be the result of elevated ambient air lead background concentrations from nearby sources. Therefore, we recommend a relief clause if it is demonstrated that the exceedance cannot be attributed to the facility.

Response: Although data values from measurements conducted by SCAQMD non-source-oriented monitors show background concentrations well below the ambient air lead limits of PR 1420.2 (see Response to Comment #8), the SCAQMD staff is aware that there could be an incident where an ambient air monitor(s) required by the rule at a metal melting facility demonstrates elevated ambient air lead concentrations not attributed to the metal melting facility. Therefore, paragraph (d)(3) states that an exceedance of the ambient limits of the rule is based on monitor readings that measure lead concentrations ***resulting from the facility***. Additionally, paragraph (m)(10) states that the owner or operator shall implement one or more of the measures of the approved Compliance Plan "…if lead emissions discharged from the facility contribute to ambient air lead concentrations…" Further in (m)(10), it is stated in considering the measure(s) that the owner or operator shall implement that are necessary to attain the applicable ambient air lead concentration limit, the Executive Officer shall consider the cause, magnitude, and duration of the exceedance, as well as past exceedances, if applicable.

In addition, a provision in the proposed rule has been included allowing facilities to elect to submit evidence demonstrating that the primary cause of an exceedance is not attributable to the facility. If the Executive Officer agrees, that exceedance will not be considered a violation of the ambient concentration limit nor will not count towards an exceedance that triggers

the submittal or implementation of a Compliance Plan. The proposed language includes details on the information the facility is required to provide for consideration by the Executive Officer. For the purposes of this rule, primary cause means the most significant contributor to the exceedance. While background ambient lead levels are an appropriate factor for consideration, the provision is expanded to include any occurrence beyond the control of the facility.

96. Comment: There should be a clear nexus between the Compliance Plan measures required to be implemented by a facility and the cause of an exceedance that triggers implementation of the measures. Further, the proposed rule gives too much power to the Executive Officer by allowing him or her to require a facility to implement additional measures from their Compliance Plan.

Response: A number of revisions have been made regarding the information required to be submitted in a Compliance Plan and the implementation of a Compliance Plan. The intent of subparagraph (m)(5)(A) of the rule is to prioritize lead emission reduction measures based on the most effective mechanism to reduce emissions from the source of the exceedance. To provide clarification, the SCAQMD staff has added language to the proposed rule stating that only those Compliance Plan measures that directly address emissions from the presumed source of the exceedance and are necessary to attain the ambient air concentration limit of the rule will be required for implementation. Please refer to Chapter 2 of the Staff Report for more details.

97. Comment: Given the very low ambient air lead concentration limits proposed in PR 1420.2 the rule isn't flexible enough, facilities should get to choose how to comply with the limit; the AQMD should not dictate the type housekeeping measures that each facility must administer in order to comply with these limits.

Response: It is important to note that during the development of PR 1420.2, the SCAQMD staff worked with the Working Group discussing various provisions of PR 1420.2, particularly housekeeping provisions. Staff has made a number of revisions to reduce the frequency of certain housekeeping measures and allow different approaches to various other housekeeping measures, such as using chemical dust suppressants instead having to pave with concrete or asphalt facility grounds where fugitive lead dust can be generated. The housekeeping measures alone are not intended to attain compliance with the ambient air lead concentration limit; rather, their intent is to supplement the lead point source emission controls required by the proposed rule and ensure emissions levels below the ambient air lead concentration limit. Wipe samples at lead-acid battery manufacturing facilities have shown elevated levels of lead on surfaces outside of building enclosures (see Response to Comment #78) and emphasize the importance

of housekeeping provisions to minimize fugitive lead dust. It is the SCAQMD staff's understanding, based on comments from a representative from the Battery Council International, that one of the primary concerns is the effect of PR 1420.2 on the national level of battery manufacturers, and not just to those located within the Basin. Based on interviewing facility operators in the Basin and through on-site surveys conducted by the SCAQMD staff at every metal melting facility subject to the proposed rule, it was determined that to some extent all of the proposed housekeeping measures are currently implemented at metal melting facilities. The significant variable in responses to the survey was the frequency at which these measures are implemented. For example, some facilities may conduct cleanings less frequently than other facilities or less frequently than the proposed rule requires. Therefore, SCAQMD staff has concluded that the proposed housekeeping measures are achievable and not overly burdensome, as they are widely implemented by the affected facilities, and will effectively minimize fugitive lead emissions based on experience at other lead emitting facilities.

98. Comment: The smoke test required by paragraph (f)(5) for lead point source controls is too resource intensive and redundant given that OSHA has a similar requirement that should be allowed in lieu of the smoke test required by PR 1420.2.

Response: Based on SCAQMD staff's experience, smoke tests are a relatively inexpensive and quick method (less than 5 minutes) that is used to determine whether emissions for a given process are being effectively captured by the emission collection system. Although facilities conduct periodic ventilation checks pursuant to OSHA requirements for worker safety, these are mainly measurements to determine the velocity of the air flow at the hood face or within ducts to ensure that the installed systems are operating at the velocities designed for the system; they do not necessarily determine the directional flow of the emissions. As stated in the OSHA Technical Manual[2] regarding technical equipment for on-site measurements, "*ventilation smoke is a helpful complement to the thermoanemometer*," and "*will also help determine whether supply air turbulence near a hood may compromise the hood's effectiveness*." As recognized by OSHA, smoke tests are not the same as mechanical ventilation tests such as thermoanemometers, as smoke tests serve the purpose of determining whether cross draft conditions or other operations conducted by the facility are affecting the ability of the emission collection system or hood to effectively capture emissions, which is the main concern of SCAQMD staff and the reason for the smoke test provision.

[2] OSHA Technical Manual (OTM), Section II – Chapter 3, Paragraph IV (Air Velocity Monitors/Indoor Air Quality (IAQ) Assessment Instrumentation, - available at https://www.osha.gov/dts/osta/otm/otm_ii/otm_ii_3.html#AirVelocityIAQMeters

99. Comment: The projected compliance costs reported in Table 5 of the Socioeconomic Report appears to be inaccurate. We request that the SCAQMD staff provide the input data used to estimate the compliance costs ultimately projected in Table 5 to all the affected facilities subject to PR 1420.2.

Response: The cost data of the PR 1420.2 Draft Socioeconomic Assessment Report was generated based on facility on-site surveys conducted by SCAQMD staff regarding what affected facilities are currently doing and what they are anticipated to do in order to comply with the proposed rule. Nevertheless, the SCAQMD staff will be conducting additional meetings with affected facilities in order to provide and re-confirm cost data presented in the Draft Socioeconomic Assessment Report.

100. Comment: Contiguous, undeveloped property that is owned by the facility that does not have any activity or operations conducted on it should not have to be paved as required by PR 1420.2.

Response: SCAQMD staff has modified the requirements of paragraph (h)(3) such that owners or operators are not required to pave with concrete or asphalt, or stabilize with dust suppressants undeveloped facility grounds where activities or operations are not conducted.

101. Comment: Our facility has landscaped areas along the perimeter of the property that are in front of the facility parking lot. Although some of the landscaping may be required under city permits for aesthetic purposes and to provide greenbelts, other landscaped areas within the parking lot area should not be required to be paved as they are located away from any lead-related operations.

Response: SCAQMD staff has modified the requirements of paragraph (h)(3) such that owners or operators are not required to pave with concrete or asphalt, or stabilize with dust suppressants landscaped areas located within and beyond facility parking lot(s) or perimeter landscaped areas.

102. Comment: The SCAQMD staff has justified regulating battery manufacturers based entirely on historical—not current—monitoring data at one facility from 2005-2007 by noting that those levels are higher than the current standard. But those values were in fact less than 20% of the federal and state ambient air standard for lead in effect during that period. At no time since 2008 – the year the current NAAQS was established – has any battery plant in the Los Angeles area exceeded the current 0.15 $\mu g/m^3$ requirement. In short, there is no need for this rule.

Response: As discussed in Chapter 1 of the Staff Report (Section: 2008 NAAQS Attainment Status – *Trojan Battery (Source-oriented Monitor)*), SCAQMD staff reviewed monitoring data for the referenced battery manufacturing

plant and discovered that multiple high monthly average readings were measured between years 2005 to 2011, including several rolling 3-month averages over 0.15 $\mu g/m^3$ between 2005 and 2007. Although the commenter is correct that the measured levels were lower than the 1.5 $\mu g/m^3$ federal standard in effect during that time period, SCAQMD staff is recognizing the fact that this industry segment has demonstrated the potential to exceed the current federal standard of 0.15 $\mu g/m^3$. Regardless of the timeframe that elevated ambient lead levels were measured, i.e. before or after the current NAAQS, operations from a battery manufacturer have shown the potential ambient lead levels to be greater than 0.15 $\mu g/m^3$. Although the referenced battery plant has not exceeded the current federal standard since 2008, it is important to understand that the source-oriented monitor for the facility was relocated in October 2011, and is most likely not measuring maximum ground level concentrations of lead as the original location was intended to do.

103. Comment: U.S. EPA and SCAQMD have concluded that Los Angeles County can attain the current NAAQS by a separate regulation of secondary smelting facilities (Rule 1420.1), and that conclusion has proven to be correct. Three of the BCI battery manufacturers—Ramcar Batteries, Trojan Battery, and Concorde Battery—are located in Los Angeles County, and therefore conclusions about Los Angeles County are applicable. U.S. Battery is in a neighboring county which has always been in attainment with the NAAQS.

Response: As discussed in Chapter 1 of the Staff Report, Rule 1420.1 establishes requirements for the large lead-acid battery recycling facilities and has proven effective at demonstrating attainment demonstration with the lead NAAQS. Proposed Rule 1420.2 is needed to ensure that ambient lead concentrations from facilities that are melting more than 100 tons of lead annually are sufficiently controlled, to protect communities, particularly younger children, from lead exposure and to help ensure attainment and maintenance of the NAAQS. As discussed in detail in Chapter 1 regarding the health effects of lead and the justification for lowering the ambient concentration limit to 0.100 $\mu g/m^3$, exposure to lead which is a neurotoxin, can result to serious health effects and behavioral impacts, particularly to young children. The SCAQMD staff believes as a regional agency that is developing a source-specific rule for lead metal melting facilities, that there is a need to ensure that communities around these facilities are protected. The ambient concentration limits in Proposed Rule 1420.2 are the front line defense to ensure ambient lead levels are sufficiently controlled and the trigger to identify if additional controls are needed. Implementation of those additional controls, if needed, would be through a Compliance Plan. There are currently only two facilities subject to Proposed Rule 1420.2 where ambient lead concentrations are being monitored, Gerdau and Trojan Battery. Both facilities have experienced elevated levels of lead relative to the proposed ambient limits in the proposed rule, demonstrating a need for

all facilities subject to Proposed Rule 1420.2 to conduct ambient monitoring to quantify the concentration of lead in the air.

The SCAQMD staff is concerned with lead emissions and high ambient air lead concentrations from metal melting facilities, including lead-acid battery manufacturers. As discussed in Chapter 1 of the Staff Report (Section: 2008 NAAQS Attainment Status – *Trojan Battery (Source-oriented Monitor)*), it has been demonstrated that this industry segment has the potential to exceed the current federal standard and the SCAQMD has developed PR 1420.2 in order to help maintain attainment status of the lead NAAQS in addition to protecting public health from the exposure to lead emissions.

104. Comment: Regulation of battery plants is a peculiar target to lower lead emissions in the South Coast Basin, given that EPA's 2011 National Emissions Inventory shows that battery plants constitute less than 0.25% of the basin's lead emissions. (Airports, by contrast, emit 94.33% of the lead in the basin yet are not the targets of regulation.)

Response: PR 1420.2 is based on an existing Rule 1420 which was adopted on September 11, 1992 which established requirements for lead emitting sources such as battery recycling facilities. PR1420.2 is based on the current science and information regarding the potential fugitive emissions from lead metal facilities as well as lowering the ambient lead concentration to ensure attainment of the lead NAAQS as well as providing additional health protection for people, particularly young children that live, go to school, or recreate near lead melting facilities. Lead melting facilities have the potential for generating fugitive emissions from the melting process, and handling of lead, to name of few. In general, metal melting facilities can accurately report point source emissions, however, fugitive emissions may be unreported or misreported due to the difficulty in quantifying fugitive emissions, and thus emissions reporting does not always capture total lead emissions from these operations. PR 1420.2 establishes requirements to lower point and fugitive sources of lead emissions, including ambient air lead concentrations. Based on reported emissions data and ambient air monitoring data, it has been shown that a facility with low reported lead emissions can still have high ambient air concentrations of lead. Please refer to Response to Comment #3 for further details.

105. Comment: With Rule 1420.1 now fully implemented, by staff's own admission there is no problem left to alleviate (*Under Cal. Health & Safety Code § 40001(c), the District must first "determine that there is a problem that the proposed rule . . . will alleviate and that the rule or regulation will promote the attainment or maintenance of state of federal ambient air quality standards." See also id. §§ 40001(c), 40402(h), 40440(a), 40440.8(b)(6)*).

Response: Ambient monitors around Proposed Rule 1420.2 facilities are needed to better understand actual ambient lead concentrations at facilities that melt more than 100 tons of lead annually. Both facilities where monitoring is conducted showed elevated levels of ambient air lead concentrations as discussed in Response to Comment #103. However, for the remaining 11 facilities there is no ambient air lead concentration data. Thus a need exists to conduct ambient air lead monitoring, and based on this monitoring will require additional measures, if needed, to ensure ambient levels of lead are not exceeded. See Response to Comment #103 for more information.

106. Comment: Staff's proposed 0.100 μg/m^3 level for triggering additional regulatory obligations also is troubling for a practical reason: it does not account for background lead levels—such as those emitted from the above mentioned airports, railroad or highway activities, or a myriad of other potential causes. The staff takes the view that, since the ten "non-source oriented" monitors in the District show average air lead levels of between 0.01 and 0.03 μg/m^3, it is reasonable to hold battery manufacturers and others it has characterized as "metal melters" responsible for any exceedance of a higher trigger.

Response: As discussed in Response to Comment #8 above, data garnered from ambient air monitoring conducted by SCAQMD at non-source-oriented monitors operated in the Air Basin between the years 2007 through 2013 was reviewed and demonstrated background concentrations ranging from 0.01 μg/m^3 to 0.03 μg/m^3. These values are substantially lower than the proposed final ambient lead concentration limit in PR 1420.2 which is 0.100 μg/m^3 by ~~January~~ April 1, 2018 and the requirement to demonstrate ambient air monitoring data results below 0.070 μg/m^3 that is applicable to facilities that opt for an exemption under paragraph (o)(1) - Ambient Air Monitoring Relief Plan. Further, it is worth noting that the recent data collected for the SCAQMD Multiple Air Toxics Exposure Study IV (MATES IV) from July of 2012 to July of 2013 revealed ambient air lead concentrations at some monitors sites that are close to freeways, heavy industrial land uses and nearby railroad tracks to be less than 0.011 μg/m^3 on a rolling 30-consecutive day average. The commenter states that Staff's view is that a metal melter is responsible for "any exceedance"; however, the rule states that an exceedance occurs if it is measured by a specified monitor that measures "lead concentrations resulting from the facility" [See Response to Comment #95].

107. Comment: Non-source specific monitors to which the staff refers are too scattered to be representative, and there are circumstances in which much higher "background" levels could exist. Therefore, regulating purely on ambient levels, especially without even providing regulated entities with an opportunity to demonstrate that any exceedances are the result of other emission sources, is not appropriate.

Response: Paragraph (d)(3) of the proposed rule states that an exceedance of the ambient limits of the rule are based on monitor readings that measure lead concentrations resulting from the facility. Additionally, paragraph (m)(10) states that the owner or operator shall implement one or more of the measures of the approved Compliance Plan "…if lead emissions discharged from the facility contribute to ambient air lead concentrations…" Further in (m)(10), it is stated in considering the measure(s) that the owner or operator shall implement that are necessary to attain the applicable ambient air lead concentration limit, the Executive Officer shall consider the cause, magnitude, and duration of the exceedance, as well as past exceedances, if applicable. A provision has been added to the proposed rule that allows an operator to demonstrate that the primary cause of an exceedance is not from their facility. [See Response to Comment #95].

108. Comment: Staff has offered no scientifically valid rationale for selecting a thirty-day averaging period rather than a ninety-day period. At the federal level, when faced with this exact question, EPA determined that a thirty-day average is not scientifically supported because "[m]edical evidence . . . indicated that blood Pb levels re-equilibrate slowly to changes in air exposure." EPA Review of the National Ambient Air Quality Standards for Lead: Policy Assessment of Scientific and Technical Information at 5-6 (Nov. 2007). As a result, any exceedance only results in an effect on blood lead levels if it increases average air lead over an averaging period closer to ninety days. *Id.*; *see also* EPA Policy Assessment for the Review of the Lead National Ambient Air Quality Standards at 4-6 (May 2014) ("2014 Policy Assessment"). This means that the thirty-day averaging period proposed by SCAQMD does not accurately capture the impacts on the public stemming from potential lead-exposures, and would unduly burden industry by potentially triggering unnecessary corrective actions.

Response: The SCAQMD staff disagrees with the comment that there is no scientific evidence to support a thirty-day averaging period. The administrative record for EPA's national rulemaking published in the federal register in November 2008, [Federal Register, Vol. 73, No.219, Wednesday, November 12, 2008, Rule and Regulations 66991-66996] documents the agencies consideration of the thirty-day averaging period for Lead: **"**The Administrator recognized that there is support in the evidence for an averaging time as short as monthly consistent with the following observations: (1) The health evidence indicates that very short exposures can lead to increases in blood levels, (2) the time period of response of indoor dust Pb to airborne Pb can be on the order of weeks, and (3) the health evidence indicates that adverse effects may occur with exposures during relatively short windows of susceptibility, such as prenatally and in developing infants." In addition, in the Clean Air Scientific Advisory Committee (CASAC) Comments and Recommendations Concerning the Proposed Rule for the Revision of the National Ambient Air Quality Standards (NAAQS) for Lead (July 18, 2008), the CASAC stated

"The CASAC's previous recommendations both in the current review cycle and during the prior review of the Lead NAAQS conducted in the 1980's-advocated reducing the averaging time of the Lead NAAQS from calendar quarter to monthly, duration. A monthly or rolling 30-day averaging time with a not to exceed form would be more protective against adverse short-term effects that a form …etc." The SCAQMD acknowledges that EPA, while weighing the shorter 30-day averaging period, chose to finalize the 2008 rulemaking with a 3-month averaging time as being appropriate considering the inherent uncertainty with the available evidence. Nevertheless, the SCAQMD staff is proposing the 30-day rolling average time frame in Proposed Rule 1420.2 consistent with Rule 1420 and 1420.1, on our belief that there is no safe level of lead in blood and a recognition that there are multiple pathways of lead exposure and sufficient temporal variability in lead exposure.

109. Comment: There is a consensus among federal regulators that no health-based evidence shows that lowering the lead ambient air standard below the already low 0.150 µg/m^3 level will lead to lower blood lead levels among the public. *See* Clean Air Science Advisory Committee ("CASAC") Review of the EPA's *Policy Assessment for the Review of the Lead National Ambient Air Quality Standards* at 6, 8 (2013); 2014 Policy Assessment at 4-34; 80 Fed. Reg. 278, 312 (Jan. 5, 2015). Even the one 2014 CASAC member quoted in the draft Staff Report in an attempt to bolster incorporation of the 0.100 µg/m^3 trigger supported the 0.150 µg/m^3 NAAQS, stating "[i]f lowering the standard would be beneficial to [blood lead] levels, then there would be potential for additional public health benefit from a lower standard. However, *such information is currently unknown.*" (*CASAC Review of the Policy Assessment at A-13 (statement of Dr. Susan Korrick)*

Response: The SCAQMD staff disagrees with the comment. As summarized in the Draft Staff Report, Section 1-4: (Justification for lowering ambient air to 0.100 µg/m^3), an ambient concentration limit of 0.100 µg/m^3 is supported by scientific information presented during the development of the 2008 Lead NAAQS and the 2015 Proposed Rule to Retain the Current Lead NAAQS. For the sake of brevity, this response to comment does not attempt to re-state the discussion in Section 1-4 of the Draft Staff Report, but the commenter is referred to this discussion for details on why the SCAQMD staff is proposing a 0.100 µg/m^3. However, Sections 1-4 conclusion is summarized below.

An ambient lead concentration limit of 0.100 µg/m^3 will be more health protective for communities that live around metal melting facilities, particularly younger children. As previously stated, there are currently no commonly accepted guidelines or criteria within the public health community that would provide a clear basis for reaching a judgment as to the appropriate degree of public health protection that should be afforded to

protect against risk of neurocognitive effects in sensitive populations, such as IQ loss in children." (73 FR 67004). As a regional air agency, developing a source-specific-rule for metal melting facilities, the SCAQMD staff is recommending policy decisions that are more health protective for communities, particularly young children, which are affected by lead emissions from metal melting facilities regulated under Proposed Rule 1420.2.

In addition, the quote that the commenter attributes to a CASAC member was not included in the Draft Staff Report in an attempt to justify the lower 0.100 $\mu g/m^3$. However, statements from the CASAC member that the commenter is alluding to, are used in the Draft Staff Report, but not in the context as described in the comment.

110. Comment: Air exposure is only one of many routes of possible exposure pathways, EPA and external reviewers repeatedly have expressed skepticism about whether a lower ambient air quality standard would have any effect on children's health. Rather, hand-to-mouth ingestion appears to be the primary exposure pathway compared to today's very low ambient air levels. *See, e.g.*, 2014 Policy Assessment 3-8, 4-22; 80 Fed. Reg. at 307.

Response: The SCAQMD staff agrees with the commenter that there are multiple pathways of lead exposure, primarily inhalation and ingestion. While EPA recognizes that this leads to a great deal of uncertainty on interpreting the evidence in setting a lead ambient level which is health protective, they also have acknowledged that policy judgments must be made regarding the level of health protection and margin of safety. The available evidence presented in the 2014 Policy Assessment 3-8, 4-22; 80 Fed. Reg. at 307 supports a range of choices in setting that level, and that "different public health policy judgments could lead to different conclusions regarding the extent to which the current standard provides projection of public health with an adequate margin of safety." (EPA, 2014). In addition, while ingestion is also a source of lead exposure, the commenter needs to acknowledge that lead in soil leading to hand-to-mouth ingestion primarily occurs as a result of lead deposition from air emissions, some of which can be significantly elevated. One only needs to review the lead in soil data currently found around the Exide Technologies facility located in Vernon, Ca to understand the severity of multi-pathway exposure via Exide's air emissions.

111. Comment: The draft Staff Report attempts to justify the lower ambient level by employing a different air-to-blood ratio (1:10) than EPA (1:7) (*The air-to-blood ratio, as SCAQMD notes, is one of the "two primary inputs to EPA's evidence-based, air-related IQ loss framework." SCAQMD does not disagree with EPA's conclusions on the other input, the concentration-response function.).* In so doing, the staff asserts that EPA chose its ratio based on a "policy judgment," and that the District is free to reach a more

conservative policy judgment. But this is incorrect. What staff refers to as EPA's "policy judgment" was a scientifically sound determination firmly tethered to the best available data. As recently as 2014, in analysis ignored by the draft Staff Report, EPA explained that a 1:6 or 1:7 air to blood ratio was the best fit with the most recent and relevant data. *See* 2014 Policy Assessment at 3-9, 4-21; *see also* 80 Fed. Reg. at 299. The draft Staff Report cited the same EPA docket in support of its alternative 1:10 air-to-blood ratio, but completely ignored the studies that were unfavorable or contrary to its position, and ignored the fact that the studies cited by EPA as potentially suggesting a 1:10 air-to-blood ratio are among the oldest studies available. EPA justified its reliance on 1:7 air-to-blood ratio because that is the ratio supported by the most current data. *See* 2014 Policy Assessment at 3-9 (observing that "air and blood data reported for 1996, 1999 and 2001 results in a ratio of 1:6.5" and that another analysis "focused only on the 1996 and 1999 data . . . yields a ratio of 1:7"). The only studies cited by the draft Staff Report—Schwarz and Pitcher (1989), Hayes (1994), and Brunekreef (1984)—rely on data collected between 1974 and 1988, during a period when leaded gasoline was still in use and ambient air levels were significantly higher than today *(One other study was conducted in Mexico City, a locale presenting unique and very different exposure pathways than the United States—including the L.A. Basin.)*. And EPA's Integrated Science Assessment specifically warns against relying on studies from that era to predict air-to-blood ratios in today's much lower lead-level ambient air environment. *See* EPA Integrated Science Assessment for Lead (June 2013) at 3-133 ("Due to the limited evidence, there is increased uncertainty in projecting the magnitude of the air Pb-blood Pb relationship to ambient air Pb concentrations below 0.2 $\mu g/m^3$.") But the staff has not explained its decision to elevate older, less representative studies over more recent studies against the expert advice of EPA and the CASAC.

Response: SCAQMD staff has reviewed the information from the U.S. EPA's recent 2014 Lead NAAQS Review and is aware of the additional studies referenced by the commenter located on page 299 of the recent proposed rulemaking to retain the Lead NAAQS dated January 5, 2015[3]. However, upon a complete review of the recently proposed Lead NAAQS, the commenter will discover that on page 300 of the Federal Notice, the U.S. EPA states that these new studies do not appreciably alter the scientific conclusions reached in the 2008 Lead NAAQS Review "regarding relationships between Pb in ambient air and Pb in children's blood" or the range of ratios of 1:5 to 1:10. Although the EPA has reviewed additional studies and conducted a more focused analyses of these studies since the previous NAAQS review in 2008, it does not consider the air to blood ratio range of 1:5 to 1:10 irrelevant and instead the EPA reinforces this range in its most recent conclusions regarding blood lead and air lead relationships. Further, on page 300 of the Federal Notice the, EPA states that the "currently available evidence continues to indicate

[3] Proposed Rule Notice for 2014 Lead NAAQS available at: http://www.gpo.gov/fdsys/pkg/FR-2015-01-05/pdf/2014-30681.pdf

ratios relevant to the population of young children in the U.S. today…to be generally consistent with the approximate range of 1:5 to 1:10 given particular attention in the 2008 NAAQS decision…" Therefore, the basis for SCAQMD's policy decisions regarding the proposed ambient lead concentration limit of 0.100 µg/m^3 remains and reinforces the determination that a 1:10 air to blood ratio is more health protective.

Further, the SCAQMD staff considers it just as important to not ignore the older studies that present evidence of higher air-to-blood ratios. Policy decisions should be made on all the available evidence, not just on the most recent data. In regards to the older evidence being conducting in an era of high ambient lead levels due to the prevalence of leaded gasoline, it is important for the commenter to consider that there may be significant elevated lead levels surrounding facilities subject to Proposed Rule 1420.2, that for short durations may contribute to higher air-to-blood ratios which may be more accurate. By setting the ambient lead levels at 0.100 µg/m^3, the SCAQMD is being proactive and more health protective than the NAAQS.

112. Comment: Other sources used to support the lower ambient air level fare no better. The first is a series of comments submitted to EPA in 2008, all of which EPA explicitly declined to follow at that time and again in 2014 (*See* 2014 Policy Assessment at 3-9, 4-21; 80 Fed. Reg. at 299; *see also* 73 Fed. Reg. 66,964, 67,001 (Nov. 12, 2008). The most recent letter of the Children's Health Protection Advisory Committee—cited by SCAQMD—offers no new evidence or arguments related to air-to-blood ratios or the appropriate ambient air lead level, and thus is irrelevant to this portion of SCAQMD's analysis.) The second is a report from the Center for Disease Control ("CDC"), which the staff report claims "further substantiates the policy decision to establish an ambient lead concentration limit of 0.100 µg /m^3." But that is another mischaracterization of the analysis conducted by a federal agency. The CDC report disclaims that its calculations are health-based and defines them instead as statistical measurements of the highest 2.5% of blood lead levels across the U.S. population of children ages 1-5.

Response: The SCAQMD staff disagrees with the comment. EPA's Children's Health Protection Advisory Committee (CHPAC), is a body of external researchers, academicians, health care providers, environmentalists, state and tribal government employees, and members of the public who advise EPA on regulations, research, and communications related to children's health. CHPAC stated in the letter referenced by the commenter that "lead affects children's IQs at exposure levels appreciably lower than recognized…" In addition, in a letter to the Administrator on January 9, 2008 and on a letter June 16, 2008 regarding the Proposed Rulemaking for the National Ambient Air Quality Standards for Lead, CHPAC stated there is clear scientific evidence to support an ambient lead concentration of 0.100 µg/m^3, based on

studies showing there are appreciable negative impacts on young children such as behavioral and development effects from low levels of lead exposure resulting in lead blood levels below 10 µg/dL.

In regards to the CDC report referenced by the commenter, that the CDC's action to establish a lead reference level below 10 ug/dL, in lieu of the previous "level of concern" of 10 ug/dL, is not health based but relies on statistical measurements to further substantiate the establishment of an ambient lead concentration limit of 0.100 $\mu g/m^3$ is not a mischaracterization of the analysis. The CDC report cited also stated that while 2.5% represents the national geometric mean of children (ages 1-5) with blood lead levels greater than 5 ug/dL, this percentage under-represented the geometric mean blood lead levels among younger children. The SCAQMD staff believes that a statistical evaluation of lead blood levels in children at the highest percentage of blood levels to help justify a lower lead ambient concentration is scientifically valid, especially in cases where younger children live, go to school, or recreate near lead melting facilities.

113. Comment: Staff found that "[s]ince September 2007, all monthly averages [at Trojan Battery] have been below the new lead NAAQS with an average concentration of 0.07 $\mu g/m^3$." Yet the draft Staff Report now inexplicably claims "[a]dditional control measures are necessary for the metal melting industry to ensure no violations of the current NAAQS of 0.15 $\mu g/m^3$." Despite five years of additional evidence showing compliant, low ambient lead levels at Trojan Battery, the staff has offered no explanation for its reversal of position, nor an explanation of how eight years of continuous compliance justifies the staff's conclusion that non-compliance is likely. And the staff presents no evidence at all relating to the purported threat of exceedances from any other facility.

Response: See Response to Comment #102.

114. Comment: The proposed rule would impose inflexible housekeeping measures that apply regardless of the monitoring results at a facility. Yet air pollution districts are prohibited by law from implementing prescriptive housekeeping measures when a facility can demonstrate equivalent performance in meeting the ambient air lead concentration limit through alternative methods. *See* Cal. Health & Safety Code § 40001(d). In fact, if a district rule establishes an emission limit, that rule may not "set operational or effectiveness requirements" for facilities that comply with those limits. *Id*

Response: The housekeeping requirements of PR 1420.2 do provide a level of flexibility as to the methods to which they are to be conducted (e.g., vacuuming or wet mopping in rule-specified areas for cleaning). A provision has been added in Proposed Rule 1420.2 under paragraph (h)(10) that will allow an operator to use an alternative housekeeping measure provided the alternative

housekeeping measure meets the same objective and effectiveness of the housekeeping requirement it is replacing.

Regarding emission limits, Health and Safety Code § 40001(d)(3) refers to any specific control equipment operating on a facility or system under that limit. PR 1420.2 allows for alternative emission control methods relating specific requirements for control equipment (e.g., use of HEPA filters and PTFE bags) so long as they are equivalent or more effective at reducing emissions as approved by the Executive Officer.

115. Comment: The rule imposes very specific and costly housekeeping requirements on every facility, regardless of whether monitoring showed an exceedance of the trigger.

Response: Based on interviewing facility operators in the Basin, and through on-site surveys conducted by the SCAQMD staff at every metal melting facility subject to the proposed rule, it was determined that to an extent nearly all of the proposed housekeeping measures are currently implemented at metal melting facilities at various frequencies. The significant variable in responses to the survey was the frequency at which these measures are implemented. For example, some facilities may conduct cleanings less frequently than other facilities or less frequently than the proposed rule requires. As a result, the SCAQMD staff does not see that compliance with the proposed housekeeping requirements results in high costs to the facility as it is understood that facilities are for the most part already conducting them. It is also important to note that through the extensive public process for development of this rule which included 6 working group meetings, multiple individual stakeholders meetings, and a public workshop, several iterations of the proposed rule have been drafted which have resulted in significant modifications to housekeeping requirements that more appropriately apply to the metal melting industry and that resulted in reduced cost impacts.

116. Comment: Housekeeping requirements were initially designed for battery recycling facilities—an entirely dissimilar industry with different processing areas and fewer enclosed processing areas (*The only similarity between these two industries is that they both involve the handling of lead-acid batteries. The emission generating processes and emissions control challenges are not similar, let alone sufficiently identical to support basing the requirements imposed on one industry onto the other.*) —where there was evidence of nonattainment. In contrast, battery manufacturers already operate below ambient air lead limits; SCAQMD has identified no real-world problem that the additional measures would alleviate, and has only proffered supposition about theoretical future violations which the industry's track-record of compliance demonstrates are highly unlikely (*See* Cal. Health & Safety Code

§ 40001(c) (requiring SCAQMD to "determine that there is a problem that the proposed rule or regulation will alleviate")).

Response: See Response to Comment #102 and #115.

117. Comment: The proposal provides no opportunity for tailoring the compliance plans to the specific challenges faced by a particular facility, such as background lead levels, the source(s) of lead emissions, or unique emissions control scenarios. But the reason for the exceedance should be determinative of the response action, and facilities should have flexibility in determining the appropriate control measure based on the cause of the exceedance. Further exacerbating this problem, the proposed rule would provide unbounded discretion to the Executive Director to override plan requirements or the actions of the facility if he/she believes the actions insufficient to preclude subsequent exceedances (even those not due to plant activities, as explained above).

Response: See Response to Comment #95, #96, and #107. If after review of the information provided by the operator, the Executive Officer does determine that the primary cause of an exceedance is attributed to another source, the metal melting facility would not be required to submit or implement the Compliance Plan. Please refer to Chapter 2 of the Staff Report and paragraphs (d)(4) and (d)(5) of Proposed Rule 1420.2.

118. Comment: The macro-level analysis of regional impacts included in the draft Socioeconomic Assessment is irrelevant to a rule as specific as this one which has a direct impact on a limited number of known and identifiable facilities. Here, the draft Socioeconomic Assessment ignores the very real costs to local communities by assessing the impact on the entire Los Angeles urban area rather than the areas and facilities singled out by the rule. The four BCI members potentially subject to this rule alone have a total of 710 employees, many with families. Those facilities are at risk of having to close or be required to substantially cut back on operations because of this rule.

Response: The socioeconomic analysis is required by the Health and Safety Code 40440.8 (a) and (b) to identify affected facilities and to provide range of probable costs to affected facilities and industries. In addition, the socioeconomic assessment is required to access and present the impacts on the proposed rule on employment of the regional economy i.e., overall net employment impacts from additional costs of compliance as well as additional spending within the local economy.

The macroeconomic model used for the analysis is unable to generate job impacts at individual facilities due to data limitations. It would be too speculative to assess the impacts of PR 1420.2 on each individual facility without having detailed financial information available for those facilities.

119. Comment: The draft Socioeconomic Assessment's "worst case" scenario assumes a maximum of approximately 230 jobs lost within the first five years. In fact, the "worst case" is a loss of at least 710 jobs, which represents the individuals employed by the four BCI members in the battery manufacturing sector alone, as well as many in at other "metal melting" facilities.

Response: The intention of the proposed rule is not to result in business closures. The 230 jobs forgone in entire economy is the outcome of an alternative scenario (worst case and highly unlikely) where the affected facilities would not purchase any control or service from providers within the Basin. The macroeconomic model is unable to assess such impacts at each individual facility due to data being unavailable at finer industry levels (battery manufacturers) or at six-digit North American Industrial Classification Codes (NAICS).

120. Comment: The calculation of compliance costs—$71,140 to $506,391 for individual battery manufacturers—is not sufficiently supported… Staff has not provided any basis for its assertion that these costs would only lead to "rise in [] delivered price by 0.004 percent" for battery manufacturer's products. BCI's members report that this price increase estimate is woefully low, and that the actual impacts will put them at a significant competitive disadvantage to their out-of-state competitors.

Response: Staff is currently working with each affected facility to reconcile the cost estimate discrepancies. The projected increase in relative cost of services (by 0.006 percent) and a rise in its delivered price (by 0.004 percent) in 2025 are for the entire manufacturing sector (where most of the affected facilities belong) and not for individual battery manufacturers. As previously mentioned, the regional economic model is unable to assess such impacts at each individual facility.

121. Comment: Paragraph (o)(1) exempts any metal melting facility subject to PR 1420.2 from the requirements of subdivision (e) if they demonstrate ambient air lead concentration levels of less than or equal to 0.070 $\mu g/m^3$ averaged over any 30 consecutive days (measured during normal operating condition that are representative of the facility). The said exemption is applicable to any metal melting facility capable of drafting an ambient air monitoring relief plan that complies with all three thresholds in the following evaluation formats: Air dispersion modeling, ambient air monitoring, and source test results. We propose that satisfying two out of the three; including dispersion modeling and source testing, is sufficient to demonstrate acceptable levels of health risk and will alleviate some of the more onerous requirements of the draft rule.

Specifically, we are concerned about the ability of ambient air monitoring to reflect our facility's actual lead emissions contribution to air quality. While

ambient air monitoring is a great tool to evaluate actual levels at a fixed location and time, it does have limitations. For example, our facility is located adjacent to railroad tracks on one side and a major freeway on the other. Also, we are located near the Burbank Airport and a multitude of other industrial facilities. As a result, we believe that it would be incredibly difficult, if not impossible, to differentiate between background emissions and emissions from our exhaust stack – making ambient air monitoring results questionable. This begs the question of the value of ambient air monitoring to determine an exemption. We see the benefit of ambient air monitoring to help quantify fugitive emissions as was done with very large lead emissions sources in the basin, however, for a site that has an emission rate of 0.01 oz/day, it may not be the correct tool nor a required tool. Therefore, we believe the other dispersion modeling and source testing are much more representative of actual air quality contributions.

Response: The SCAQMD staff believes that all three thresholds are necessary to rule out with confidence that any facility which processes 100 tons of lead or more annually will not have ambient air lead concentrations above the proposed limit of 0.100 $\mu g/m^3$. Given the limitations of source test and air dispersion modeling results the commenter's proposal to exempt metal melting facilities from the ambient air monitoring requirements set-forth in subdivision (e) based on source test and air dispersion modeling alone is insufficient. Specifically, source test and dispersion modeling may not accurately estimate fugitive emissions resulting in inaccurate ambient air lead concentration levels.

As discussed in Response to Comment #8 above, data garnered from ambient air monitoring conducted by SCAQMD at non-source-oriented monitors operated in the Basin between the years 2007 through 2013 was reviewed and demonstrated background concentrations ranging from 0.01 $\mu g/m^3$ to 0.03 $\mu g/m^3$. These values are substantially lower than the proposed final ambient lead concentration limit in PR 1420.2 which is 0.100 $\mu g/m^3$ by ~~January~~ April 1, 2018 and the requirement to demonstrate ambient air monitoring data results below 0.07 $\mu g/m^3$ applicable to facilities that opt for an exemption under paragraph (o)(1) - Ambient Air Monitoring Relief Plan. Further, it is worth noting that the recent data collected for the SCAQMD Multiple Air Toxics Exposure Study IV (MATES IV) from July of 2012 to July of 2013 revealed ambient air lead concentrations at the monitor near the commenter's facility to be less than 0.011 $\mu g/m^3$ on a rolling 30-consecutive day average. The sources surrounding the SCAQMD monitoring site are similar to those sources around the commenter's facility, for example, the I-5 Freeway, heavy industrial land uses and a nearby railroad track. Given these similar surrounding site characteristics, the SCAQMD staff disagrees with the commenter's statement that it would be difficult to differentiate between background emissions and emissions from the site. It should also be noted that staff is aware that there could be an

incident where an ambient air monitor required by the rule at a metal melting facility demonstrates elevated ambient air lead concentrations not attributed to emissions from the metal melting facility, therefore paragraph (d)(3) of Proposed Rule 1420.2 states that an exceedance of the ambient limits of the rule is based on monitor readings that measure lead concentrations resulting from the facility (See Response to Comment #95).

Further, while a facility may have a low point source emissions rate (e.g., 0.01 oz/day, referenced by the commenter) this rate does not necessarily reflect the overall lead emissions from the facility because it may inaccurately account for fugitives. Without a precise accounting of fugitive lead emissions it is irresponsible to dismiss a source of lead emissions as insignificant. Ambient air monitoring combined with air dispersion modeling and source test data results will provide a comprehensive emissions profile of metal melting sources and enable the SCAQMD staff to discern any emission unrelated to these sources.

Given the SCAQMD's experience with ambient air monitoring in the Basin and the apparent similarities between the commenter's facility and areas where monitors have historically been located within the ambient air monitoring network, the SCAQMD staff disagrees with the commenter's belief that ambient air monitors placed in accordance with the provisions of PR 1420.2 will not accurately represent the facility's actual contribution of lead emissions or serve as an appropriate and valuable tool to determine a facility's ambient air lead concentration levels.

122. Comment: Paragraph (o)(3) of PR 1420.2 exempts metal melting facilities from the proposed rule requirements if the amount of lead melted at the facility has been reduced to less than 50 tons per year. Therefore, our facility is interested in understanding how 50 tons was identified as the threshold point and the District's estimated emissions associated with 50 tons of melting a year.

Response: Per Response to Comment #2 above, the 50 tons per year value is based on 100% collection efficiency and no fugitive emissions. SCAQMD staff determined that throughput levels that are half of the applicability threshold for PR 1420.2 would likely result in ultra low emissions warranting an exemption from PR 1420.2. However, these facilities would then need to continue to comply with Rule 1420 and all other applicable SCAQMD rules.

123. Comment: We believe that the lead charge rate is not reflective of emissions and impact to the environment. From a physical properties perspective, the temperature of the lead, its subsequent vapor pressure, and the surface area of the melt kettle are more indicative of the potential emissions. Our facility's most current permit application references an AQMD conversion factor of 0.01667 pounds of lead emission per ton of lead metal melted. If this

emission rate is used to determine an emission threshold for the 50 ton/year exemption, we arrive at 0.8335 pounds of lead per year (0.01667 lb. lead/ton lead melted * 50 tons lead melted = 0.8335 lb. lead emission). Our most current source test shows that this facility emits 0.00059 lb lead/day, or 0.215 lb. lead/year (0.00059 lb/day * 365 days). This number is approximately four times lower than what is assumed for a facility that melts 50 tons a year. Since emissions of lead are dependent on more than just lead melting throughput, we recommend that an exemption option be included that is based on the actual lead emission threshold of the facility.

Response: Temperature of the lead, its subsequent vapor pressure, and the surface area of the melt kettle are indicative of potential emissions, however, these emission indicators alone do not provide a complete profile of emissions from metal melting operations. For example, default lead emission factors from U.S. EPA's *Compilation of Emission Factors (AP-42)* establish emission rates that are directly tied and calculated based on charging rates, as does the commenter's facility permit application that references a 0.01667 pounds of lead emissions per ton of lead metal melted. Therefore, charge rates are also a crucial component to estimating emissions from metal melting and in some cases could outweigh emissions from other operational parameters at a given facility.

Additionally, SCAQMD staff is concerned about fugitive emissions resulting from throughput levels beyond 50 tons per year. Specifically, SCAQMD staff is concerned that facilities with throughput levels and associated activity levels beyond this exemption threshold could have significant fugitive emissions resulting from various industrial processes not captured by point source controls or accurately accounted for in emissions quantification calculations. For example, some facilities that utilize lead melting pots vent fugitive emissions from the pot to a capture and control device (e.g., a hood exhausted to baghouse) upon operation of the furnace. However, during transport of the molten lead from the melting pot to casting areas of the facility there are no emissions controls to minimize or eliminate fugitive emissions and source tests do not capture emissions generated during this stage of the process. Therefore, SCAQMD staff disagrees that an emissions threshold will suffice at meeting the objectives and purpose of PR 1420.2.

124. Comment: According to the 2012 SIP, the EPA attempted to quantify fugitive emissions, but concluded it is very difficult and acknowledged the points of error variability. EPA's final solution was a calculation using factors for size, housekeeping, enclosure and multiplied against an assigned standard, none of which is reflective of how lead is used in our facility's operations. If we are to make comparisons of this type, we need to keep it apples to apples.

According to EPA's fact sheet, "Revisions to Lead Ambient Air Monitoring

Requirements" the EPA threshold for lead monitoring near an industrial facility is 0.5 tons/year or 2.74 lb/day. This is 2.74 / 0.0006 lb/day = 4,566 x higher than our facility's point source emissions, including fugitives, the facility emissions will come nowhere close.

EPA's position on source oriented ambient air monitoring near high-emitting facilities was reflected in the Federal Register / Vol. 75, No. 247 / Monday, December 27, 2010 / Rules and Regulations. The EPA used a 1 tpy threshold. To put this in perspective, the operation utilized by Senior emits 0.22 lbs/yr from the HEPA effluent. Under this philosophy our facility would not be required to conduct ambient air monitoring.

Response: Historical **s**ource-oriented monitoring data from a metal melting facility that reported less than 0.015 tpy of lead through the SCAQMD's AER Program and EPA's TRI Program has demonstrated that a facility with lead emissions substantially lower than EPA's 0.5 tpy threshold could contribute to an exceedance of the NAAQS. This monitoring data reinforces SCAQMD staff's concern pertaining to unaccounted fugitive emissions that may contribute to elevated ambient air lead concentration levels. See Response to Comment #1 and Section "Trojan Battery (Source-oriented Monitor) in Chapter 1 of this Staff Report for further details.

125. Comment: As we promulgate new rules to reduce lead emissions and reduce health risk, it's only fair to bring all relevant information forward to determine impact to the different businesses that are affected. Our facility is an aerospace manufacturing company and its single ancillary lead point is limited to a small working area. This poses significantly different issues than a battery plant, where there are many locations within the facility where lead is processed. There are also technical differences as our facility re-melts pure lead only at temperatures just barely above the melting point (621 F). Because of this practice the vapor pressure is extremely low (4.4355E-9) and the ancillary lead process at our facility does not lend itself to the generation of $<PM_{10}$, thus resulting in very little potential for fugitive emissions.

Requiring our facility to conduct ambient air monitoring will increase compliance costs, but has zero benefit to us and the community. Because of the physical properties of the process the uncontrolled emissions were measured at an extremely low 0.000199 lbs/hr in 1990 and reconfirmed at 0.000133 lbs/hr in 2015, both de minimis values and well below the exemption level of 1420.2(o)(2) of 0.005 lbs/hr.

Response: The commenter contends that low melting temperatures (621 F) used at the subject facility preclude the potential for elevated fugitive emissions. However, based on historical source-oriented ambient air monitoring data near other metal melting facilities in the Basin that also melt

at relatively lower temperature there have been instances of elevated ambient air concentrations of lead (See Section "Trojan Battery (Source-oriented Monitor) in Chapter 1 of this Staff Report for further details). Further, although the facility referenced by the commenter may have a single lead point source (i.e., a single lead melting pot) it is worth noting that the ancillary processes to the lead melting activity at this site are similar to other metal melting facilities. For example, like other metal melting facilities this facility includes a pouring and casting process and generates lead waste from these processes. Therefore, SCAQMD staff disagrees that the facility's lead processes and low melting temperatures excludes the possibility of elevated fugitives or ambient air lead concentrations near a metal melting facility.

126. Comment: Rule 1402.2 allows demonstration of de minimis impacts by source testing and modeling, which is sufficient. Does SCAQMD intend to change all industry rules that allow modeling to show de minimis impacts, to now require ambient monitoring? Requiring ambient monitoring for facilities with minimal air toxics emissions has zero public health benefit, and presents an unreasonable and unfair burden on business.

Response: The SCAQMD continually assesses emission sources in the South Coast Air Basin and is currently in the process of reviewing and revising existing rules and drafting new rules applicable to lead emission sources. Future regulatory requirements are not pre-determined by the SCAQMD staff. Further, under certain circumstances, for example, when addressing toxic lead emissions that can result in detrimental health effects to the public and potentially violate federal standards, the SCAQMD rule development staff has the responsibility of reviewing feasible regulatory standards that effectively reduce these emissions resulting in greater protection of public health, and in some instances, these standards may be adopted by the SCAQMD Governing Board and enforced by SCAQMD staff.

Further, per the H&SC Sections 40440.8(a) and (b), the SCAQMD is obligated to conduct a socioeconomic assessment for each rulemaking project. The socioeconomic assessment accounts for the burden on businesses that the commenter references in their comment. The PR 1420.2 Socioeconomic Assessment includes compliance costs and overall economic impacts, for example, job impacts to facilities subject to PR 1420.2. Details regarding the economic impacts are available on pages 5 through 17 of the PR 1420.2 Socioeconomic Assessment.

127. Comment: Below are key points to consider when evaluating impact to operations similar to those performed at our facility, which is NOT rate dependent:

a. Lead is not our primary business, only a single ancillary lead point source in a limited facility working area. At a battery plant there are many locations lead is processed.

b. Given the very low demonstrated uncontrolled lead emissions from our melting operation, any further fugitive lead emissions are negligible and may not even be measurable.
c. Our facility already has a total building enclosure for its lead operation, and very little opportunity for lead to be <PM10 and airborne that would allow it to get outside the facility. The housekeeping and enclosure measures required by Rule 1420 and PR 1420.2 ensure any fugitive lead emissions are kept to a minimum.
d. Monitoring entails considerable measurement uncertainty; detection limits, where to select monitor locations with bidirectional wind patterns, separating facility impact from background sources, interpretation of results, and other technical issues. As a result, monitoring is only appropriate for facilities with expected high lead emissions.
e. Modeling has been SCAQMD's standard approach to prove no health concerns, as can be referenced in many rules. Modeling is better than monitoring in this case, because it presents a more accurate and conservative picture of impact locations, human exposure and amounts under all operating conditions. From modeling information, reasonable decisions can be made whether further information such as from monitoring is needed, or additional emission reductions should be required.
f. If the 0.5 tons/year emission rate threshold is considered health-protective by EPA, so that no lead monitoring is needed below that threshold, then the point source emissions 0.04 lb/hr or 0.175 tons/year (24-hr basis) in PR 1420.2(o)(C) along with conservative, demonstrated modeling impacts (including fugitive emissions) <= 0.07 $\mu g/m^3$ in (o)(B), should provide more than enough health-protective margin for a facility to obtain monitoring relief.

Response: Response to a. – As discussed in Response to Comment #125 although lead is not the primary business at this facility the ancillary processes to the lead melting activity at this site are very similar to other metal melting facilities. For example, similar to other metal melting operations this facility includes a pouring and casting process and generates lead waste from these processes. Like all other facilities subject to PR 1420.2 each of these processes are a potential source of fugitive lead emissions. Given the operational similarities of this facility to other metal melting facilities in the PR 1420.2 universe it is reasonable to subject it to the same requirements.

Response to b. - It is inaccurate to assume negligible fugitive emissions given the low uncontrolled stack emissions. As discussed by SCAQMD staff in Response to Comment #122 above, historical source oriented monitoring data near other metal melting facilities demonstrates that low stack emissions do not necessarily result in negligible fugitive emissions. It should be noted that PR 1420.2 provides an exemption to subdivision (f) – Lead Point Source

Controls if the facility has uncontrolled emission levels below 0.005 pounds/hour.

Response to c. –The SCAQMD staff agrees that housekeeping and enclosure measures help ensure any fugitive lead emissions are kept to a minimum, however, the potential for fugitive emissions from metal melting processes substantiates a need for ambient air monitoring (see SCAQMD staff Response to Comment #123 for details regarding fugitive emissions).

Response to d. – The uncertainties expressed by the commenter are addressed in the ambient air monitoring plan requirements set-forth in paragraph (e)(1) of PR 1420.2. The provisions of paragraph (e)(1) requires SCAQMD staff review and approval of Lead Ambient Air Monitoring Plans. This review will eliminate technical uncertainties in collecting ambient air monitoring data.

Response to e. – In many emissions scenarios modeling can accurately portray the behavior of a facility's emissions and health impacts resulting from these emissions. However, modeling has limitations and cannot provide important pieces of information such as: real time emissions data and actual ambient air emissions concentrations (as opposed to theoretical calculations) that could detect emissions discrepancies resulting from unidentified or unquantifiable fugitive emissions that could elevate ambient air concentration of lead in communities surrounding a particular facility.

Response to f. – See Response to Comment #121 and #124.

128. Comment: If an upwind monitor or meteorological information demonstrates that an exceedance of the ambient lead concentration limit was the result of background levels substantially greater than 0.03 µ~~u~~g/m^3, the facility should not be considered in violation of the ambient limit nor should Compliance Plan requirements be triggered.

Response: A provision in the proposed rule has been included allowing facilities to submit evidence demonstrating that the primary cause of an exceedance is not due to the facility. If the Executive Officer agrees, that exceedance will not be considered a violation of the ambient concentration limit nor will it count towards an exceedance that triggers the submittal or implementation of a Compliance Plan. The proposed language includes details on the information the facility is required to provide for consideration by the Executive Officer. For the purposes of this rule, "primary cause" means the most significant contributor to the exceedance. While background ambient lead levels are an appropriate factor for consideration, the provision is expanded to include any occurrence beyond the control of the facility. In the event that the owner or operator exercises this opportunity to demonstrate that the facility is not the primary cause and the Executive Officer

disapproves, the disapproval by the Executive Officer will not be relevant to the determination of the exceedance.- [See Response to Comment #95].

129. Comment: Allow provision for that would allow use of alternative housekeeping measure(s) that are as effective as those currently prescribed in the proposed rule.

Response: A provision has been added to Proposed Rule 1420.2 that allows an operator to submit a written request to use an alternative housekeeping measure provided the replacement measure meets the same objective and effectiveness of the housekeeping measure it is replacing. To facilitate requests for alternative housekeeping measures staff has included a table in Appendix 3 of the rule listing the objective and effectiveness of each housekeeping measure in the proposed rule.

130. Comment: The trigger for implementing the Compliance Plan should be based on three exceedances of the 0.100 µg/m^3 ambient lead concentration limit averaged over 24-months.

Response: Staff has revised Proposed Rule 1420.2 for the trigger to implement the Compliance Plan to be based on three exceedances of the 0.100 µg/m^3 ambient lead concentration limit within a rolling 24 month period.

131. Comment: BCI requests that the submittal of the Compliance Plan occur after an exceedance rather than prior to an exceedance. Additionally, the scope of information that must be submitted in the Compliance Plan should be narrowed to measures that may be appropriate, depending on the cause of the exceedance and that measures may be implemented if they are deemed to address the cause of the exceedance.

Response: Staff has revised Proposed Rule 1420.2 to modify provisions of the Compliance Plan in response to this comment. The implementation of the plan is now more closely tied to the exceedance. The language has been clarified to only require measures in the Compliance Plan to be implemented that address the cause of the exceedance. Please refer to the proposed rule for the specific changes. Staff has also revised the rule to require submittal of the Compliance Plan after an exceedance rather than prior to an exceedance.

132. Comment: Plastic strips should be allowed as a measure to minimize cross drafts from openings in doors.

Response: Staff agrees and has included the following language in paragraph (g)(2), "Acceptable methods to minimize cross-draft conditions include closing doors or openings when not in use, using automatic roll-up doors, installing plastic strip curtains, or installing vestibules."

133. Comment: In addition to city permit requirements, ordinances and State Water Board requirements, municipal permits should also be considered as a valid reason for not paving landscaped areas.

Response: Staff agrees and has added municipal permits and any state or federal agency requirement that would conflict with paving requirements.

134. Comment: BCI requests that wet scrubbers be allowed in addition to vacuum sweepers

Response: Staff has revised Proposed Rule 1420.2 to specifically allow the use of wet scrubbers.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Environmental Assessment for:

Proposed Rule 1420.2 Emissions Standards for Lead from Lead Melting Facilities

October 2015

SCAQMD No. 150716
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Preface

This document constitutes the Final Environmental Assessment (EA) for Proposed Rule (PR) Rule 1420.2 – Emission Standards for Lead from Lead Melting Facilities. The Draft EA was released for a 32-day public review and comment period from July 17, 2015 to August 18, 2015. Subsequently, a Revised Draft EA, which included formatting changes to Appendix B, was released for a 30-day public review and comment period from July 21, 2015 to August 19, 2015. One comment letter was received on the Draft EA. The comment letter and response to comments are included in Appendix C.

Since the June version of PR1420.2, SCAQMD staff has been working with stakeholders and has revised some of the provisions. The approach and core provisions requiring ambient monitoring of lead, the ambient lead concentration limits, lead point source requirements, requirements for operating within an enclosure, housekeeping and maintenance, and requirements for a compliance plan if certain thresholds are exceeded have not changed. In general, the revisions provided clarifications, provided other compliance options, or reduced the frequency of implementing specific provisions. As discussed in Chapter 2, modifications to the proposed rule will not increase or create any new environmental impacts and in areas where the frequency of implementing certain housekeeping measures is reduced, will lessen certain environmental impacts.

To facilitate identification, modifications to the document are included as underlined text and text removed from the document is indicated by strikethrough. SCAQMD staff has reviewed the modifications to PR 1420.2 and concluded that none of the modifications alter any conclusions reached in the Draft EA, nor provide new information of substantial importance relative to the draft document. As a result, these minor revisions do not require recirculation of the document pursuant to CEQA Guidelines §15073.5. Therefore, this document now constitutes the Final EA for PR 1420.2.

CHAPTER 1

PROJECT DESCRIPTION

Introduction

California Environmental Quality Act

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Project Description

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INTRODUCTION

Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities applies to lead melting facilities that process more than 100 tons of lead a year. The purpose of Proposed Rule 1420.2 (PR 1420.2) is to protect public health by reducing exposure to emissions of lead from these facilities and to help ensure attainment of the National Ambient Air Quality Standard for lead.

South Coast Air Quality Management District (SCAQMD or District) staff is currently proposing Rule 1420.2 to reduce lead emissions from metal melting facilities by limiting the ambient lead concentration and requiring housekeeping and maintenance provisions to reduce the amount of lead emitted into the air from point and fugitive sources. Hence, this reduces the further accumulation of lead dust in and around these facilities to better ensure protection of public health.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

PR 1420.2 is a discretionary action, which has the potential to result in direct or indirect changes to the environment and, therefore, is considered a "project" as defined by the California Environmental Quality Act (CEQA). SCAQMD is the lead agency for the proposed project and has prepared this Revised Draft Environmental Assessment (EA) with no significant adverse impacts pursuant to its Certified Regulatory Program. California Public Resources Code §21080.5 allows public agencies with regulatory programs to prepare a plan or other written document in lieu of an environmental impact report or negative declaration once the Secretary of the Resources Agency has certified the regulatory program. SCAQMD's regulatory program was certified by the Secretary of the Resources Agency on March 1, 1989, and is codified as SCAQMD Rule 110. Pursuant to Rule 110, SCAQMD has prepared this Revised Draft EA.

CEQA and Rule 110 require that potential adverse environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid significant adverse environmental impacts of these projects be identified. To fulfill the purpose and intent of CEQA, the SCAQMD has prepared this Revised Draft EA to address the potential adverse environmental impacts associated with the proposed project. The Revised Draft EA is a public disclosure document intended to: (a) provide the lead agency, responsible agencies, decision makers and the general public with information on the environmental effects of the proposed project; and, (b) be used as a tool by decision makers to facilitate decision making on the proposed project.

SCAQMD's review of the proposed project shows that the proposed project would not have a significant adverse effect on the environment. The analysis in Chapter 2 supports the conclusion of no significant adverse environmental impacts. Therefore, pursuant to CEQA Guidelines §15252, no alternatives or mitigation measures are required to be included in this Revised Draft EA. Comments received on the Revised Draft EA during the 30-day public review period will be addressed and included in the Final EA.

PROJECT LOCATION

The SCAQMD has jurisdiction over an area of 10,473 square miles, consisting of the four-county South Coast Air Basin (Basin) and the Riverside County portions of the Salton Sea Air Basin (SSAB) and the Mojave Desert Air Basin (MDAB). The Basin, which is a subarea of the SCAQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The 6,745 square-mile Basin includes all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County

portion of the SSAB and MDAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federal nonattainment area (known as the Coachella Valley Planning Area) is a subregion of both Riverside County and the SSAB and is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east (see Figure 1-1~~Figure 1-1~~).

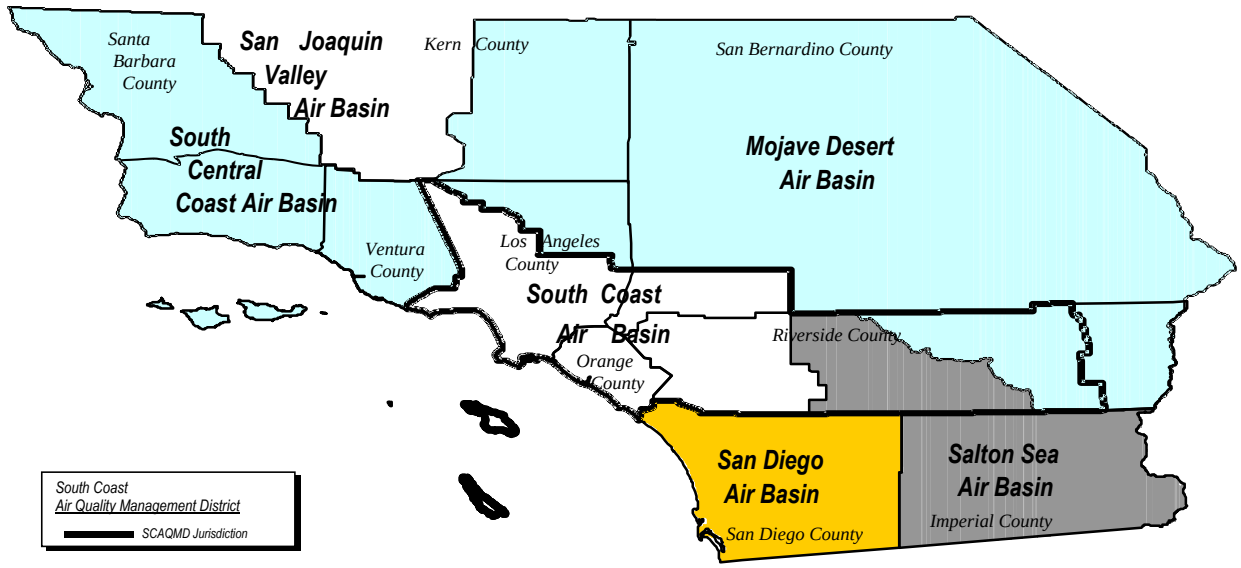


Figure 1-1 Boundaries of the South Coast Air Quality Management District

PROJECT OBJECTIVES

The objectives of PR 1420.2 are to protect public health by further reducing lead emissions from metal melting facilities by:

- Establishing an ambient air lead concentration limit;
- Requiring air monitoring and sampling for ambient lead;
- Establishing lead reduction efficiencies for lead point sources;
- Requiring total enclosures for metal melting and associated processes;
- Establishing housekeeping and maintenance provisions;
- Requiring submittal of compliance plans if ambient air concentration limits for lead or total facility mass emission rate from point sources are exceeded; and
- Requiring periodic source testing of lead point source controls.

PROJECT BACKGROUND

Health Effects of Lead

Lead is classified as a "criteria pollutant" under the federal Clean Air Act. It is also identified as a carcinogenic toxic air contaminant (TAC) by the Office of Environmental Health Hazard Assessment (OEHHA). Chronic health effects include problems such as nervous and reproductive system disorders, neurological and respiratory damage, cognitive and behavioral changes, and hypertension. Also, exposure to lead may increase the risk of contracting cancer or result in other adverse health effects. Young children are especially susceptible to the effects of environmental lead given that their bodies accumulate lead more readily than do adults and because they are more vulnerable to certain biological effects of lead including learning disabilities, behavioral problems, and deficits in IQ.

During the U.S. EPA's recent review of the lead NAAQS the U.S. EPA Administrator concluded that the current lead NAAQS of 0.15 $\mu g/m^3$ should be retained given that it provides requisite protection of public health. However, the Administrator noted that a threshold blood-lead level with which nervous system effects, and specifically, cognitive effects, occur in young children cannot be discerned from the currently available studies. Further, in the U.S. EPA's recent Policy Assessment for the Review of the Lead NAAQS, the U.S. EPA explicitly stated "with regard to our understanding of the relationship between exposure or blood lead levels in young children and neurocognitive effects, the evidence in this review…does not establish a threshold blood lead level for neurocognitive effects in young children. Furthermore, based on information provided in the U.S. EPA's recent policy assessment document and proposed rule, an ambient lead concentration of 0.15 $\mu g/m^3$ correlates to a potential IQ decrement of approximately <u>two</u> (2) points in young children exposed to elevated levels of lead. As a result, SCAQMD staff is proposing additional measures in PR 1420.2 to reinforce the protection of public health from significant sources of lead emissions.

<u>The NAAQS is a national standard for lead which applies uniformly to all parts of the United States. In contrast, PR1420.2 is a source-specific rule that regulates specific lead melting facilities. Proposed Rule 1420.2 establishes an ambient lead limit of 0.100 $\mu g/m^3$, and implements other requirements to minimize the release of point source and fugitive lead emissions from such lead melting facilities and thereby to minimize the accumulation of lead surface and soil dust, both of which are meant to be more health protective. The proposed level considers that communities with children live around lead melting facilities, and it provides additional protection for the population most at-risk from lead emissions: pre-school children under the age of five</u>.

Regulatory History

The metal melting industry has been subject to regulation regarding lead for more than two decades. Below is a chronology of regulatory activity:

- November 1970, CARB set the state ambient air quality standard for lead at 1.5 $\mu g/m^3$ averaged over 30 days.
- October 1978, the U.S. EPA adopted the NAAQS for lead, requiring attainment with a lead ambient concentration of 1.5 $\mu g/m^3$ averaged over a calendar quarter.
- September 1992, the SCAQMD adopted Rule 1420 – Emissions Standard for Lead. The rule incorporated the state ambient air quality standard and required control devices on lead emission points, control efficiency requirements for lead control devices, housekeeping, and monitoring or modeling of ambient air quality.
- October 1992, OEHHA classified lead as a carcinogenic toxic air contaminant and assigned to it a cancer potency factor and a cancer unit risk factor.
- January 1993, CARB adopted the Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting. The state regulation required control devices for lead and other toxic metal emission points, control efficiency requirements for control devices, fugitive emission control, and recordkeeping.
- June 1997, the U.S. EPA adopted the National Emissions Standards for Hazardous Air Pollutants (NESHAP) from Secondary Lead Smelting. The federal regulation required lead emission concentration limits of lead control devices, control of process fugitive emissions, monitoring, recordkeeping, and reporting.
- On July 16, 2007, EPA finalized a regulation that affects lead emissions from all lead-acid battery manufacturing facilities that are area sources. The federal regulation required lead emission concentration limits, testing, monitoring, recordkeeping, and reporting requirements.
- On October 15, 2008, the U.S. EPA signed into regulation an amended NAAQS for lead of 0.15 $\mu g/m^3$.
- November 5, 2010, the SCAQMD adopted Rule 1420.1 – Emissions Standard for Lead from Large Lead-acid Battery Recycling Facilities. The rule established requirements for total enclosures of areas used in the lead-acid battery recycling operation, ambient air lead concentration limits, ambient air monitoring, and housekeeping practices. Additional rule amendments followed the initial adoption in January of 2014, March of 2014, and March of 2015.
- December 14, 2010, the U.S. EPA made final revisions to the ambient monitoring requirements for measuring lead in the air. These amendments expand the nation's lead monitoring network to better assess compliance with the 2008 National Ambient Air Quality Standards for lead.
- January 2, 2015, the U.S. EPA proposed that the ambient lead concentration standard of 0.15 $\mu g/m^3$ averaged over a rolling 3-month period remain unchanged. The 90-day comment period for this proposal ended on April 6, 2015 and requires further action by the U.S. EPA.

The following provides additional background information about Rule 1420 and the 2008 NAAQS for lead.

Rule 1420

Rule 1420 was adopted in September 1992 and has not been amended since its adoption. Rule 1420 applies to facilities that process or use lead-containing materials that include, but is not limited to, primary or secondary lead smelters, foundries, lead-acid battery manufacturers or recyclers, and lead-oxide, brass and bronze producers. Rule 1420 is based on the current state ambient air quality standard of 1.5 $\mu g/m^3$ averaged over a 30-day period. The rule includes requirements for point source controls,

monitoring, sampling, recordkeeping, and reporting. Rule 1420 requires facilities that process more than two tons of lead per year to submit a Compliance Plan that provides information on how the facility will conduct monitoring, air dispersion modeling, and implement requirements to install and implement point source controls.

2008 NAAQS for Lead

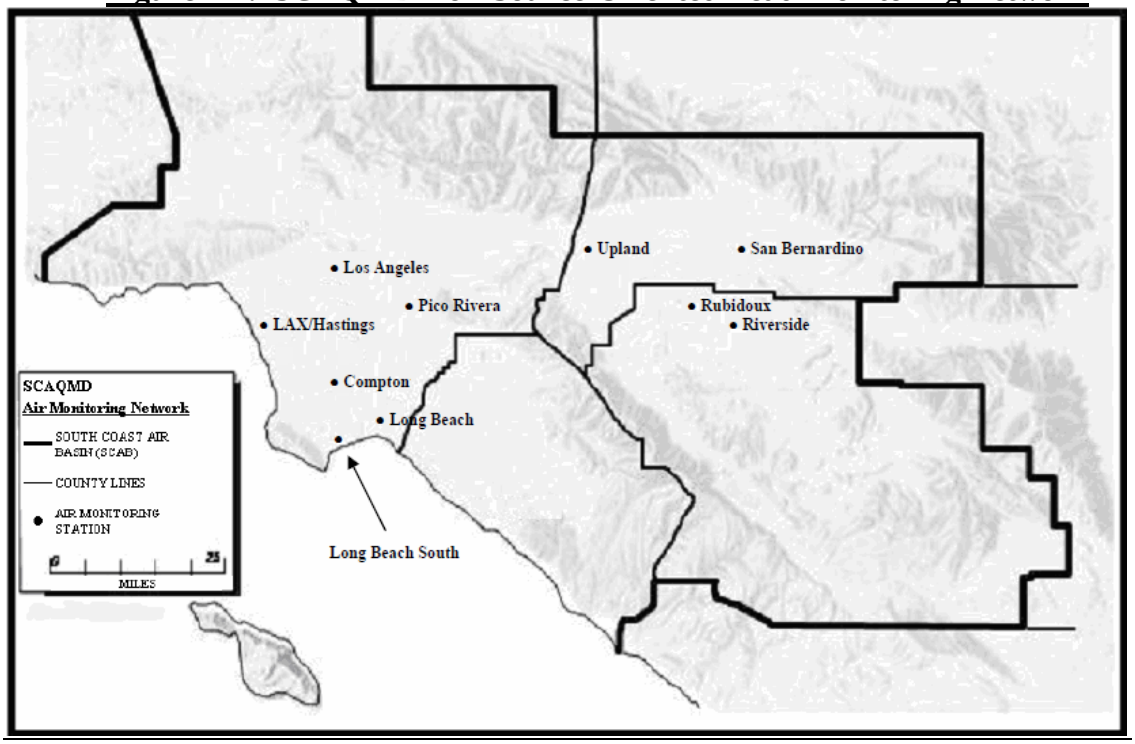
Since U.S. EPA established the initial standard of 1.5 µg/m^3 in 1978, scientific evidence about lead and health has expanded dramatically. More than 6,000 new studies on lead health effects, environmental effects, and lead in the air have been published since 1990. Evidence from health studies shows that adverse effects occur at much lower levels of lead in the blood than previously thought. As a result, U.S. EPA amended the NAAQS for lead that now reduces the ambient air quality standard from 1.5 µg/m^3 to 0.15 µg/m^3. The 2008 lead NAAQS requires full attainment by each state no later than five years after final designations for attainment status are made. Demonstration of attainment is based on measurements using a rolling 3-month averaging form to be evaluated over a 3-year period. Measurements are to be determined by U.S. EPA-required monitoring networks within each state which consist of both source-oriented and non-source-oriented monitors. The SCAQMD has already established the required monitoring network for both source and non-source-oriented lead monitors.

Further, in May of 2014, the U.S. EPA released its "Policy Assessment for the Review of the Lead National Ambient Air Quality Standards," reaffirming the primary (health-based) and secondary (welfare-based) staff conclusions regarding whether to retain or revise the current standards. As a result, in January of 2015 the U.S. EPA proposed that the ambient lead concentration standard of 0.15 µg/m^3 averaged over a rolling 3-month period remain unchanged. The 90-day comment period for this proposal ended on April 6, 2015 and requires further action by the U.S. EPA.

Non-Source-Oriented Monitors

The SCAQMD currently operates a non-source-oriented monitoring network of 10 locations throughout the Basin. The spatial distribution of these sites is shown below in Figure 1-2. Because the SCAQMD's current lead monitoring network meets the minimum requirements for the U.S. EPA non-source-oriented monitoring network as specified in the new lead NAAQS, data from the existing monitors were used to provide an indication of lead attainment status on a regional scale. Data values from measurements made at non-source-oriented monitors in the Basin were reviewed for years 2007 through 2013 and showed concentrations below the 2008 NAAQS for lead of 0.15 µg/m^3 and range from 0.01 µg/m^3 to 0.03 µg/m^3.

Figure 1-2: SCAQMD Non-Source-Oriented Lead Monitoring Network



Source-Oriented Monitors

The SCAQMD currently operates existing source-oriented monitoring networks at the following four facilities: Trojan Battery Company in Santa Fe Springs, Quemetco, Inc. in the City of Industry, Exide Technologies in Vernon, and Gerdau in Rancho Cucamonga in order to meet the monitoring requirements of the new lead NAAQS. The SCAQMD continues to operate source-oriented monitors at the Exide and Quemetco sites, and Rule 1420.1 requires these facilities to conduct fence line monitoring. These facilities also must meet an ambient air lead concentration of 0.100 µg/m^3 averaged over any consecutive 30 days beginning January 1, 2017.

Ambient Air Monitoring at PR 1420.2 Facilities

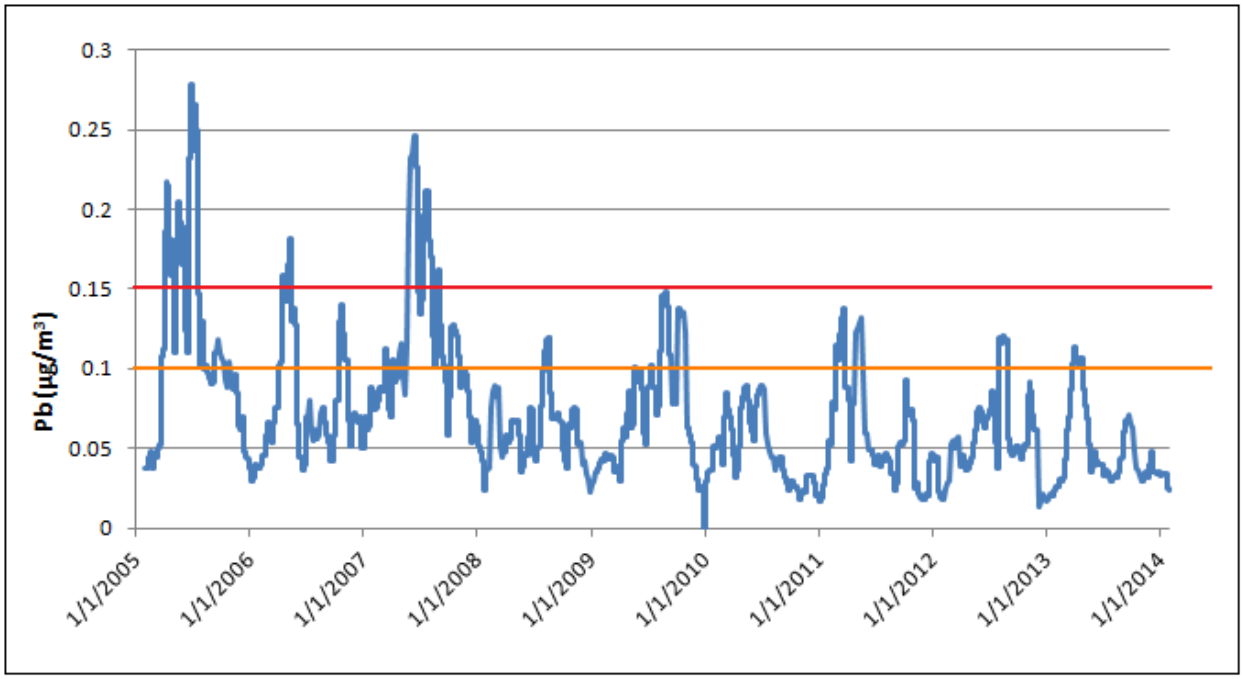
Two PR 1420.2 facilities currently have ambient air monitors to demonstrate compliance with the ambient air lead concentration limit of Rule 1420, or have ambient air monitors that are used by the SCAQMD for compliance demonstration with the 2008 NAAQS for lead. These two facilities are Trojan Battery ~~(which was discussed above)~~ and Gerdau, previously Tamco. Monitors are typically sited based on the maximum expected ground-level concentrations of lead at or beyond the property line of the facility. Monitoring data from these two facility types under the source category of metal melting have exhibited high ambient air lead concentration levels over the last decade, and show the ~~high~~ potential for exceedances of the 2008 Lead NAAQS.

Trojan Battery

Based on data from AER reporting years 2005 through 2007, lead emissions at Trojan Battery, a battery manufacturer located in Santa Fe Springs, were reported as 29 lbs/yr and sampling was conducted at one site located adjacent to the Trojan Battery facility. The site operates on a 1-in-6 day sampling

schedule and had multiple rolling 30-day averages greater than 0.15 µg/m3 between years 2005 and 2011 with the highest average of 0.28 µg/m^3 in June 2005. Additionally, in 2005 through 2007, ambient air lead concentrations showing multiple 3-month rolling averages of greater than 0.15 µg/m3 were also measured (high of 0.21 µg/m^3). These measurements exceed the current NAAQS level for lead, although the measurements of these high ambient air lead concentrations occurred before the most recent version of the federal ambient air lead standard went into effect. Figure 1-3 below illustrates rolling 30-day averages for ambient air lead concentrations monitored by SCAQMD at Trojan Battery. Reported lead emissions data (2010 - 2013) for Trojan Battery indicate an average annual lead emissions value of 15 lbs/year. Since 2011, ambient air lead concentration levels have appreciably decreased, however, the lower levels coincide with the relocation of the SCAQMD monitor in October 2011. The monitor was relocated from its original location at the request of the owner of the property, as the owner stated that the location of the SCAQMD monitor was inhibiting business operations. As such, the lower ambient air lead concentration levels measured by the monitor since its relocation may not reflect maximum ground level concentrations.

Figure 1-3: 2005-2014 SCAQMD Monitoring at Trojan Battery
(Rolling 30-day Average)



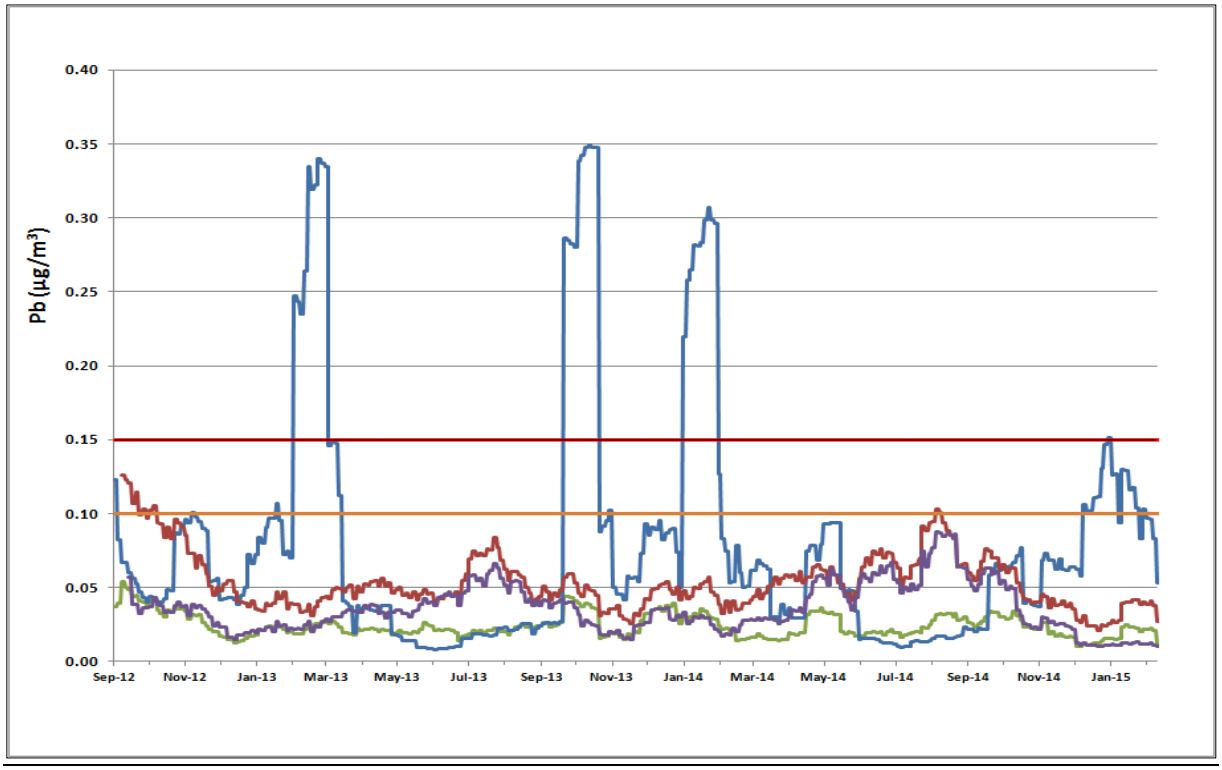
Gerdau (Fence Line and Source-Oriented Monitors – Rule 1420 & Lead NAAQS)

Gerdau North America acquired the TAMCO Rancho Cucamonga steel mini mill in October 2010. In 2012, Gerdau retained an environmental consultant to perform an environmental audit and found discrepancies in reported lead emissions. Gerdau self-reported these discrepancies and SCAQMD staff conducted inspections of the facility to address issues. Since 2010, Gerdau has worked with the SCAQMD to ensure compliance with SCAQMD regulatory requirements and has invested nearly $7 million to improve emission reductions. Gerdau also has approved permits with the SCAQMD to install a $37 million state-of-the-art evacuation system that would further improve emission reductions of lead and other metals particulates. Gerdau currently monitors lead and other metals at the facility. Four onsite monitors maintained by Gerdau operate on a 1-in-3 day sampling schedule to monitor the site for

compliance with Rule 1420. These monitors are generally located at four locations along the fence line of the facility. Two additional monitors are independently operated and maintained by the SCAQMD. As demonstrated by Figure 1-4 below, the SCAQMD monitors are collocated with the Gerdau SA Recycling monitor (#1) and the Gerdau south baghouse monitor (#2). Recent results of the Gerdau monitoring efforts (Figure 1-5 below) show Gerdau as a source of lead emissions that potentially could contribute to an exceedance of the NAAQS. Fence line monitoring onsite conducted by Gerdau at one of the four monitors measuring onsite lead in air pursuant to Rule 1420 shows multiple air lead concentration readings (2012 to present)that are well above 0.150 µg/m^3 averaged over any consecutive 30 days, typically occurring during high wind events. Further, recent NAAQS modeling analysis submitted by Gerdau to SCAQMD staff demonstrates the potential for a NAAQS exceedance near the south baghouse at locations offsite, and hence in ambient air.

Figure 1-4: Gerdau Fence Line & Source-Oriented Monitors

Figure 1-5: 2012-2015 Gerdau Rule 1420 Fence Line Monitoring Data (Rolling 30-day Average)



Facilities

Based on lead emissions inventories reported to the SCAQMD Annual Emissions Reporting (AER) program for years 2010 through 2012 and information available from the SCAQMD permitting database, there are approximately 13 metal melting facilities expected to be subject to PR 1420.2. Cumulatively these facilities process more than 50,000 tons of lead annually through a combination of metal melting furnaces. These facilities manufacture a variety of products and are classified in the Standard Industrial Classification codes as listed in Table 1-1 below. The facilities range in size from small to large scale operations and include both foundries and secondary melters. Table 1-2 provides an overview of the estimated annual lead throughput and annual reported lead emissions at metal melting facilities subject to PR 1420.2.

This proposed rule would also apply to any future metal melting facilities within SCAQMD that melt at least 100 tons per year of lead.

Table 1-1: Types of Facilities Subject to PR 1420.2

NAICS Code	Facility Type	# of Facilities
Storage Battery Manufacturing (335911)	Lead-Acid Battery	1
Secondary Smelting and Alloying of Aluminum (331314)	Scrap Metal Recyclers	1
Iron and Steel Mills and Ferroalloy Manufacturing (331110)	Iron and Steel Mills	2
Other Nonferrous Metal Foundries (331529)	Other Lead Product Manufacturing	1
Other Metal Container Manufacturing Products (332439)	Metal Forging and Heat Treating	1
Sheet Metal Work Manufacturing (332322)	Metal Melting	1
All Other Miscellaneous Chemical Product and Preparation (325998)	Chemical Products	6

~~SIC Code~~	~~Facility Type~~	~~# of Facilities~~
~~2819~~	~~Chemical Manufacturing~~	~~1~~
~~3312~~	~~Steel Works, Blast Furnaces, and Rolling Mills~~	~~1~~
~~3341~~	~~Secondary Smelting and Refining of Nonferrous Metals~~	~~2~~
~~3369~~	~~Nonferrous Foundries, Except Aluminum and Copper~~	~~1~~
~~3400~~	~~Fabricated Metal Products, except Machinery and Transportation Equipment~~	~~1~~
~~3444~~	~~Sheet Metal Work~~	~~1~~
~~3691~~	~~Storage Battery Production~~	~~6~~

~~*Some facilities may overlap in the different types of facilities.~~

Table 1-2: PR 1420.2 Overview of Estimated Annual Lead Throughput at Metal Melting Facilities 2010-2012

Value	0 to <100 tons/year	100 to <500 tons/year	500 to <1000 tons/year	1000 tons/year or more
# of facilities based on annual lead melted (in tons/year)	None	4	3	6

INDUSTRY PROCESS DESCRIPTION, LEAD EMISSION POINTS AND CONTROL STRATEGIES

The following paragraphs provide a general overview of the manufacturing processes and emission sources for the industry source category subject to Proposed Rule 1420.2. Specifically, this Revised Draft EA provides general operation and emissions source information for iron and steel mills, secondary metal processing, foundries, and lead-acid battery storage production.

IRON AND STEEL MILLS (1 facility)

Background

Steel mini-mills are the largest scrap metal recyclers in the United States. The scrap metal originates from sources such as scrapped automobiles, demolished buildings, discarded home appliances, and manufacturing returns. Mini-mills accounted for 57 percent of the national steel production in 2006. The applicable NAICS code for this industry is 331110, Iron and Steel Mills and Ferroalloy Manufacturing. There is one facility in the Basin in this industry source category for this rulemaking. The following process description also reflects the operational characteristics at similar facilities.

Process Description

Steel is manufactured by chemical reduction of iron ore using an integrated steel manufacturing process or a direct reduction process. In conventional integrated steel manufacturing processes, iron from a blast furnace is converted to steel in a basic oxygen furnace (BOF). However, steel can also be produced using an electric arc furnace (EAF) from scrap metal. BOF is typically used for high-tonnage production of carbon steels while EAFs are used to produce carbon steels and low-tonnage specialty steels. In the BOF process, coke making and iron making precede steelmaking; these steps are not necessary with an EAF.

- Electric Arc Furnace (Metal Melting - Steel Production)
  An EAF is a cylindrical, refractory-lined container, and when electrodes are retracted from the furnace, its roof can be rotated aside to permit scrap metal charging (feeding) into the furnace. The charging material is typically scrap metal that is charged by an overhead crane. Steel production using an EAF includes stages such as charging, melting, refining, slagging, and tapping. Each of these stages are described below.

  o Charging
    During the charging stage, scrap metals are fed into the EAF. The charge can also include carbon and lime, a fluxing agent which removes chemical impurities out of the metal and renders slag that is more liquid at smelting temperatures. The slag is a liquid mixture of ash, flux, and other impurities. Direct reduced iron (DRI) or other iron-bearing material can supplement the scrap metal. DRI, also known as "sponge iron", is a type of iron created by heating iron ore to burn off carbon and oxygen while the temperature is kept below iron's melting point.

- Melting
  The furnace roof is rotated back to close the furnace and carbon electrodes are lowered through openings in the furnace roof. Electric current generates heat between the electrodes and through the scrap to melt the scrap. Oxy-fuel burners and oxygen lances may also be used to supply chemical energy. Oxy-fuel burners, which burn natural gas and oxygen, use convection and flame radiation to transfer heat to the scrap metal. Oxygen is directly injected through oxygen lances into the molten steel. Exothermic reaction with the iron and other components provides additional energy to assist in the melting of the scrap metal and excess carbon. Alloys may be added to achieve the desired composition.

- Refining
  Refining of molten steel can take place simultaneously with melting process, especially in EAF operations where oxygen is introduced. During the refining process, substances that are incompatible with iron and steel are separated out by forming a layer of slag on top of the molten metal.

- Slagging
  The slag layer consists primarily of oxides of calcium, iron, sulfur, silicon, phosphorus, aluminum, magnesium, and manganese in complexes of calcium silicate, aluminosilicates, and aluminoferrite. The slag is typically removed by tipping the furnace backwards and pouring the molten slag out through a slag door.

- Tapping
  After completion of the EAF batch process, the tap hole is opened, and the hot steel is poured from the EAF into a ladle for transfer to the next operation.

- Secondary Refining

  - Argon Oxygen Decarburization (AOD)
    AOD is a process that further refines the steel outside the EAF during the production of certain stainless and specialty steels. In the AOD process, steel from the EAF process is transferred into an AOD vessel, and gaseous mixtures containing argon and oxygen or nitrogen are blown into the vessel to reduce the carbon content of the steel. Argon assists the carbon removal by increasing the affinity of carbon for oxygen.

  - Ladle Metallurgy
    After initial smelting and refining of the steel in the EAF, molten steel is further refined in a ladle furnace undergoing chemical and thermal homogenization. The molten steel may receive alloy additions to produce the desired metallurgy.

- Casting and Finishing

  - Continuous Casting
    A ladle with molten steel is lifted to the top of a continuous caster, where it flows into a reservoir (called a tundish) and then into the molds of the continuous casting machine. Steel passes through the molds and then is cooled and solidified into semi-finished products such as blooms, billets, or slabs.
  - Ingot Casting

Molten steel is poured into an ingot mold, where it cools and begins to solidify. The molds are stripped away, and the ingots are transferred to a soaking pit or reheat furnace where they are heated to a uniform temperature. Ingots are shaped by hot rolling into the semi-finished products such as blooms, billets, or slabs, or by forging.

- o Finishing
  The semi-finished products may be further processed by a number of different steps, such as annealing, hot forming, cold rolling, pickling, galvanizing, coating, or painting. Some of these steps require additional heating or reheating. The additional heating or reheating is accomplished using furnaces usually fired with natural gas.

Process Emission Points and Controls

- EAF
  During EAF steelmaking process, metal dusts and gaseous emissions are generated from charging scrap, smelting and refining, removing slag, and tapping steel. The amount and composition of the particulate matter (PM) emitted can vary greatly depending on the scrap composition and types and amount of furnace additives such as fluxes. Iron and iron oxides are the primary components of PM. In addition, zinc, chromium, nickel, lead, cadmium, and other metals may also be present in the PM. Transfer of slag removed from the EAF is a potential source of fugitive lead-dust emissions, especially when cooled slag is loaded by a front-end loader onto a truck to be transported to a different location.

  Emissions from an EAF are generally captured using direct shell evacuation supplemented with a canopy hood located above the EAF. In general, the captured gases and particulate from the EAF are routed to baghouses for PM control. Some mini-mills have a common baghouse through which emissions from the EAF, as well as emissions from the ladle metallurgy process and/or continuous caster, are ducted and subsequently controlled. Fugitive dust emissions from slag loading can be controlled by applying dust suppressants or enclosing the loading area that has openings with overlapping flaps and venting the dust-laden air to a dust collector.

- Secondary Refining
  The AOD vessel, ladle furnace and ladle heater are potential source of PM and gaseous emissions. A roof canopy hood or a side draft hood is used to capture the emissions which are vented to a baghouse (which may be the same baghouse used for EAF emissions).

- Casting and Finishing
  Fugitive particulate emissions may be generated at the caster and emitted through a roof stack. Control devices are not generally employed for these processes. Other potential sources of emissions include reheat furnace, annealing furnaces, and other furnaces used in the finishing processes.

- Fugitive Dust
  PM emissions from the processes described above can be deposited onto building surfaces and soils nearby. Events that disturb these deposits such as winds or vehicles traveling over roads (especially unpaved roads onsite) can resuspend this particulate matter back into the air. Controls can include watering and/or application of chemical stabilizers, paving, reducing vehicle speed, or other housekeeping measures.

SECONDARY METAL PROCESSING (2 facilities)

Source Description

Secondary metal processing includes recovering and reusing metal from metal-containing materials. Secondary metal processing, also known as metal scrap recycling, is a large industry that processes in the U.S. alone, 56 million tons of scrap iron and steel (including 10 million tons of scrap automobiles), 1.5 million tons of scrap copper, 2.5 million tons of scrap aluminum, 1.3 million tons of scrap lead, 300,000 tons of scrap zinc and 800,000 tons of scrap stainless steel, and smaller quantities of other metals, on a yearly basis.

The NAICS codes for this industry are 331314 Secondary Smelting and Alloying of Aluminum; 331410 Nonferrous Metal (except Aluminum) Smelting; and 331492 Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum).

Process Description

Specifics recovery processes vary depending on the type of metal being processed. Processes can also vary among facilities processing the same type of metal. However, the processes used by different industries may be grouped as described below.

- Raw Material Handling

Material handling operations include receiving, unloading, storing, and conveying the metal-containing materials and auxiliary materials required for metal processing (i.e., scrap metals, fluxes, fuels, alloys, and casting materials).

- Scrap Pretreatment

Scrap pretreatment involves the preliminary separation of the metal of interest from other metals contained in the scrap and contaminants such as dirt and plastics. The most commonly used operations include mechanical separation, solvent cleaning, centrifugation, pyrometallurgical and hydrometallurgical cleaning, and heavy-media separation. Mechanical separation includes sorting, crushing, pulverizing, shredding, and other mechanical means to break scrap into small pieces.

- Metal Melting/Smelting

Melting is performed to separate the metals of interest from their metallic compounds. Melting also allows the creation of an alloy and castings to be made from its molten metal. Smelting in metal processing takes place in furnaces or heated crucibles. The furnaces may be heated with fuels or through the use of electricity.

Pretreated scrap, fuels, and flux materials are charged to the furnace where melting takes place. The mixture of the flux materials depends on the type of metal being processed. In secondary lead processing, for example, flux materials may consist of rerun slag, scrap iron, coke, recycled dross, flue dust, and limestone. The flux may chemically react with the scrap in the presence of heat, breaking metallic-oxide bonds to produce pure metal. Also, the flux may oxidize impurities in the scrap and further purify the metal.

- Metal Refining

Refining may take place in the melting furnace, or it may be performed in holding furnaces or other heated vessels separate from the melting furnace to further purify the metal, producing

the desired properties. These furnaces are heated with fuels or with electricity. Flux materials are added to the molten metal in the furnace to remove impurities. Alloy materials are added to produce desired properties of the metal.

- Metal Forming and Finishing

The metal may be formed to make bars and ingots, or it may be formed to a final product. Bars and ingots, such as those produced in secondary lead and aluminum industries, may be sent to another facility to make a final product. In iron and steel foundries, the metal is cast into a final product at the melting facility.

Forming the metal into a final product requires the use of cores and molds. Cores are shapes used to make internal voids in castings. Molds are forms used to shape the exterior of castings. Once the formed metal is removed from the mold, it may be necessary to grind or sand off rough edges. The metal may also be shot-blasted to remove mold sand or scale.

Emissions and Control

Particulate or hazardous air pollution emissions are likely to result from hot processes that produce fumes (such as torching, welding, and melting in a furnace) or processes that produce dust (such as breaking, shredding, and cutting). Exhaust systems, either stationary or portable, can capture airborne hazardous metal at the source of emissions such as melting furnaces, shredders, and cutters. Cyclones, electrostatic precipitators, and fabric filters are suitable to filter dust. Wet scrubbers are also a common control method for dust and acidic gases.

FOUNDRIES (3 facilities)

Source Description

A foundry is a facility that produces metal castings. The metal casting industry sector includes establishments that pour molten ferrous metals (iron and steel) or non-ferrous metals under high pressure into molds to manufacture castings. Ferrous metal castings include those castings made with gray iron, white iron, ductile iron, malleable iron, and steel. Non-ferrous metal castings are predominantly aluminum, but might also be bronze, brass, zinc, magnesium, and titanium. Cast metal components are used in the manufactured goods that include engine blocks, transmission housings, and suspension parts of cars and trucks; undercarriages of farms and construction equipment; and pipes and valves for plumbing fixtures and boilers. The applicable NAICS codes for this industry sector are 331511 Iron Foundries; 331512 Steel Investment Foundries; 331513 Steel Foundries (except Investment); 331523 Nonferrous Metal Die-Casting Foundries; 332524 Aluminum Foundries (except Die-Casting); and 331529 Other Nonferrous Metal Foundries (except Die-Casting).

Process Description

Foundry operations consist primarily of pattern/mold making, melting, pouring, cooling and finishing.

- Pattern and Mold Making

Pattern making is the first stage of developing a new casting. The pattern becomes permanent so it can be used to form a number of permanent molds. Cores are produced in conjunction with the pattern to form the interior surfaces of the casting. Cores are formed by one of the binding systems.

The mold is formed in a mold box (flask), which is typically constructed in two halves to assist in removing the metal product. The bottom half of the mold (the drag) is formed on a molding board. Cores require greater strength to hold their form during pouring. Once the core is inserted, the top half of the mold (the cope) is placed on top.

- Melting and Pouring

  Many foundries use a high proportion of scrap to make up a charge. The charge is weighed and introduced into the furnace. Alloys and fluxes are added to the charge to produce the desired melt. The furnaces commonly used in the industry are described below.

  Molten metal is transferred from the furnace to a ladle and held until it reaches the desired pouring temperature. The molten metal is poured into the mold and allowed to solidify.

  - Cupola Furnace

    A typical cupola furnace consists of a water-cooled vertical cylinder which is lined with refractory material. Cupolas are charged in alternating layers of scrap metal, alloying materials, limestone, and coke through an opening in the cylinder. Air is introduced into the cupola through tuyeres located at the base. The heat produced by the burning coke melts the iron, which flows down and is tapped from the bottom of the cupola. Flux combines with non-metallic impurities in the charge and forms slag, which is drawn off through holes located above the level of the metal tap hole.

  - Induction Furnace

    An induction furnace is an electric melting furnace that uses heat generated by electric induction to melt metal. These furnaces have excellent metallurgical control and are relatively pollution free in comparison to cupola furnaces. A high voltage in the primary coil induces a low-voltage, high current across the metal charge which acts as a secondary coil. Because of electrical resistance in the metal, this electrical energy is converted to heat which melts the charge. Once the metal is in its molten state, the magnetic field produces a stirring motion. In a coreless induction furnace, the refractory-lined crucible is completely surrounded by a water-cooled copper coil, which prevents the primary induction coil from overheating. In a channel induction furnace, the induction coil surrounds the inductor.

  - Electric Arc Furnace

    An EAF is another type of electric furnace used in larger foundries and mini-mills steelmaking operations. The scrap metal charge is placed on the hearth and melted by the heat from an electric arc formed between the electrodes. In a direct-arc furnace, the electric arc comes into contact with the metal; in an indirect-arc furnace, the electric arc does not touch the metal. EAFs are more tolerant of dirty scrap than induction furnaces and can be used to refine metals, allowing steel to be refined from iron charge.

  - Reverberatory Furnace

    Reverberatory furnaces are designed and operated to produce a soft, nearly pure lead product. Reverberatory furnaces emit high levels of lead fume during charging and tapping lead and slag.

- Rotating Furnace
  A rotating furnace consists of a refractory-lined cylinder that rotates slowly around a horizontal axis. The charge is heated directly from an open flame, typically fed by gas or oil. Exhaust gases are extracted from the opposite end of the chamber. Rotating the furnace helps to mix the charge and utilizes heat from the whole refractory surface.

- Crucible Furnace
  Crucible furnaces are mostly used by smaller foundries or for specialty alloy lines. The crucible or refractory container is heated in a furnace, typically fired with natural gas or liquid propane.

- Cooling and Shakeout
  Once the metal has been poured, the mold is transported to a cooling area. The casting needs to cool before it can be removed from the mold. Castings may be removed manually or using vibratory tables that shake the refractory material away from the casting. Quenching baths are also used in some foundries to achieve rapid cooling of castings. The quench bath may contain chemical additives to prevent oxidation.

- Sand Reclamation
  A significant proportion of the waste sand is reclaimed mechanically or thermally for reuse. Cores, metal lumps, and binders are removed by vibrating screens and extraction, and collected in a baghouse. Thermal reclamation process heats the sand to the point where organic materials, including the binders, are driven off. The sand is returned to an "as new" state, allowing it to be used in core making.

- Finishing
  Finishing processes such as fettling involves the removal of the casting from the gating systems. This is accomplished by cutting, grinding, and chiseling.

Emissions and Control

Air emissions result from various operations in foundries, including metal melting, mold making, handling foundry sand, and die-casting. A substantial amount of metal emissions come from the metal melting operations, while most organic emissions are from handling the binder. Once the binder is combined with the sand, there may be additional PM emissions from pouring the molten metal into the casting and from breaking apart the cast. Handling foundry sand results primarily in PM emissions. Fugitive particulate can be emitted from operations of unloading, storage, transfer, and preparation.

The casting or mold pouring and cooling operations in iron and steel foundries are potentially a source of lead emissions due to impurities in the metal. In addition, mold preparation and casting shakeout (removal from the mold) activities are also lead emission sources.

Baghouses and wet scrubbers are common technologies used to control lead emissions from foundry metal melting operations. Fugitive emissions from such sources are generally controlled with local hooding or building ventilation systems that are ducted to a control device (predominantly baghouses).

STORAGE BATTERY MANUFACTURING (7 facilities)

Source Description

A major use of lead is in lead-acid storage batteries. The electrical systems of vehicles, ships, and aircraft depend on such batteries for start-up, lighting, and ignition and, in some cases, batteries provide the actual motive power. The NAICS code for this industry sector is 335911 Storage Battery Manufacturing.

Process Description

Operations consist primarily of grid casting, paste mixing, pasting, burning, battery assembly, formation and lead recovery.

- Grid Casting

Lead alloy ingots are melted in a gas-fired lead furnace at approximately 700 degrees F. The furnace is often equipped with a hood to vent the fumes to an emission control device. The molten lead flows into molds that form the battery grids. They are then ejected, trimmed, and stacked.

- Lead Oxide Production and Paste Mixing

The paste mixing is conducted in a batch-type process to make paste for application to the grids. A mixture of lead oxide powder, water, sulfuric acid, and an organic expander (generally mixture of barium sulfate, carbon black, and organic fibers) are added to the mixer, depending on whether the paste batch is for positive or negative plates. The mixture is blended to form a stiff paste. A duct system vents the exhaust gases from the mixer and loading station to an emission control device.

- Grid Pasting

Pasting machines force the lead sulfate paste into the interstices of the grid structure (the grids are called plates after the paste has been applied). The freshly pasted plates are transported through a temperature-controlled heated tunnel, where the surface water is removed. The floor area around pasting operations must be kept clean of paste, however, since this is a potential source of fugitive dust. After the plates are cured for up to 72 hours, they are sent to the assembly operations where they are stacked in an alternative positive and negative block formation.

- Lead Burning

Leads are welded to the tabs of each positive plate and each negative plate, fastening the assembly (element) together. An alternative to this operation is the "cast-on-strap" process, where molten lead is poured around and between the plate tabs to form the connection. Then a positive and a negative tab are independently welded to the element. The completed elements can go to either the wet or dry assembly lines.

- Battery Assembly

In the wet battery line, elements are placed in battery cases made of durable plastic or hard rubber. Covers are sealed to the cases, and the batteries are filled with diluted sulfuric acid and made ready for formation. For dry batteries, elements are formed prior to being placed in a sealed case.

- Formation

The inactive lead oxide-sulfate paste is chemically converted into an active electrode. Lead oxide in the positive plates is oxidized to lead peroxide; in the negative plates, it is reduced to metallic lead. This is accompanied by placing the unformed plates in a diluted sulfuric acid solution and connecting the positive plates to the positive pole of a direct current (D.C.) source and the negative plates to the negative pole of a D.C. source.

- Lead Recovery

Defective parts are either reclaimed at the battery plant or sent to a secondary lead melter for recycling. Pot-type furnaces are generally used for reclaiming scrap lead at the battery manufacturing plants. Emissions generally are visible only when oily scrap or floor sweepings are charged.

Emissions and Control

Lead and other PM are generated in several operations within storage battery production. Fabric filtration in baghouses is generally used as part of the process control (i.e., product recovery equipment) and to collect particulate emissions from lead oxide mills. Fabric filters have become an accepted method for controlling emissions from grid casting and lead reclamation. Specifically, cartridge collectors and high efficiency particulate air (HEPA) filters can be used in grid casting, paste mixing, lead oxide manufacturing, the three-process operation, or lead reclamation. Cyclone mechanical collectors often precede fabric filters.

PROJECT DESCRIPTION

The following is a summary of the PR 1420.2 – Emission Standards for Melting Facilities. A copy of PR 1420.2 with the specific details of the rule language can be found in Appendix A. Since the June version of PR1420.2, SCAQMD staff has been working with stakeholders and has revised some of the provisions. The approach and core provisions requiring ambient monitoring of lead, the ambient lead concentration limits, lead point source requirements, requirements for operating within an enclosure, housekeeping and maintenance, and requirements for a compliance plan if certain thresholds are exceeded have not changed. In general, the revisions provided clarifications, provided other compliance options, or reduced the frequency of implementing specific provisions. As discussed in Chapter 2, modifications to the proposed rule will not increase or create any new environmental impacts and in areas where the frequency of implementing certain housekeeping measures is allowed, will lessen certain environmental impacts.

Applicability

PR 1420.2 applies to metal melting facilities in the SCAQMD that melt 100 tons or more of lead annually. Based on SCAQMD staff analysis of compliance and permitting data (including AER, permit files, available source tests, and available ambient air monitoring data), there are currently 13 facilities in the Basin that meet the applicability of the proposed rule. These facilities represent high lead emissions from the stationary source category of reported lead emissions in the Basin and include facilities such as scrap recyclers, iron and steel mini-mills, aerospace, and lead-acid battery manufacturers. Additionally, as discussed in Chapter 1, data from SCAQMD monitors at two metal melting facilities have shown the potential for this source category to exceed the NAAQS lead limit of 0.15 $\mu g/m^3$ averaged over a rolling 3-month period. A minimum process limit of 100 tons of lead melted a year was set as the threshold for rule applicability because a facility melting a little over this amount resulted in high ambient air lead concentrations at the fence line. PR 1420.2 is more stringent than Rule 1420, therefore facilities that are subject to PR 1420.2 would be exempt from Rule 1420 requirements.

Definitions

PR 1420.2 includes definitions of the following terms used in the proposed rule. Please refer to subdivision (c) [Definitions] of PR 1420.2 for the definitions:

- Ambient Air
- Casting
- Duct Section
- Dust Suppressant
- Emission Collection System
- Emission Control Device
- Fugitive Lead-Dust
- Furnace
- Furnace, Refining, or Casting Area
- Lead
- Leeward Wall
- Maintenance Activity
- Measurable Precipitation
- Metal
- Metal Melting Facility
- Partial Enclosure
- Point Source

- Process
- ~~Sensitive Receptor~~
- Slag
- Smelting
- Smelting Furnace
- Total Enclosure
- Windward Wall

Requirements

Subdivisions (d) through (l) of PR 1420.2 establish key "core" requirements including ambient air lead concentration limits, ambient air monitoring and sampling, point source emissions controls, total enclosures, housekeeping measures, maintenance activity requirements, source testing, recordkeeping, and reporting. Requirements for submitting and implementing a Compliance Plan are specified in subdivision (m) [Compliance Plan] and subdivision (o) [Exemptions] includes exemptions.

Subdivision (d) – Ambient Air Lead Concentration Limit

Upon adoption of PR 1420.2 until March 31, 2018, metal melting facilities with an approved ambient air monitoring plan will be required to meet an ambient air lead concentration limit of 0.150 µg/m^3 averaged over any 30 consecutive days. For metal melting facilities that install a rule-required ambient air lead monitor after adoption of Rule 1420.2, the ambient lead concentration limit of 0.150 µg/m^3 averaged over any 30 consecutive days must be met beginning 90 days from the date the ambient air monitoring plan is approved. The 90 days provides a 30-day time period after the ambient monitors are required to be installed before the 0.150 µg/m^3 lead concentration limit is effective.

On and after ~~January~~ April 1, 2018, metal melting facilities subject to PR 1420.2 will not be allowed to discharge into the atmosphere emissions which contribute to ambient air concentrations of lead that exceed 0.100 µg/m^3 averaged over any 30 consecutive days. Measurements recorded at any rule-required ambient air lead monitor, including any District-installed monitor, must meet the rule limit.

The objective of the proposed requirement is to be protective of public health by limiting the lead concentration in the ambient air. By limiting the ambient air lead concentration to 0.100 µg/m^3 by 2018, it will further reduce the accumulation of lead dust and reduce lead exposure from metal melting facilities to the surrounding community. In the most recent EPA review of the National Ambient Air Quality Standards for Lead[1], EPA decided to retain the current standard. However, lowering the ambient air lead concentration is consistent with studies that U.S. EPA reviewed indicating that lower ambient air lead concentrations would result in fewer impacts to children. According to U.S. EPA, the assessment of the currently available studies continues to recognize a non-linear relationship between blood lead and effects on cognitive function, with a greater incremental effect (greater slope) at lower relative to higher blood lead levels.[2] Chronic health effects include increased risk of cancer, nervous and reproductive system disorders, neurological

[1]EPA Review of the National Ambient Air Quality Standards for Lead; http://www.epa.gov/airquality/lead/actions.html#dec2014

[2] U.S. EPA's "Policy Assessment for the Review of the Lead National Ambient Air Quality Standards," Environmental Protection Agency, May 2014

and respiratory damage, cognitive and behavioral changes, and hypertension. In addition, young children accumulate lead more readily than adults and they are more vulnerable to certain biological effects of lead including learning disabilities, behavioral problems, and deficits in IQ.

Subdivision (e) – Ambient Air Monitoring and Sampling Requirements

PR 1420.2 facilities will be required to collect and analyze ambient air lead samples to determine compliance with the ambient air quality lead concentration limits of the rule. This subdivision provides the requirements for submittal of an ambient air monitoring plan, which includes the number of monitors, placement of monitors, and installation of monitors.

PR 1420.2 requires that 24-hour lead samples be collected and requires that samples be collected midnight-to-midnight at all sites, but does allow for a different sampling schedule based on approval of the Executive Officer. Refer to PR 1420.2 for more details. Facilities will also be required to continuously monitor wind speed and direction for the ambient air quality monitoring system at all times to supplement data analysis of samples collected. Only personnel approved by the Executive Officer will be allowed to conduct ambient air quality monitoring, and sampling equipment shall be operated and maintained in accordance with U.S. EPA-referenced methods. A provision was added to PR 1420.2 which provides a process where an operator can submit information to the Executive Officer when there operator has information that an alleged source is the primary cause of an exceedance.

Cleaning activities, such as wet washing and misting, that result in damage or biases to samples collected, will not be allowed within 10 meters of any sampling site required by the rule. Additionally, ambient air quality monitoring systems that are required to conduct daily samples will be required to be equipped with a backup, uninterruptible power supply sufficient to power monitors for use during a power outage. This requirement will not be required during the first year of monitoring. Any existing ambient air monitoring network currently in use for Rule 1420 can be used for compliance with PR 1420.2 so long as all rule requirements for sampling and monitoring have been met.

Subdivision (f) – Point Source Emission Controls

Point sources are defined by the proposed rule as any process, equipment, or total enclosure used at a melting facility whose emissions pass through a stack or vent designed to direct or control its release into the ambient air. All lead emissions from lead point sources are required to be vented to a lead control device. Proposed requirements for lead point source emission controls will be effective beginning March 1, 2016.

PR 1420.2 requires that lead point source emission controls meet a minimum lead reduction efficiency of 99 percent. The 99 percent lead reduction efficiency is more stringent than the 98 percent lead reduction efficiency requirement of Rule 1420. Upon review of SCAQMD-approved source tests of lead point sources, SCAQMD staff determined that the more stringent 99 percent lead reduction efficiency for this source category was achievable with controls available today.

PR 1420.2 previously allow~~s~~ed the owner or operator of a lead melting facility, after an initial lead reduction efficiency testing, ~~-~~to demonstrate that lead point source emission rate is less than 0.080 pounds per hour in lieu of demonstrating the 99 percent lead reduction efficiency after the first year of implementation. PR 1420.2 has since been modified to still allow a facility, after initial lead reduction efficiency testing, to test the mass lead outlet emission rate. However instead of

establishing a specific emission rate of 0.080 pounds per hour, the operator would use the total mass lead outlet emission rate requisite to achieve 99% control efficiency (as calculated using the most recent District-approved source test conducted at the inlet and outlet of the lead emission control device) to determine compliance with the 99% control efficiency requirement. In addition, a provision was added that will allow a facility, even during initial testing to demonstrate an outlet mass lead emission rate less than 0.0003 pounds per hour. ~~The 0.080 pounds per hour is representative of a level of lead emissions that would require the facility to install additional controls. In 2008, the U.S. EPA determined that a facility lead emissions (point source and fugitives) of 0.5 tons per year represent an estimate of the lowest lead emission rate that could result in lead concentrations exceeding the 0.15 μg/m^3 NAAQS for lead. Assuming an operation schedule of 24 hours/day, 365 days/year to arrive at an hourly lead emission rate from the facility of 0.114 pound/hour. As PR 1420.2 proposes a final ambient air lead concentration limit of 0.100 μg/m^3 averaged over 30 consecutive days, the 0.114 pound/hour lead emission rate threshold was scaled down proportionately resulting in an emission rate limit of 0.080 pounds/hour.~~

All filters and filter bags used in any lead control device are required to be rated by the manufacturer to achieve a minimum of 99.97% capture efficiency for 0.3 micron particles, or made of polytetrafluoroethylene membrane material. Any other material that is equally or more effective for the control of lead emissions may be used if approved by the Executive Officer.

Subdivision (g) – Total Enclosures

No later than March 1, 2016, the specified areas below will be required to be located within a total enclosure. The areas may be enclosed individually or in groups. The intent of this requirement is to minimize fugitive lead-dust emissions generated in processing areas, specifically:

- Furnace, refining, or casting areas; and
- Lead oxide production areas.

Cross-draft conditions of a total enclosure that decrease the efficacy of the emission collection system for any lead point emission source shall be minimized by closing any openings including, but not limited to, vents, windows, passages, doorways, bay doors, and roll-ups during metal melting operations. The proposed rule allows a facility to close openings when not in use, use automatic roll-up doors, vestibules, and plastic strip curtains to meet this requirement.

Total enclosures around the above mentioned areas with negative air pressure will be required for facilities with a Health Risk Assessment (HRA) approved by SCAQMD after January 1, 2015 that exceeds the action risk level specified in Rule 1402 or if the ambient air monitors indicate a concentration of more than 0.120 μg/m^3 averaged over any 30 consecutive days.

Subdivision (h) – Housekeeping Requirements

The following housekeeping requirements are proposed to minimize fugitive lead-dust emissions. All requirements will be effective within 30 days of rule adoption with the exception of the requirement to pave, concrete, asphalt, or otherwise stabilize all facility grounds, which will be effective 180 days after rule adoption.

- Clean by wet wash or clean by vacuum particles in a manner that does not generate fugitive lead-dust, the following areas at the specified frequencies, unless located within a total enclosure vented to a lead emission control device. Days with measurable precipitation in the following areas occurring within the timeframe of a required cleaning frequency may be counted as a cleaning.

- Quarterly cleanings, no more than 3 months apart, of roof tops on structures ≤ 45 feet in height that house areas that are associated with the storage, handling or processing of lead-containing materials, excluding areas associated with the storage of raw, unprocessed lead-containing material that does not generate fugitive lead-dust;
- Semi-annual cleanings, no more than 6 calendar months apart, of roof tops on structures > 45 feet in height that house areas associated with the storage, handling or processing of lead-containing materials, excluding areas associated with the storage of raw, unprocessed lead-containing material that does not generate fugitive lead-dust;
- Weekly cleanings of all areas where lead-containing wastes generated from housekeeping activities are stored, disposed of, recovered or recycled; and
- Initiate immediate cleaning, no later than one hour after any maintenance activity or event including, but not limited to, accidents, process upsets, or equipment malfunction, that causes deposition of fugitive lead-dust onto specified areas in the rule. If the facility can demonstrate that delays were due to unreasonable risks to safety posed by each cleaning or inability to reasonably obtain equipment required to implement this requirement, immediate cleanings of rooftops shall be completed within 72 hours.

- Paving, concreting, asphalting all facility grounds, or use of dust suppressants, for the purpose of providing a surface that accommodates ease of cleaning. A provision has been added that facility grounds that cannot be paved or otherwise stabilized with dust suppressants due to requirements to comply with city or other municipal permits or ordinances, requirements of the State Water Control Board, or any other state or federal agency requirement are not required to pave those areas.
- Removal of weather caps on any stack that is a lead emissions source.
- Storage of all materials capable of generating any amount of fugitive lead-dust in sealed, leak-proof containers, unless located within a total enclosure. Examples of materials include slag, spent filters used in lead control devices, and lead-containing waste generated from housekeeping requirements. A provision has been added that allows use of dust suppressants as approved by the Executive Officer.
- Transport of all materials capable of generating any amount of fugitive lead-dust emissions within closed conveyor systems or in sealed, leak-proof containers, unless conducted within a total enclosure. This requirement is not applicable to the transport of high temperature material where implementation of the specified control requirements are infeasible. A provision has been added that allows use of dust suppressants as approved by the Executive Officer.
- Facility grounds cleaning using onsite wet scrubbers or mobile vacuum sweepers or vacuums equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles. Facilities will be required to wet scrub or vacuum sweep all facility areas subject to vehicle and foot traffic with a wet scrubber or vacuum or an onsite mobile vacuum sweeper that complies with District Rule 1186. Wet scrubbing or ~~V~~vacuum sweeping will be required at least once per operating shift, when lead processing is occurring.
- Post signs at all entrances and truck loading and unloading areas indicating a speed limit of 5 miles per hour on any roadway located within 75 feet of the perimeter of a total enclosure and 15 miles per hour or less on any roadway located at more than 75 feet from the perimeter of a total enclosure.

- For each of the housekeeping measures identified above, the proposed rule allows an alternative housekeeping measure be used provided the owner or operator demonstrates and receives written approval from the Executive Officer.

Additionally, any accidents, mishaps and/or process upsets occurring in the aforementioned areas that result in the deposition of lead-containing material or dust shall be vacuum swept immediately, no later than one hour after occurrence. Further, sweeping will not be required on any day where the onsite measured rain amount is greater than 0.01 inches in any 24-hour calendar day. Facilities may use locally recorded and reported measured rain amounts. In addition, a provision has been added to PR 1420.2 which will allow an operator to submit an alternative housekeeping requirement provided it meets the same objective and efficiency as the measure it is replacing (as described in Appendix 3 of PR 1420.2).

Subdivision (i) – Maintenance Activity Requirements

The maintenance activity requirements of PR 1420.2 are effective upon rule adoption. For purposes of the proposed rule, maintenance activity is defined as any of the following activities conducted outside of a total enclosure that generates fugitive lead-dust:

- Building construction, demolition, or the altering of a building or permanent structure, or the removal of one or more of its components that generates fugitive lead-dust;
- Replacement or repair of refractory, filter bags, or any internal or external part of equipment used to process, handle, or control lead-containing materials;
- Replacement of any duct section used to convey lead-containing exhaust;
- Metal cutting or welding that penetrates the metal structure of any equipment used to process lead-containing material, and its associated components, such that lead dust within the internal structure or its components can become fugitive lead-dust;
- Resurfacing, repair, or removal of ground, pavement, concrete, or asphalt; or
- Soil disturbances, including but not limited to, soil sampling, soil remediation, or activities where soil is moved, removed, and/or stored.

The owner or operator of a metal melting facility will be required to conduct any maintenance activity that is not done in a total enclosure, inside a temporary negative air containment enclosure that is vented to a permitted negative air machine equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles. The negative air containment shall enclose all affected areas where the potential for fugitive lead-dust generation exists. If the maintenance activity cannot be conducted in a negative air containment enclosure due to physical constraints, limited accessibility, or safety issues when constructing or operating the enclosure, the facility will be required to conduct the activity under the following conditions:

- In a partial enclosure, barring conditions posing physical constraints, limited accessibility, or safety issues;
- Using wet suppression or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles, at locations where the potential to generate fugitive lead-dust exists prior to conducting and upon completion of the maintenance activity. Wet suppression or vacuuming will also be required during the maintenance activity barring safety issues;
- While collecting 24-hour samples at monitors for every day that maintenance activity is occurring notwithstanding paragraphs (e)(2) through (e)(5) of the rule. For unplanned maintenance activity, if sampling is not being conducted on the day the incident occurs, sample collection shall begin at midnight at the end of the day on which the incident occurs;

- Maintenance activity conducted outside a negative enclosure must stop immediately if instantaneous wind speeds are 20 miles per hour or greater. Maintenance work may be continued if it is necessary to prevent the release of lead emissions;
- All concrete or asphalt cutting or drilling performed outside of a total enclosure shall be performed under 100% wet conditions; and
- Grading of soil shall only be performed on soils sufficiently wet to prevent fugitive dust.

All lead-contaminated equipment and materials used for any maintenance activity requires immediate storage or cleaning after completion of work, by wet wash or a vacuum equipped with a filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles. Storage and cleaning must be done in a manner that does not generate fugitive lead-dust.

Subdivision (j) – Source Tests

The proposed rule will require annual source tests for all lead control devices in order to demonstrate compliance with the lead control reduction efficient for any lead point source emission control of 99%. Initial source tests for new and modified lead control devices with an initial start-up date on or after the adoption date of the proposed rule will be required within 60 days of initial start-up. Existing lead control devices in operation before the adoption date of the rule will require a source test no later than six months after adoption of the rule. An existing source test, for existing lead control devices, conducted on or after January 1, 2014 may be used as the initial source test as long as the test:

- Is the most recent conducted since January 1, 2014;
- Demonstrated compliance with the applicable control standard;
- Is representative of the method to control emissions currently in use; and
- Was conducted using applicable and approved test methods.

The rule lists the following applicable test methods:

- SCAQMD Method 12.1;
- ARB Methods 12 and 436; and
- EPA Method 12.

Use of an alternative or equivalent test method will be allowed as long as it is approved in writing by the Executive Officer, in addition to the California Air Resources Board, or the U.S. EPA, as applicable. Facilities will be required to submit a pre-test protocol to the Executive Officer at least 60 calendar days prior to conducting the source test. Notification to the Executive Officer in writing shall also be required one week prior to conducting the source test.

The proposed rule provides an incentive for lead control devices that demonstrate low lead emission rate source test results. If an annual source test to demonstrate compliance with the lead point source emission standards of subdivision (f) demonstrates a 99% or greater reduction of lead emissions, and total facility mass lead emissions of less than 0.020 pounds per hour, then the next test for all lead point sources can be performed no later than 24 months after the date of the most recent test.

Subdivision (k) – Recordkeeping

PR 1420.2 will require records indicating amounts of lead-containing material melted at the facilities to be maintained by the facility. Examples of records include purchase records, usage records, results of lead content analysis, or other SCAQMD-approved verification to indicate

melting amounts. Records for all rule-required housekeeping, maintenance activity, ambient air lead monitoring, and lead control device inspection and maintenance must also be maintained. All records shall be maintained for five years and maintained onsite for at least two years.

Subdivision (l) – Ambient Air Monitoring Reports

Under the proposed rule, facilities will be required to submit reports for monthly ambient air monitoring results for lead and wind data measured at each sampling location on a monthly basis. Beginning no later than 30 days after receiving Executive Officer approval of a Lead Ambient Air Monitoring and Sampling Plan, reports must be submitted by the 15th of each month for the preceding month, and must include the results of individual 24-hour samples and 30-day averages for each day within the reporting period. Facilities that are conducting ambient air monitoring and sampling already approved by the Executive Officer and that meets the requirements in paragraph (e)(3), shall begin reporting no later than 30 days after rule adoption. In addition, any exceedance of the ambient air quality concentration shall be reported to the Executive Officer (1-800-CUT-SMOG) within 24 hours of receipt of completed sample analysis, followed by a written report to the Executive Officer no later than three business days after the notification.

Subdivision (m) – Compliance Plan

Compliance with PR 1420.2 is primarily based on an ambient air concentration of lead at fence line monitors. The proposed rule is designed to control lead point source emissions and fugitive lead-dust emissions to achieve the ambient air concentration limits. Under PR 1420.2, an owner or operator of a metal melting facility is required to submit a Compliance Plan if one or more of the following occurs:

- the point source emission rate for all lead sources is greater than 0.080 pound per hour on and after July 1, 2016; or
- the ambient air lead concentration is greater than 0.120 µg/m^3 averaged over 30 consecutive days on and after July 1, 2016; or
- the ambient lead concentration is greater than 0.100 µg/m^3 averaged over 30 consecutive days on and after ~~January~~ April 1, 2018.

The purpose of this provision is to address any facilities that still may have difficulty demonstrating compliance with the ambient air lead concentration limit even after implementation of PR 1420.2 core requirements. The Compliance Plan will identify additional measures to be implemented and at a minimum, each Compliance Plan submittal shall include:

- A ~~comprehensive~~ list of additional short-term and long-term lead emission reduction measures to be implemented to address any reasonably foreseeable exceedance and to ensure compliance with the applicable ambient lead concentration limit~~in the event that ambient concentrations of lead exceed 0.100 µg/m^3 averaged over any 30 consecutive days~~. Additional lead emission reduction measures should address the areas where there are sources that contributed to an ambient lead concentration greater than 0.070 µg/m^3 and should address the following areas as applicable:~~must include, but are not limited to:~~
    - Increased frequency of housekeeping measures such are more frequent sweeping, roof washing, etc.;
    - More stringent housekeeping measures, such as installation and maintenance of vehicle wet wash areas, additional areas for cleaning;
    - Total enclosures with negative air pursuant to the requirements in Appendix A of PR 1420.2;

- Modification to lead point source control devices, including but not limited to process and/or operational changes, and enhanced maintenance of lead point source control devices to increase the capture and/or control efficiency;
- Installation of multi-stage lead emission control devices , including but not limited to devices that use filter media other than a filter bag(s), such as HEPA and cartridge-type filters rated by the manufacturer to achieve a minimum of 99.97% control efficiency for 0.3 micron particles;
- Process changes including reduced throughput limits;
- Conditional curtailments including, at a minimum, information specifying the curtailed processes, process amounts, and length of curtailment; and
- Identification of lead reduction measures to be implemented relative to increasing ranges of exceedance levels of the ambient air concentration limit. The owner or operator is required to identify initial measures necessary to achieve the ambient air lead concentration of 0.100 $\mu g/m^3$ averaged over any 30 consecutive days as well as additional measures to be implemented in the event that subsequent exceedences of the 0.100 $\mu g/m^3$ averaged over any 30 consecutive days.

It should be noted that ~~although the owner or operator is required to identify all~~ the control measures listed above in the Compliance Plan, ~~it~~ will ~~not always be the case where a facility would be required to~~ be implemented only if the facility exceeds the triggers for implementing the compliance plan and it would only include those measures needed to address the exceedance.~~all measure listed based on the severity and conditions surrounding the ambient air concentration or total facility mass emission rate exceedance.~~ The owner or operator shall implement measures based on the schedule in the approved Compliance Plan if lead emissions discharged from the facility contribute to ambient air concentrations of lead to exceed:

- 0.150 $\mu g/m^3$ averaged over any 30 consecutive days on or after January 1, 2017, measured at any monitor pursuant to subdivision (e) or at any District-installed monitor; or
- Three exceedances of 0.100 $\mu g/m^3$ averaged over any 30 consecutive days over a rolling 24-month period on or after ~~January~~ April 1, 2018, measured at any monitor pursuant to subdivision (e) or at any District-installed monitor.

Under Proposed Rule 1420.2, the owner or operator is required to specify the implementation schedule and categorize the measures based on the source and prioritize~~ation of~~ each lead emission reduction measure based on how quickly the measure can be implemented. ~~As specified in paragraph (m)(5) in the rule, the prioritization of lead emission reduction measures should be in order from the highest to the lowest potential lead emissions reductions.~~ In some situations, there may be a need if there are subsequent exceedances of the ambient air concentration limits to implement lead emission reduction measures prior to the completion of implementation of initial measures. If there is information that implementation of initial measures will not ensure that a subsequent exceedance of the applicable ambient concentration limit ~~of 0.100 $\mu g/m^3$ averaged over any 30 consecutive days~~ will not occur, the Executive Officer may require that lead emission reduction measures be implemented prior to completion of implementation of initial measure(s).

In specific situations where the total facility lead point source emission rate, as determined through a source test, is greater than 0.080 pound per hour, measures to reduce lead point source emissions must be implemented first. Please refer to subdivision (m) [Compliance Plan] for more details regarding the implementation schedule for lead reduction measures, updating a Compliance Plan, and other requirements.

Subdivision (n) – Visible Emissions

Under PR 1420.2, facilities are not to discharge into the atmosphere fugitive lead-dust emissions that exceed Ringlemann 0.5, or 10 percent opacity, for more than three minutes aggregate in any 60-minute period. This is a current requirement of Rule 1420 and is being required in PR 1420.2 since facilities subject to PR 1420.2 will be exempt from Rule 1420.

Subdivision (~~n~~o) – Exemptions

PR 1420.2 provides exemptions to the ambient air monitoring requirements if the following are met and the Executive Officer approves an air monitoring exemption plan containing the following:

- Air dispersion modeling analysis that demonstrates an operational ambient air lead concentration of < 0.070 µg/m^3 averaged over 30 consecutive days.
- One (1) year of ambient air monitoring data without a single day exceeding an ambient air lead concentration of 0.070 µg/m^3 averaged over 30 consecutive days. This demonstration period is only applicable to the first year of operating a District-approved ambient air monitoring and sampling network that complies with subdivision (e) [Ambient Air Monitoring Requirements].
- The facility's most recent source tests approved by the District demonstrate a total facility mass lead emission rate from all lead point sources of less than 0.040 pounds per hour.

Any violation of the ambient air lead concentration limits required by subdivision (d) [Ambient Air Lead Concentration Limit] or any lead throughput increase of five (5) percent or more above recent source test levels conducted pursuant to subdivision (k) [Recordkeeping] shall result in revocation of the air monitoring relief plan. Upon revocation of the air monitoring relief plan, the owner or operator of a metal melting facility shall comply with the requirements of subdivision (e) [Ambient Air Monitoring Requirements] no later than 180 days after revocation of the air monitoring relief plan.

Paragraph (~~n~~o)(2) of PR 1420.2 ~~exempts~~ relives facilities with any lead point source that has an uncontrolled emission rate of 0.005 pound per hour from subdivision (f) [Lead Point Source Emission Controls] provided a source test pursuant to subdivision (j) is conducted for the lead point source at least once every 24 months.

Paragraph (~~n~~o)(3) exempts facilities from PR 1420.2 that reduce their lead melting amounts to less than 50 tons per year based on lead melting limits specified in a facility permit condition. Further, paragraph (n)(4) exempts any metal melting facility subject to the PR 1420.2 from the requirements of Rule 1420. PR 1420.2 is more stringent that the requirements of Rule 1420 and effectively supersedes the requirements set forth in Rule 1420.

Appendix 1 – Total Enclosures with Negative Air (Conditional Requirement)

Appendix 1 to the rule specifies the requirements for total enclosures with negative air that are required to be included in the Compliance Plan. As specified in Appendix A of PR 1420.2, areas with a total ground surface area of 10,000 square feet or more require a minimum of three digital differential pressure monitors: one at the leeward wall of the total enclosure, one at the windward wall, and one at an exterior wall that connects the leeward and windward wall at a location defined by the intersection of a perpendicular line between this wall and a straight line between the other two monitors in order to account for shifts in draft direction throughout the enclosure. Each total

enclosure is required to be maintained at a negative pressure of at least 0.02 mm of Hg (0.011 inches H_2O) averaged over any 15 minutes and an in-draft velocity of at least ~~300~~ 200 feet per minute at any opening such as vents, windows, passages, doorways, bay doors, and roll-ups. For smaller enclosures, at least one differential pressure monitor, continuously measuring the negative pressure of the total enclosure, is required to be installed on the leeward wall.

Digital differential pressure monitors must be capable of measuring and displaying negative pressure in the range of 0.01 to 0.2 mm Hg (0.005 to 0.11 inches H_2O) with a minimum increment of measurement of plus or minus 0.001 mm Hg (0.0005 inches H_2O). Digital differential pressure monitoring systems will also need to be equipped with a continuous strip chart recorder or electronic recorder approved by the Executive Officer. If the facility elects to use an electronic recorder, the recorder will need to be capable of writing data on a medium that is secure and tamper-proof. The recorded data needs to be readily accessible upon request by the Executive Officer. If software is required to access the recorded data that is not readily available to the Executive Officer, a copy of the software, and all subsequent revisions, shall be provided to the Executive Officer at no cost. If a device is needed to retrieve and provide a copy of such recorded data, the device must be maintained and operated at the facility.

Digital differential pressure monitoring systems shall be calibrated in accordance with manufacturer's specifications at least once every 12 calendar months, or more frequently, if recommended by the manufacturer, and equipped with a backup, uninterruptible power supply to ensure continuous operation of the monitoring system during a power outage.

Appendix 2 – Periodic Smoke Test

Appendix 2 to the rule specifies the requirements for facilities to conduct periodic smoke tests in order to demonstrate that all lead emissions are being vented to the emission collection system for any lead control device subject to the rule. The periodic smoke test requirement of PR 1420.2 will not be required if performing such test presents an unreasonable risk to safety.

Appendix 3 –Objectives of Housekeeping Requirements Set-Forth in Paragraph (h)

Appendix 3 to the rule lists the objectives and effectiveness of the housekeeping measures in Subdivision (h), which will be used by an operator when submitting an alternative housekeeping requirement to ensure that it meets the same objective and efficiency as the measure it is replacing.

Emissions Control Technologies

Existing Controls

The facilities subject to PR 1420.2 are metal melting operations where lead-containing scrap or ingots are processed to recover desired metals or produce lead-containing products. The process generally involves the sorting, charging, melting, casting, and refining of lead-containing materials. Lead, arsenic and other toxic or criteria pollutant emissions are vented directly to air pollution control equipment, captured in building enclosures vented to air pollution control equipment, or are fugitive emissions that do not get captured by air pollution control equipment and come into contact with ambient air.

All of these existing facilities use baghouses or filter systems to control lead emissions from process operations and building enclosures. Since all facilities that would be subject to the proposed rule already have control devices constructed capable of meeting the point source pollution control requirements in the rule, it is assumed that facilities may install additional control devices in series as part of the compliance plan, should one be triggered. These devices include high efficiency particulate arrestors, cyclones, and scrubbers. In the proposed rule, it is anticipated that the facilities will have to make improvements to their housekeeping procedures to comply with the proposed ambient concentration limit of 0.100 $\mu g/m^3$ in 2018.

Compliance with PR 1420.2

To meet the ambient lead concentration, point source limits and compliance plan requirements of PR 1420.2, ~~the~~ some facilities will be required to increase housekeeping requirements.~~are expected to further control lead emissions.~~ Since PR1420.2 is regulating sources that are already regulated under Rule 1420, it is not expected that additional point source controls will be needed since Rule 1420 established a control efficiency requirement of 99 percent for particulate matter and 98 percent for lead. The following discusses the control equipment currently in place or that could potentially be installed, if needed through a Compliance Plan or it is found that a facility is currently not meeting the control efficiency specified in PR1420.2.~~ to assist in achieving compliance with the proposed lower limits. However, t~~The control of fugitive lead dust is anticipated to be the primary method to comply with the new ambient lead concentration limits.

Emissions at the facilities are generally categorized as either point source emissions or fugitive emissions. Point source emissions are those emissions that are vented to a stack where the stack can be from a specific piece of equipment such as a furnace or building. Fugitive emissions are emissions that are not contained and/or not captured in air pollution control device and are released to the ambient air. Fugitive emissions can settle on surfaces such as roof tops and ground surfaces and can be re-entrained in the ambient air.

Fugitive emissions can accumulate in and around process areas, from point sources, raw material storage areas, on roof tops, and during maintenance operations to name a few. There are a variety of housekeeping and containment strategies that can be implemented to minimize fugitive emissions.

If the compliance plan is triggered, it is assumed that facilities will first enhance the housekeeping and maintenance provisions already in place by increasing the frequency of those activities, before ~~opting to~~ installing additional pollution control equipment.

Point Source Control Strategies for Lead

The following describes lead point source control strategies. As with any type of control device, maintenance and proper operation of the control device are important to ensure the control device can achieve its maximum control efficiency. The following provides a description of baghouses and filter controls, and high efficiency particulate arrestors (HEPA). Use of multistage point source controls such as use of baghouse filters and HEPA filters can improve the capture efficiency and provide additional protection. Although wet scrubbers and electrostatic precipitators might also be used, based on a review of the facilities, it is assumed that these facilities would likely use multistage baghouses and filters as their air pollution control equipment due to the lower operational costs. Lead emissions from lead processes discussed in the previous section would be vented to one or more lead control devices listed below:

Point source emissions from the processes discussed in the previous section can be vented to one or more emission control devices listed below. In general for lead particulate controls, a series of filter media and/or scrubbers can be used to control lead emissions. It is imperative that the control of emissions, including the routing of these emissions to the appropriate emission control device, is designed, maintained, and operated properly in order to achieve the intended level of control described herein.

Baghouses and Filters

Baghouses operate by collecting particles on a fabric filter. Typically, they consist of fabric bags of tubular or envelope shapes. As an air stream flows through the bags, small particles are initially captured and retained on the fabric filter by one or a combination of the following collection mechanisms: impaction, direct interception, diffusion, electrostatic attraction, and gravitational settling. Once dust has accumulated on the walls of the bags, the "dust mat" acts as a sleeve to further increase particulate matter capture. PR 1420.2 requires that filter bags be polytetrafluoroethylene or materials that are equally as effective for control of particulate emissions.

Baghouses are commonly used in metal melting operations. They have one of the highest control efficiencies for particulate emissions, and the captured particulate can be recycled to recover metal. Operating parameters of melting operations, such as exhaust stream temperature, gas stream velocity, and particulate chemical properties must be taken into account when designing the baghouse.

Daily maintenance and monitoring of the baghouse is necessary to ensure that it continuously meets the required standard of efficiency. Gas volume, temperature, pressure drop, and dust load are monitored continuously or intermittently. Baghouse shaking and sending pulses of air backwards through the bags is done at specific intervals, or when the bags are overloaded, to remove the captured particulate matter from the bags and drop it into a hopper below the bags.

Baghouse and filter technology combined can achieve overall particulate matter efficiencies. A well designed baghouse can control 99 percent of lead particulate emissions. Gases and vapors are not controlled by baghouses.

Arrays of filters are also used to collect particulate matter. They can be used after the bags in a baghouse to further reduce emissions or can be used alone as in a spray booth. Filters are often

used in combination with a prefilter which is replaced on a regular basis allowing the bank of filter cartridges to last longer.

Used in conjunction with a prefilter, high-efficiency particulate air (HEPA) filters can trap particles as small as 0.3 µm at an efficiency of 99.97 percent or greater. Like cartridge filters, HEPA filter elements use a pleated design. HEPA filters are generally limited to ambient temperature (100 degrees Fahrenheit), though special applications for higher temperatures are available. Unlike bags or cartridge filters, HEPA filters are not automatically cleaned. When a HEPA filter element becomes loaded with particulate matter, the element is replaced and disposed of as hazardous waste. Filters can be applied to controls such as baghouses to reduce emissions from lower temperature exhaust streams and fugitive dust emissions collected within total enclosures. They can also be utilized in negative air equipment or vacuums used to conduct housekeeping activities throughout the facility. Proposed Rule 1420.2 requires filter media including HEPA and cartridge-type filters to be rated by the manufacturer to achieve a minimum of 99.97 percent controlled efficiency for 0.3 micron particles.

Ambient Source Control Strategies for Lead

Fugitive Lead-Dust Control

Fugitive dust at lead metal melting facilities can be a major source of lead emissions. Fugitive lead dust can accumulate in and around process areas near lead point sources, on roof tops in and around a facility, and near maintenance operations. There are a variety of housekeeping and containment strategies that can be implemented to minimize fugitive lead dust. Housekeeping activities must be implemented frequently and properly to ensure they are effective. The concept behind many of these strategies is to either contain or remove lead dust so it cannot become airborne. Housekeeping practices specifying adequate frequencies and locations for all cleanings to be performed are also critical in the effectiveness to control fugitive lead-dust emissions. The following summarizes some potential fugitive lead dust control strategies:

- Pave roadways subject to vehicular and foot traffic;
- Clean paved areas through vacuuming, vacuum sweepers, and use of wet suppression;
- Wet wash or vacuum areas where lead particulate can accumulate such as roof tops and areas where lead-containing wastes are stored or disposed of;
- Clean (i.e. sweeping, vacuuming, dusting) areas where lead dust may accumulate due to accidents, process upsets or equipment malfunctions;
- Store and transport all materials capable of generating any amount of fugitive lead-dust in sealed, leak-proof containers, or stabilize using dust suppressants approved by the Executive Officer; and
- Use enclosures or containment areas during maintenance activities and storage of lead-containing materials.

CHAPTER 2

Introduction

General Information

Environmental Factors Potentially Affected

Determination

Discussion and Evaluation of Environmental Checklist

INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by the proposed project.

GENERAL INFORMATION

Project Title:	Proposed Rule 1420.2
Lead Agency Name:	South Coast Air Quality Management District
Lead Agency Address:	21865 Copley Drive, Diamond Bar, CA 91765
Rule Contact Person:	Eugene Kang, (909) 396-3524
CEQA Contact Person:	Cynthia Carter, (909) 396-2431
Project Sponsor's Name:	South Coast Air Quality Management District
Project Sponsor's Address:	21865 Copley Drive, Diamond Bar, CA 91765
General Plan Designation:	Not applicable
Zoning:	Not applicable

Description of Project:	PR 1420.2 would protect public health by reducing lead emissions produced by lead melting facilities. PR 1420.2 applies to metal melting facilities in the SCAQMD that melt 100 tons or more of lead annually. PR 1420.2 would accomplish this by limiting the ambient lead concentration, imposing housekeeping, limiting the point source emissions, conducting periodic source testing, and requiring ambient air lead monitoring and sampling. Owner/operators of facilities would be required to meet an ambient lead limit of 0.150 micrograms per cubic meter ($\mu g/m^3$) averaged over any 30 consecutive days upon date of adoption if the facility currently has approved ambient air monitoring and sampling sites.~~effective September 4, 2015.~~ Facilities that do not currently conduct ambient air monitoring will be required to meet the ambient limit no later than 90 days after approval of an ambient air monitoring plan. The limit would be further reduced to 0.100 $\mu g/m^3$ effective January 1, 2018. Improvements to building enclosures and additional control equipment may be necessary to comply with the proposed ambient standard for some facilities. The proposed rule also requires implementation of a Compliance Plan if a facility exceeds ~~an~~the ambient air lead concentration of 0.150 $\mu g/m^3$ beginning January 1, 2017 and exceeds the 0.100 $\mu g/m^3$ three times within a rolling 24-month period beginning April 1, 2018.~~or a total facility mass lead emission rate of 0.080 lb/hr after January 1, 2018.~~ The environmental analysis in the Revised Draft EA concluded that PR 1420.2 would not generate any significant adverse environmental impacts. PR 1420.2 would affect six facilities that are on lists of California Department of Toxics Substances Control hazardous waste facilities per Government Code §65962.5 (http://www.envirostor.dtsc.ca.gov/public; accessed on July 16, 2015)
Surrounding Land Uses and Setting:	Large industrial/commercial facilities melting metal
Other Public Agencies Whose Approval is Required:	None

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The following environmental impact issues have been assessed to determine their potential to be affected by the proposed project. As indicated by the checklist on the following pages, environmental topics marked with an "✓" may be adversely affected by the proposed project. An explanation relative to the determination of the significance of the impacts can be found following the checklist for each area.

☑	Aesthetics	☐	Geology and Soils	☐	Population and Housing
☐	Agricultural Resources	☑	Hazards and Hazardous Materials	☐	Public Services
☑	Air Quality	☑	Hydrology and Water Quality	☐	Recreation
☐	Biological Resources	☐	Land Use and Planning	☑	Solid/Hazardous Waste
☐	Cultural Resources	☐	Mineral Resources	☐	Transportation/Traffic
☑	Energy	☑	Noise	☑	Mandatory Findings

DETERMINATION

On the basis of this initial evaluation:

☑ I find the proposed project, in accordance with those findings made pursuant to CEQA Guideline §15252, COULD NOT have a significant effect on the environment, and that an ENVIRONMENTAL ASSESSMENT with no significant impacts has been prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will NOT be significant effects in this case because revisions in the project have been made by or agreed to by the project proponent. An ENVIRONMENTAL ASSESSMENT with no significant impacts will be prepared.

☐ I find that the proposed project MAY have a significant effect(s) on the environment, and an ENVIRONMENTAL ASSESSMENT will be prepared.

☐ I find that the proposed project MAY have a "potentially significant impact" on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL ASSESSMENT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL ASSESSMENT pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL ASSESSMENT, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Date: July 17, 2015 **Signature:** Jillian Wong

Jillian Wong, Ph.D.
Program Supervisor, CEQA Section
Planning, Rules, and Area Sources

DISCUSSION AND EVALUATION OF ENVIRONMENTAL IMPACTS

The objective of PR 1420.2 is to reduce the public's exposure to lead that is associated with lead emissions from metal melting facilities. PR 1420.2 would establish requirements for these facilities. One of the key components of PR 1420.2 is reducing lead point source emissions and the ambient air lead concentration (see Chapter 1- Project Description for a thorough discussion on the new proposed rule requirements).

Some of the facilities already comply with the proposed rule's key requirements including ambient air monitors, point source emission controls, total enclosures, and housekeeping requirements. ~~All~~ Most of the facilities will be subject to new source tests. In addition, if a facility exceeds the rule's ambient monitoring limits, implementation of a compliance plan is triggered. The compliance plan will include measures such as increased frequency of housekeeping measures, total enclosures under negative air, additional air pollution control devices (APCDs) such as multi staged baghouses and HEPA filters.

In order to comply with PR 1420.2, which includes ambient air monitoring, point source limits, total enclosure requirements, point source control equipment, and housekeeping and maintenance provisions, the CEQA analysis assumes a worst case scenario where facilities are expected to need to do further actions to meet the core requirements of the proposed rule and that some facilities could be required to implement additional controls as part of a compliance plan.

PR1420.2 anticipates that facilities would need to control their fugitive dust emissions by implementing specific housekeeping and maintenance measures. In analyzing potential environmental impacts, the SCAQMD staff gathered information from the 13 facilities to understand existing practices and controls to i~~n~~dentify additional controls and measures that would be expected to be implemented to meet the requirements of PR1420.2. For the purpose of the CEQA analysis, reasonable worst-case assumptions have been made, based on lead emissions inventories reported to the SCAQMD AER program (i.e., for years 2010 through 2012) and information available from the SCAQMD permitting database (including available source test reports and available monitoring data): The analysis evaluated impacts that could potentially occur from implementing the core requirements of PR1420.2 and measures that could be implemented under a compliance plan. Regarding core requirements the following assumptions have been made: all facilities would implement all housekeeping and maintenance provisions; two facilities are not completely paved and will require paving; 12 facilities would require on-site ambient air monitors (Gerdau already operates on-site monitors), two facilities would need to construct total enclosures, five facilities would increase water usage and five facilities would need to use a different filter media for their existing pollution control devices. Based on a review of the facilities, it is assumed that no more than 10 facilities will trigger the need for a compliance plan. The compliance plan will identify the potential cause of the ambient monitoring violation as well as additional measures to control those emissions. The following assumptions are used for implementation of measures in the compliance plan: four facilities would need to retrofit an existing building to install a negative air pressure system, and all facilities would implement enhanced housekeeping requirements. Based on staff's understanding of the operations at the facilities that likely to need a compliance plan, the facilities will opt to enhance the existing housekeeping measures by increasing the frequency (i.e. increased roof washing or vacuuming of structures involved with the storage, handling, or processing of lead-containing materials and increased vacuuming of on-site areas) before opting to install additional APCDs. PR 1420.2 establishes a lead point source control efficiency requirement greater than 99 percent, which is

slightly higher than what is required under Rule 1420 which is 98 percent control efficiency for lead and 99 percent control efficiency for particulate matter. As a result, most facilities are expected to meet point source requirement of PR 1420.2. It is expected that some improvements will be needed for point source controls such as increased maintenance, for those facilities that are required to implement a compliance plan and the point source emission rate was greater than 0.08 lb/hour. Although wet scrubbers, electrostatic precipitators, and wet electrostatic precipitators are viable APCD options, staff assumes that the facilities will likely opt to install HEPA filters or baghouses due to the lower operational costs. The potential environmental impacts associated with PR 1420.2 are summarized in Table 2-1. Although the facilities could potentially utilize other measures, that would be speculative at this time.

Of the facilities which would need to comply with PR 1420.2, one facility is expected to have an approved HRA that exceeds the action risk level in Rule 1402 by the time Rule 1420.2 is adopted. That facility has already secured permits to construct and operate a new baghouse. The environmental impacts associated with the baghouse were previously analyzed in the CEQA document prepared for that permit. Thi<u>s</u> ~~e~~ facility will ~~likely~~ need to prepare a risk reduction plan under Rule 1402. It is anticipated that the measures in the risk reduction plan will be consistent with PR 1420.2 and will include the installation of a negative air pressure system in the total enclosures and increased frequency of housekeeping measures such as sweeping. The analysis in this CEQA document included the environmental impacts associated with the installation of the negative air pressure system and increased housekeeping as part of compliance with PR 1420.2.

Table 2-1 CEQA Summary of PR 1420.2 Requirements

Key Requirements	Facilities	Physical Actions Anticipated	Environmental Topics to be Analyzed:
Ambient Air Monitoring Requirements	One facility has a SCAQMD approved ambient air monitor. Compliance with this provision will potentially create impacts at 12 facilities.	Construction: Install monitors Operation: Vehicle trips (Collect Filters, Analyze samples)	Air Quality, Energy, Transportation
Point Source Emission Controls	All 13 facilities currently have point source emission controls. However, five facilities would likely need to replace the filter media in their existing control devices.	Construction: None Operation: Increased frequency in filter replacement due to increased control efficiency	Air Quality, Solid Waste
Total Enclosures	Two facilities do not have total enclosures and will need to construct them to comply with this provision. Only one facility is expected to have an approved HRA that exceeds the action risk level in Rule 1402 by the time Rule 1420.2 is adopted and will need to construct a total enclosure under negative pressure.	Construction: Installation of total enclosure; Installation of negative air system Operation: Blowers	Air Quality, Energy, Transportation
Housekeeping Requirements	Two facilities are not completely paved and will require paving to comply with this provision. All facilities would need to comply with the housekeeping provisions.	Construction: Paving Operation: Vacuum Truck, Roof Washing, Haul waste and wastewater, Aerial Lifts, Reduced on-site speed limit	Air Quality, Energy, Hazardous Material, Hydrology, Solid Waste, Transportation
Source Testing	All facilities will be required to have annual or biannual source tests to comply with this provision.	Construction: None Operation: Vehicle trips, Analysis of samples	Air Quality, Energy, Transportation

Key Requirements	Facilities	Physical Actions Anticipated	Environmental Topics to be Analyzed:
Compliance Plan	The compliance plan will include measures such as increased frequency of housekeeping measures, total enclosures under negative air, additional APCD such as adding an additional baghouse or HEPA filters in series with the existing APCD.	Construction: APCD (foundation, and installation for larger blower) Operation: Blower and filter replacement; Vehicles needed for additional workers	Air Quality, Energy, Hydrology, Solid waste, Transportation

PR 1420.2 is also requiring additional reporting and recordkeeping. Because these rule requirements are administrative in nature, no environmental impacts would be expected.

ENVIRONMENTAL CHECKLIST AND DISCUSSION

I. AESTHETICS.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☑
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☑	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☑	☐

Significance Criteria

The proposed project impacts on aesthetics will be considered significant if:

- The project will block views from a scenic highway or corridor.
- The project will adversely affect the visual continuity of the surrounding area.
- The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

Discussion

I. a), b), c) & d) The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. All construction activities would occur on-site at these existing facilities within the facility boundaries. Although most of the ambient air monitors will be located within the property boundaries, it is possible that some monitors might be placed in an off-site location, in close proximity to the facility. The construction of total enclosures would occur on-site and additional lighting might be required on the outside of the enclosure, depending on the operating schedule of the facility. However, any new lighting is expected to be similar in character to the existing lighting on-site.

Off-site monitors may be placed around the facilities. Off-site monitors would be placed manually without heavy construction. The off-site monitors typically consist of a two foot by eight foot platform, two meters above the ground. The monitors are place one meter above the platform.

The monitors are expected to appear similar to the industrial area surrounding the existing facilities.

Since PR 1420.2 affects operations on-site at existing facilities in industrial areas, any new construction at these facilities is expected to be similar to existing buildings or other structures, and off-site air monitors are expected to appear similar to the surrounding industrial area, PR 1420.2 is not expected to obstruct scenic resources or degrade the existing visual character of a site, including but not limited to, trees, rock outcroppings, or historic buildings. Further, additional light or glare is expected to be similar to existing lighting. Therefore, PR 1420.2 is not expected to adversely affect day or nighttime views in the area.

Based upon these considerations, significant adverse aesthetics impacts are not anticipated. Since no significant aesthetics impacts were identified, no mitigation measures are necessary or required.

II. AGRICULTURE AND FOREST RESOURCES.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland mapping and Monitoring Program of the California Resources Agency, to non- agricultural use?	☐	☐	☐	☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104 (g))?	☐	☐	☐	☑
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☑

Significance Criteria

Project-related impacts on agriculture and forest resources will be considered significant if any of the following conditions are met:

- The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
- The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
- The proposed project conflicts with existing zoning for, or causes rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined in Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code § 51104 (g)).
- The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

Discussion

II. a), b), c), & d) The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, additional APCDs, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Ambient air monitors may be placed off-site in the surrounding industrial area.

In general, the facilities and surrounding industrial areas are not located on or near areas zoned for agricultural use, Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland mapping and Monitoring Program of the California Resources Agency. Therefore, the proposed project would not result in any construction of new buildings or other structures that would require converting farmland to non-agricultural use or conflict with zoning for agricultural use or a Williamson Act contract. Since the proposed project would not substantially change the facility or process at the facilities and would occur within the existing facility boundaries, there are no provisions in PR 1420.2 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments and no land use or planning requirements relative to agricultural resources would be altered by the proposed project.

The facilities are located in an industrial area in the urban portion of the Basin that is not near forest land. Therefore, the proposed project is not expected to conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104 (g)) or result in the loss of forest land or conversion of forest land to non-forest use.

Since PR 1420.2 would not affect the placement of affected equipment near farmland, the proposed project is not expected to result in converting farmland to non-agricultural use; or conflict with existing zoning for agricultural use, or a Williamson Act contract. Similarly, it is not expected that PR 1420.2 would conflict with existing zoning for, or cause rezoning of, forest land; or result in the loss of forest land or conversion of forest land to non-forest use. Consequently, the proposed project would not create any significant adverse agriculture or forestry impacts. Since no

significant agriculture or forestry resources impacts were identified, no mitigation measures are necessary or required.

III. AIR QUALITY AND GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☑	☐
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☑	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☑	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☑	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☑	☐
f) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	☐	☐	☑	☐
g) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☑	☐
h) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☑	☐

Significance Criteria

To determine whether or not air quality impacts from the proposed project may be significant, impacts will be evaluated and compared to the criteria in Table 2-2~~Table 2-2~~.

Table 2-2 SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction** [b]	***Operation*** [c]
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
Sox	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO2eq for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants [d]		
NO2 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hour average annual average	10.4 μg/m^3 (construction)[e] & 2.5 μg/m^3 (operation) 1.0 μg/m^3	
PM2.5 24-hour average	10.4 μg/m^3 (construction)[e] & 2.5 μg/m^3 (operation)	
SO2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 μg/m^3 (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month average	1.5 μg/m^3 (state) 0.15 μg/m^3 (federal)	

[a] Source: SCAQMD CEQA Handbook (SCAQMD, 1993)
[b] Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).
[c] For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
[d] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
[e] Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million μg/m^3 = microgram per cubic meter ≥ = greater than or equal to
MT/yr CO2eq = metric tons per year of CO2 equivalents > = greater than

Discussion
The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, additional APCDs and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Ambient air monitors will likely be placed within the boundaries of the facility, however, some may be placed off-site, just outside of the facility boundary All construction activities would occur on-site at the existing facilities.

III. a) The SCAQMD is required by law to prepare a comprehensive district-wide Air Quality Management Plan (AQMP) which includes strategies (e.g., control measures) to reduce emission levels to achieve and maintain state and federal ambient air quality standards, and to ensure that new sources of emissions are planned and operated to be consistent with the SCAQMD's air quality goals. The AQMP's air pollution reduction strategies include control measures which target stationary, area, mobile and indirect sources. These control measures are based on feasible methods of attaining ambient air quality standards. Pursuant to the provisions of both the state and federal Clean Air Acts (CAA)s, the SCAQMD is required to attain the state and federal ambient air quality standards for all criteria pollutants, including lead. PR 1420.2 would not obstruct or conflict with the implementation of the AQMP because lead emission reductions are in addition to emission reductions in the AQMP. Additionally, PR 1420.2 does not include any provisions which would conflict with the attainment of ozone and PM standards in the AQMP. The SCAQMD adopted the 2012 Lead State Implementation Plan (SIP) for Los Angeles County on May 4, 2012, which relies upon Rule 1420 and Rule 1420.1 for lead emission reductions. Further, on November 5, 2010, the Governing Board approved the 2010 Clean Communities Plan (CCP). The CCP is an update to the 2000 Air Toxics Control Plan (ATCP)[3] and its 2004 Addendum. The objective of the 2010 CCP is to reduce the exposure to air toxics and air-related nuisances throughout the district, with emphasis on cumulative impacts. The elements of the 2010 CCP are community exposure reduction, community participation, communication and outreach, agency coordination, monitoring and compliance, source-specific programs, and nuisance.

PR 1420.2 would reduce lead emissions and therefore, be consistent with the goals of the AQMP, 2012 Lead SIP for Los Angeles County, and the 2010 CCP. Additionally, the emissions associated with rule compliance for both construction and operation do not exceed the SCAQMD's CEQA significance thresholds (see analysis in III.b and f). Therefore, implementing PR 1420.2 that further reduces lead emissions would not conflict or obstruct implementation of the 2012 Lead SIP for Los Angeles County, the AQMP or the 2010 CCP.

III. b) and f) ***Criteria Pollutants***

Construction Impacts
New Facilities
SCAQMD staff is not aware of any new lead melting facilities planned to be constructed in the future; therefore, construction of new lead melting facilities is considered speculative according to CEQA Guidelines §15145 and will not be evaluated further in this analysis. The focus of the analysis will be on the 13 known facilities.

[3] SCAQMD Air Toxics Control Plan: http://www.aqmd.gov/home/library/clean-air-plans/clean-communities-plan/air-toxics-control-plan

Existing Facilities

The primary source of construction air quality impacts would be from the rule's key requirements and applicable compliance plan. The key requirements that affect air quality are for installing air monitors, paving and constructing total enclosures, additional APCDs and implementing some of the housekeeping requirements.

To meet the proposed final ambient lead concentration limit of 0.100 µg/m^3, improvements to housekeeping practices are likely necessary and there will likely also be a need for additional control equipment. Table 2-3 below summarizes potential control strategies that facilities could implement to meet the 0.100 µg/m^3. All other measures discussed in Table 2-3 will likely be implemented to ensure the facilities can consistently meet the lower ambient lead concentration limit of 0.100 µg/m^3. Some key requirements are affecting either all or a few facilities. See Appendix B for details.

Table 2-3 CEQA Air Quality Impacts of Key Requirements

Key Requirements	Physical Actions Anticipated
Ambient Air Monitoring Requirements	Construction: Install monitors Operation: Vehicle trips (Collect Filters, Analyze samples)
Point Source Emission Controls	Construction: None Operation: Increased frequency in filter replacement due to increased control efficiency
Total Enclosures	Construction: Install total enclosure, Installation of negative air system Operation: Blowers
Housekeeping Requirements	Construction: Paving Operation: Vacuum Truck, Roof Cleaning, Haul waste and wastewater, Reduced on-site speed limit
Source Testing	Construction: None Operation: Vehicle trips (Analysis of samples)
Compliance Plan	Construction: Install APCD Operation: Blower and filter replacement; Vehicle trips ; increased frequency of housekeeping requirements

For the base requirements of PR 1420.2, it is assumed that 12 facilities would need ambient air monitors, five facilities which have existing APCDs would need to use different filter media to meet the efficiency standards in PR 1420.2, two facilities would need to construct total enclosures, one facility would need to install a negative air pressure system in the total enclosure, two facilities would require paving, and all facilities would need to perform source testing and include housekeeping provisions. Based on a review of the available information and understanding of the operations at each facility, it is assumed that ten facilities may trigger a compliance plan. Therefore, all ten of the facilities may need to enhance their current housekeeping measures by increasing the frequency of the measures, such as additional street sweeping, and washing of structures. For four of the ten facilities, the enhanced housekeeping provisions would not be enough to demonstrate compliance and the installation of multistage add-on controls (i.e. HEPA filters) is anticipated. The type of construction-related activities attributable to facilities that would

be installing control equipment would consist predominantly of cranes, cutting, welding, drilling, etc. These construction activities would not involve large-scale grading, slab pouring, or paving activities, that would be undertaken at typical land use projects such as housing developments, shopping centers, new industrial facilities, etc. For the purposes of this analysis, construction activities undertaken at facilities are anticipated to entail the use of portable equipment (e.g., pavers, mixers, generators and compressors) and hand held equipment by small construction crews to weld, cut, and grind metal structures.

For the purpose of the CEQA analysis, reasonable worst-case assumptions have been made: all 13 facilities will implement housekeeping and maintenance measures, twelve would need air monitors, two would need to pave their roads, five facilities would need more efficient filters, and two facilities would construct total enclosures. There is one facility that will be required to retrofit their existing building to enclose it fully and install a negative air system in order to comply with PR 1420.2. For the compliance plan, four facilities would install additional new APCDs and install blowers for negative air pressure.

PR 1420.2 includes requirements for air monitors. Air monitors are placed on two meter height platforms that are two feet wide by eight feet long. Other than placing the monitors on the platforms, air monitors do not require construction. Therefore, no construction emissions are associated with the air monitors. Emissions from the delivery of the air monitors would be negligible and less than the peak day emissions associated with construction of the enclosures, ducting and control systems.

Construction emissions were estimated to be completed in different phases (paving of roads, installation of APCD for compliance plan, and total enclosures)[4]. In addition, criteria pollutant emissions were calculated for all on-road vehicles transporting workers, vendors, and material removal and delivery (see Appendix B). It is important to note that the construction emissions associated with complying with the base requirements of PR 1420.2 will not overlap with the construction emissions from the compliance plan, as the compliance plan will only be triggered after the base requirements are met. However, since the compliance plan is triggered after the base requirements are met, there is the potential for overlap between the operational base emissions and the construction of the compliance plan. These impacts have been estimated and are discussed below. As all phases are entirely completed before the next phase can commence, there would be no overlap of construction phases for the construction of the key requirements. Therefore, the emissions are not additive at each facility. One of the facilities will need to pave a portion of the site and make modification to existing enclosures prior to the installation of the negative air pressure system (permits have already been secured for the ventilation portion of the negative air pressure system); one other facility which needs to be paved will not require additional construction; another two facilities will only require construction of total enclosures. Given the short duration of construction and the amount of time for facilities to comply with PR 1420.2, staff assumed that the construction phases at these different facilities would not overlap. There are a number of factors that would preclude concurrent construction activities including: availability of construction crews, type and size of control equipment to be constructed, engineering time necessary to plan and design the control equipment, permitting constraints, etc. Furthermore, as a "worst-case," the SCAQMD's air quality impacts analysis assumes that construction could take

[4] In general, no or limited construction emissions from grading are anticipated because modifications or installation of new equipment would occur at existing industrial/commercial facilities and, therefore, would not be expected to require digging, earthmoving, grading, etc.

up to two months to complete. Depending on the type and size of the control equipment to be constructed, actual construction time could be substantially less than two months. Further, some facilities could reduce emissions through methods other than installing control equipment, thus, eliminating construction impacts at those facilities. Construction emissions at any one facility would not exceed any of the significance thresholds identified in Table 2-4~~Table 2-4~~. Finally, once construction is complete, construction air quality impacts would cease. Table 2-4~~Table 2-4~~ presents the results of the SCAQMD's construction air quality analysis. Appendix B contains the spreadsheets with the results and assumptions used for this analysis.

The peak daily emissions vary for each pollutant depending on the construction phase. Peak daily emissions of all pollutants are the highest for building the total enclosures phase of construction. It was conservatively assumed that peak daily emissions are based on the largest total enclosure. The significance determination for the construction is based on the peak daily emissions during any construction phase, and as previously discussed construction phases do not overlap. Therefore, all of the construction impacts from the project are not significant for criteria pollutant emissions.

Table 2-4 PR 1420.2 Daily Peak Construction Emissions in SCAQMD for Key Requirements

Key Requirements: Construction Phase	**CO, lb/day**	**NOx, lb/day**	**PM10, lb/day**	**PM2.5, lb/day**	**VOC, lb/day**	**SOx, lb/day**
Ambient Air Monitoring Installation	N/A	N/A	N/A	N/A	N/A	N/A
Point Source Emission Controls	N/A	N/A	N/A	N/A	N/A	N/A
Housekeeping: Paving of roads	19	29	1.8	1.6	1.1	0.0
Total Enclosure & Negative Air System	**34**	**80**	**4.2**	**3.8**	**9.0**	**0.08**
Source Testing	N/A	N/A	N/A	N/A	N/A	N/A
Significance Threshold - Construction, lb/day	550	100	150	55	75	150
Exceed Significance?	No	No	No	No	No	No

Compliance Plan Requirement

Based on a review of the facilities that would be subject to the proposed rule, it is assumed that no more than ten facilities will trigger the need for a compliance plan. The compliance plan is required when the ambient monitors exceed the proposed rule's concentration limit. The compliance plan will identify the potential cause of the ambient monitoring violation as well as additional measures to control those emissions. Based on staff's understanding of the operations at the facilities likely to need a compliance plan, the facilities will opt to enhance the existing housekeeping measures by increasing their frequency (i.e. increased roof cleaning or vacuuming of structures involved with the storage , handling, or processing of lead-containing materials and increased vacuuming of on-site areas) before opting to install additional APCDs. The compliance plan requirement will be implemented after the construction of the proposed rule's key requirements are completed. Therefore, there could be an overlap between construction emissions

for the compliance plan and operational impacts, as shown in Table 2-5. When the impacts from compliance plan construction are added to the operational impacts and compared to SCAQMD's operational thresholds, the impacts continue to be less than significant.

Table 2-5 PR 1420.2 Daily Peak Construction Emissions in SCAQMD for Compliance Plan

Compliance Plan: Construction Phase	**CO**	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**
	lb/day					
Foundation for blower for APCD or Blowers-Negative air pressure	**19**	**29**	**1.8**	**1.6**	1.1	**0.0**
Installation of Blowers- Negative air pressure	10	24	1.0	0.9	2.2	0.0
Installation of APCD	12	28	1.2	1.0	**2.6**	0.0
Operational Emissions (From Table 2-6)	**8.29**	**19.35**	**0.63**	**0.54**	**1.52**	**0.04**
Total Worse-Case Impacts (Construction + Operation)	**27.29**	**48.35**	**2.43**	**2.14**	**4.12**	**0.04**
Significance Threshold - Operation, lb/day	550	55	150	55	55	150
Exceed Significance?	No	No	No	No	No	No

Operational Impacts

Total operational emissions from mobile sources (waste disposal trucks, vacuum trucks, source testing trucks, and air sampling trips) are shown in Table 2-6. The facilities currently send operational hazardous waste to the Nevada Landfill or their local melter for proper disposal. The proposed project may require one additional haul truck trip per facility to the Nevada Landfill per year. Criteria emissions are based on a 200 mile round trip from the I-15 district border to the facilities.

PR 1420.2 would require source test events for the applicable facilities (potential of 13 source testing events per year). Source testing would require additional gasoline-fueled vehicle round trips to the facility on the day of source testing. It is unlikely that all the facilities would test on the same day; therefore only one additional gasoline-fueled vehicle round trip is expected on any given day. Air monitors would be visited every one in six days. A conservative assumption is to have two facilities per day have their monitors checked. Assuming a total of 80 miles may be traveled round trip to visit the air monitors. Also for this analysis, it is assumed that 4 facilities may trigger a compliance plan. Therefore, these 5 facilities may need additional street sweeping and the air quality impacts are analyzed in Table 2-6 and Appendix B.

As indicated in Table 2-6, operational emissions anticipated from implementing PR 1420.2 do not exceed any significance threshold and therefore, are considered insignificant. ~~facilities~~

Table 2-6 PR 1420.2 Daily Peak Operational Emissions

Key Requirements: Operation Phase[5]	CO, lb/day	NOx, lb/day	PM10, lb/day	PM2.5, lb/day	VOC, lb/day	SOx, lb/day
Ambient Air Monitoring: Mobile Sources	1.32	0.15	0.014	0.01	0.15	0
Point Source Emission Controls: Mobile Sources	1.6	7.2	0.216	0.154	0.31	0.01
Housekeeping: Mobile Sources[a]	4.56	11.26	0.3685	0.3531	0.95	0.0325
Total Enclosures	N/A	N/A	N/A	N/A	N/A	N/A
Source Testing: Mobile Sources	0.16	0.01	0.0042	0.0018	0.02	0.0003
Compliance Plan: Mobile Sources	0.65	0.73	0.027	0.0227	0.09	0
Total Operational Emissions	**8.29**	**19.35**	**0.6297**	**0.5416**	**1.52**	**0.0428**
Significance Threshold - Operation, lb/day	550	55	150	55	55	150
Exceeds Significance?	No	No	No	No	No	No

[a] Housekeeping is the sum of haul trucks, vehicle sweeping, and aerial lifts. See Appendix B

The direct and indirect criteria emissions are totaled, in Table 2-6~~Table 2-6~~ and are less than the SCAQMD's mass daily operational significance thresholds; therefore, the proposed amendments are not expected to result in significant adverse operational criteria pollutant emission impacts.

Indirect Criteria Pollutant Emissions from Electricity Consumption

Indirect criteria pollutant and GHG emissions are expected from the generation of electricity to operate new equipment that occurs off-site at electricity generating facilities (EGFs). Emissions from electricity generating facilities are already evaluated in the CEQA documents for those projects when they are built or modified. The analysis in Section VI. Energy b), c) and d)) demonstrates that there is sufficient capacity from power providers for the increased electricity consumption for PR 1420.2.

Under the SCAQMD Regional Clean Air Incentives Market (RECLAIM) program (that regulates NOx and SOx emissions), EGFs were provided annual allocations of NOx and SOx emissions that typically decline annually. However, the proposed project does require an increase in energy use and that increase in emissions from generating the additional energy (See Section VI Energy for impacts) from the EGFs would be required to offset any potential NOx and SOx emission increases under the RECLAIM program and other pollutants under the New Source Review Project. Thus, air quality impacts from energy generation are anticipated to be to less than significant impacts.

[5] The occasional delivery and disposal of lead or filters, aerial lifts ambient monitoring, and source testing trips are expected to generate mobile source emissions. See Appendix B for details.

III. c) ***Cumulatively Considerable Impacts***

Based on the foregoing analysis, criteria pollutant project-specific air quality impacts from implementing PR 1420.2 would not exceed air quality significance thresholds (Table 2-2 SCAQMD Air Quality Significance Thresholds~~Table 2-2 SCAQMD Air Quality Significance Thresholds~~), cumulative impacts are not expected to be significant for air quality. SCAQMD cumulative significance thresholds are the same as project-specific significance thresholds. Therefore, potential adverse impacts from implementing the proposed rule would not be "cumulatively considerable" as defined by CEQA Guidelines §15064(h)(1) for air quality impacts. Per CEQA Guidelines §15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulative considerable.

The SCAQMD guidance on addressing cumulative impacts for air quality is as follows: "As Lead Agency, the SCAQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR." "Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."[6]

This approach was upheld by the Court in *Citizens for Responsible Equitable Environmental Development v. City of Chula Vista* (2011) 197 Cal. App. 4th 327, 334. The Court determined that where it can be found that a project did not exceed the South Coast Air Quality Management District's established air quality significance thresholds, the City of Chula Vista properly concluded that the project would not cause a significant environmental effect, nor result in a cumulatively considerable increase in these pollutants. The court found this determination to be consistent with CEQA Guidelines §15064.7, stating, "The lead agency may rely on a threshold of significance standard to determine whether a project will cause a significant environmental effect." The court found that, "Although the project will contribute additional air pollutants to an existing nonattainment area, these increases are below the significance criteria…" "Thus, we conclude that no fair argument exists that the Project will cause a significant unavoidable cumulative contribution to an air quality impact." As in *Chula Vista*, here the District has demonstrated, when using accurate and appropriate data and assumptions, that the project will not exceed the established South Coast Air Quality Management District significance thresholds. See also, *Rialto Citizens for Responsible Growth v. City of Rialto* (2012) 208 Cal. App. 4th 899. Here again the court upheld the South Coast Air Quality Management District's approach to utilizing the established air quality significance thresholds to determine whether the impacts of a project would be cumulatively considerable. Thus, it may be concluded that the Project will not cause a significant unavoidable cumulative contribution to an air quality impact.

[6] SCAQMD Cumulative Impacts Working Group White Paper on Potential Control Strategies to Address Cumulative Impacts From Air Pollution, August 2003, Appendix D, Cumulative Impact Analysis Requirements Pursuant to CEQA, at D-3, http://www.aqmd.gov/docs/default-source/Agendas/Environmental-Justice/cumulative-impacts-working-group/cumulative-impacts-white-paper-appendix.pdf?sfvrsn=4.

III. d) ***Toxic Air Contaminants (TAC)***

Construction

Diesel Particulate Matter (DPM) is considered a carcinogenic and chronic TAC. Since construction is expected include less than 60 days with onsite DPM emissions, a HRA was not conducted, consistent with OEHHA Guidance (2015). If subsequent site-specific projects have additional details about TAC impacts, they will be evaluated under CEQA at that time. In addition, adoption of this rule will reduce toxic impacts once implemented by controlling lead emissions. Lead potentially affects both cancer and non-cancer health risks.

Therefore, PR 1420.2 is not expected to generate significant adverse TAC impacts from construction.

Operation

Direct Health Risk Reductions from PR 1420.2

PR 1420.2 is expected to reduce overall TAC emissions. Therefore, PR 1420.2 is expected to have the benefit of reducing adverse health risk impacts from the facilities to nearby sensitive receptors.

Secondary Health Risk Impacts from PR 1420.2

The operation of non-combustion APCDs, that may be needed to comply with PR 1420.2, are not expected to generate any TAC emissions. These APCDs are expected to be powered by electricity, so no new combustion emissions would be generated.

Based on the above discussion, PR 1420.2 is not expected be significant for exposing sensitive receptors to substantial concentrations.

III. e) ***Odor Impacts***

It is assumed that construction is expected to occur on-site at 4 facilities. Also, the affected facility is an industrial facility where heavy-duty diesel equipment (sweepers) and trucks already operate. Therefore, the addition of several pieces of construction equipment and haul trucks are not expected to generate diesel exhaust odor greater than what is already present.

Operation of the new APCDs and blowers are not expected to generate any new odors. There would be no APCDs that include a new combustion system and would be designed to reduce TAC emissions from lead melting facilities, which may potentially further reduce odors.

The facilities are industrial facilities where heavy-duty diesel equipment (haul/delivery) trucks already operate.

Therefore, PR 1420.2 is not expected to generate significant adverse odor impacts.

III. g) and h) ***Greenhouse Gas Impacts***

Total GHG Emissions

PR 1420.2 may result in the generation of 855 amortized metric tons of CO2e construction emissions per year and 74 metric tons of CO2e operational emissions per year. The addition of 929 metric tons of CO2e emissions is less than the SCAQMD significance threshold of 10,000 metric tons per year for CO2e from industrial projects.

Therefore, PR 1420.2 is not expected to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG gases.

Conclusion
Based upon these considerations, the proposed project would not generate significant adverse construction or operational air quality impacts and, therefore, no further analysis is required or necessary and no mitigation measures are necessary or required.

IV. BIOLOGICAL RESOURCES.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
c) Have a substantial adverse effect on federally protected wetlands as defined by §404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☑
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☑

e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f)	Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

Significance Criteria

Impacts on biological resources will be considered significant if any of the following criteria apply:

- The project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies.
- The project interferes substantially with the movement of any resident or migratory wildlife species.
- The project adversely affects aquatic communities through construction or operation of the project.

Discussion

IV. a), b), c), d), e) & f) The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Ambient air monitors may be placed off-site in the surrounding industrial area. All construction activities would occur on-site at the existing facilities.

In general, the facilities and the surrounding industrial areas currently do not support riparian habitat, federally protected wetlands, or migratory corridors because they are long developed and established foundations used for industrial purposes. Additionally, special status plants, animals, or natural communities identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service are not expected to be found in close proximity to the affected facility. Therefore, the proposed project would have no direct or indirect impacts that could adversely affect plant or animal species or the habitats on which they rely in the SCAQMD's jurisdiction.

Compliance with PR 1420.2 is expected to reduce lead emissions from operations at the facilities, which would improve, not worsen, present conditions of plant and animal life, since these lead emissions would be captured destroyed or disposed of properly before they impact plant and animal life. PR 1420.2 does not require acquisition of additional land or further conversions of riparian habitats or sensitive natural communities where endangered or sensitive species may be found.

PR 1420.2 compliance is not envisioned to conflict with local policies or ordinances protecting biological resources or local, regional, or state conservation plans because it is only expected to affect existing lead melting facilities located in an urbanized, industrial area. PR 1420.2 is designed to reduce lead emissions which would also reduce emissions both inside and outside the boundaries of the facilities and, therefore, more closely in line with protecting biological resources.

Land use and other planning considerations are determined by local governments and no land use or planning requirements would be altered by the proposed project. Additionally, the proposed project would not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or any other relevant habitat conservation plan, and would not create divisions in any existing communities because all activities associated with complying with PR 1420.2 would occur at existing established industrial facilities.

The SCAQMD, as the Lead Agency for the proposed project, has found that, when considering the record as a whole, there is no evidence that the proposed project will have potential for any new adverse effects on wildlife resources or the habitat upon which wildlife depends because all activities needed to comply with PR 1420.2 would take place at long developed and established facilities. Accordingly, based upon the preceding information, the SCAQMD has, on the basis of substantial evidence, rebutted the presumption of adverse effect contained in §753.5 (d), Title 14 of the California Code of Regulations. Further, in accordance with this conclusion, the SCAQMD believes that this proposed project qualifies for the no effect determination pursuant to Fish and Game Code §711.4 (c).

Based upon these considerations, significant adverse biological resources impacts are not anticipated. Therefore, no further analysis or mitigation measures are required or necessary.

V. CULTURAL RESOURCES.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☑
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☐	☐	☑
c) Directly or indirectly destroy a unique paleontological resource, site, or feature?	☐	☐	☐	☑
d) Disturb any human remains, including those interred outside formal cemeteries?	☐	☐	☐	☑
e) Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code §21074?	☐	☐	☐	☑

Significance Criteria

Impacts to cultural resources will be considered significant if:

- The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of historic or cultural significance, or tribal cultural significance to a community or ethnic or social group or a California Native American tribe.
- Unique paleontological resources or objects with cultural value to a California Native American tribe are present that could be disturbed by construction of the proposed project.
- The project would disturb human remains.

Discussion

V. a) There are existing laws in place that are designed to protect and mitigate potential impacts to historical resources. Buildings, structures, and other potential culturally significant resources that are less than 50 years old are generally excluded from listing in the National Register of Historic Places, unless they are shown to be exceptionally important. Even if there are any buildings or structures that may be affected by the proposed project and are older than 50 years, they are generally not considered historically significant since they would not have any of the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Ambient air monitors may be placed off-site in the surrounding industrial area. All construction activities would occur on-site at the existing facilities. None of the facilities include any existing structures that would be considered historically significant, that have contributed to California history, or that pose high artistic values. Therefore, PR1420.2 is not expected to cause any impacts to significant historic cultural resources.

V. b), c), & d) PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Ambient air monitors may be placed off-site in the surrounding industrial area. Since construction-related activities are expected to be confined within the existing footprint of the facilities that have been fully developed and paved, PR 1420.2 is not expected to require physical changes to the environment, which may disturb paleontological or archaeological resources. Furthermore, it is envisioned that these areas are already either devoid of significant cultural resources or whose cultural resources have been previously disturbed. Therefore, the proposed project has no potential to cause a substantial adverse change to a historical or archaeological resource, directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or disturb any human remains, including those interred outside a formal cemeteries. PR 1420.2 is, therefore, not anticipated to result in any activities or promote any programs that could have a significant adverse impact on cultural resources in the District.

V. e) PR 1420.2 is not expected to require physical changes to a site, feature, place, cultural landscape, sacred place or object with cultural value to a California Native American Tribe. Furthermore, the proposed project is not expected to result in a physical change to a resource determined to be eligible for inclusion or listed in the California Register of Historical Resources or included in a local register of historical resources. For these reasons, the proposed project is not expected to cause any substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code §21074.

It is important to note that as part of releasing this CEQA document for public review and comment, the SCAQMD also provided a formal notice of the proposed project to all California Native American Tribes (Tribes) that requested to be on the Native American Heritage Commission's (NAHC) notification list per Public Resources Code §21080.3.1 (b)(1). The NAHC notification list provides a 30-day period during which a Tribe may respond to the formal notice, in writing, requesting consultation on the proposed project.

In the event that a Tribe submits a written request for consultation during this 30-day period, the SCAQMD will initiate a consultation with the Tribe within 30 days of receiving the request in accordance with Public Resources Code §21080.3.1 (b). Consultation ends when either: 1) both parties agree to measures to avoid or mitigate a significant effect on a Tribal Cultural Resource and agreed upon mitigation measures shall be recommended for inclusion in the environmental document [see Public Resources Code §21082.3 (a)]; or, 2) either party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached [see Public Resources Code §21080.3.2 (b)(1)-(2) and §21080.3.1 (b)(1)].

Based upon these considerations, significant cultural resources impacts are not expected from implementing the proposed project. Since no significant cultural resources impacts were identified for any of the issues, no mitigation measures are necessary or required.

VI. ENERGY.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Conflict with adopted energy conservation plans?	☐	☐	☐	☑
b) Result in the need for new or substantially altered power or natural gas utility systems?	☐	☐	☑	☐
c) Create any significant effects on local or regional energy supplies and on requirements for additional energy?	☐	☐	☑	☐
d) Create any significant effects on peak and base period demands for electricity and other forms of energy?	☐	☐	☑	☐
e) Comply with existing energy standards?	☐	☐	☐	☑

Significance Criteria

Impacts to energy and mineral resources will be considered significant if any of the following criteria are met:

- The project conflicts with adopted energy conservation plans or standards.
- The project results in substantial depletion of existing energy resource supplies.

- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
- The project uses non-renewable resources in a wasteful and/or inefficient manner.

Discussion

VI. a) & e) PR 1420.2 does not require any action which would result in any conflict with an adopted energy conservation plan or violation of any energy conservation standard. PR 1420.2 is not expected to conflict with any adopted energy conservation plans because existing facilities would be expected to continue implementing any existing energy conservation plans.

PR 1420.2 is not expected to cause new development and will only affect existing facilities. At this time, staff has no knowledge of new facilities. As a result, PR 1420.2 would not conflict with energy conservation plans, use non-renewable resources in a wasteful manner, or result in the need for new or substantially altered power or natural gas systems.

VI. b), c) & d. PR 1420.2 will increase the use of electricity from the installation of APCDs, negative air systems and total enclosures. Diesel fuel would be consumed by construction equipment. Gasoline fuel would be consumed by the construction workers vehicles and operational vehicles. The following sections evaluate the various forms of energy sources affected by the proposed project.

Construction-Related Impacts

During the construction phases, diesel and gasoline fuel will be consumed in portable construction equipment (e.g., pavers, mixers, generators and compressors) used to weld, cut, and grind metal structures and by construction workers' vehicles traveling to and from construction sites. To estimate "worst-case" energy impacts associated with the construction phases of the proposed project, the SCAQMD assumed that portable equipment used to weld, cut, and grind metal structures would be operated up to 220 hours in a year (4 hours per day for 55 days). The reader is referred to Appendix B for the assumptions used by the SCAQMD to estimate fuel usage associated with the implementation of the proposed rule.

To estimate construction workers' fuel usage per commute round trip, the SCAQMD assumed that workers' vehicles would get 20 miles to the gallon and would travel 40 miles round trip to and from the construction site in one day. Table 2-7 lists the projected energy impacts associated with the construction and installation at the two facilities at any given time.

Table 2-7 Total Projected Fuel Usage for Construction Activities

Fuel Type	Year 2012 Projected Basin Fuel Demand[a] (mmgal/yr)	Fuel Usage[b] (mmgal/yr)	Total % Above Baseline	Exceed Significance?
Diesel	524	0.0127	2.24 x 10^-3	No
Gasoline	5,589	0.0042	7.47 x10^-7	No

[a] Figures taken from Table 3.3-3 of the 2012 AQMP Final EIR

[b] Estimated peak fuel usage from the implementation of the proposed amendments. Diesel usage estimates are based on portable construction equipment operation. Gasoline usage estimates are derived from construction workers' vehicle daily trips to and from work.

The 2012 AQMP states that 524 million gallons of diesel and 5,589 million gallons gasoline are consumed per year in Los Angeles County. An additional 12,707 gallons of diesel consumed and 4176 gallons of gasoline consumed for the year of construction is not expected to have a significant adverse impact on fuel supplies.

Operational Energy Impacts

Electricity Use

Air monitors are expected to be powered by electricity service near where the air monitors are placed. The air monitors typically require 16 amps of service (six amps for the monitor and 10 amps for vacuum pumps), which would be approximately 0.00152 GW-h (3 monitors/facility x 12 facilities x 16 amps x 110 voltage x 24 hr)[7]. SCAQMD staff estimates there will be additional electricity usage for the new APC equipment and negative air pressure.

It was assumed that 4 additional blowers would be needed for the APCDs required under Compliance Plans and 12 additional blowers to create negative air pressure at the facilities. Electrical energy impacts associated with air monitors and ancillary equipment (e.g., fans, motors, etc.) used in conjunction with the HEPA filters and are not considered significant as shown in Table 2-8.

Table 2-8 PR 1420.2 Additional Electricity Consumption

Energy Use	Consumption (GW-h)
Air Monitors-36	0.00152
Blowers for APCD (100 bhp@ 0.001788 GW-h) x 4	0.7152
Blowers for negative air pressure (100 bhp@ 0.001788 GW-h) x12	2.1456
Total Use:	2.86
SCAQMD District Electrical Demand[1]	113,109
Total Impact % of Capacity	**0.0025**
Significant?	**No**

[1]AQMP 2012 TABLE 3.3-1 2011 Electricity Use GWh (Aggregated, includes self generation and renewables)

Diesel Use

One additional truck trip per day to dispose of additional hazardous material would use 20 gallons (200 miles ÷ 10 mpg). By assuming one truck trip per week, there will be 52 trucks/yr for all of the facilities. The year's total diesel use would be 1,040 gal/yr.

Sweeper Diesel Use

Of the thirteen facilities subject to PR 1420.2, two facilities currently sweep three times a day with mobile sweepers. Diesel use was estimated for the eleven extra sweeping events that would be required at the eleven remaining facilities, plus additional sweeping for the compliance plans. Diesel use was estimated assuming that sweepers would be nine feet wide, sweep over the entire outside area around the production site (i.e., not around administrative buildings) one time a day with two feet of overlap on the return path as the sweepers travel back and forth. Assuming a ten

[7] Power = (A x V)/1000= (16 amps x 110 voltage)/1000= 1.76 kW x 24 hr = 42.24 kW-hr per monitor.

mile per gallon of diesel fuel efficiency x 185 miles from sweeping, approximately 18.5 gallons of diesel would be consumed on a peak day and 4,810 gal/yr.

Aerial Lift Diesel Use

The proposed rule requires roof washings or vacuuming on either a quarterly or semi-annual basis. The facilities would need to use aerial lifts to reach the roofs. PR 1420.2 would require roof cleaning events for the applicable facilities (potential of 13 roof cleaning events per year). It is unlikely that all the facilities would roof clean on the same day. Therefore, only one additional aerial lift diesel-fueled use is expected on any given day. For this analysis, the aerial lifts would be used six hours per day. Diesel fuel use was estimated using a 1.4 gallon per hour fuel consumption from ARB's OFFROAD2007 database. The diesel fuel use from aerial lifts would be 8.4 gallons per day. On a yearly basis, worse-case would be quarterly cleanings for all 13 facilities would consume 439 gal/yr (8.4 gal/day*4 day/yr*13 facilities).

Roof cleaning may be contracted out, so it is assumed that aerial lifts are delivered. A single heavy-duty diesel truck round trip of 40 miles per day is expected to be required on a peak day. Assuming a ten mile per gallon of diesel fuel efficiency approximately 8 gallons of diesel would be consumed on a peak day. On a yearly basis, worse-case would be quarterly deliveries for all 13 facilities would consume 416 gal/yr (8 gal/day*4 day/yr*13 facilities).

Gasoline Use

Source Testing

Additional source testing would require additional gasoline-fueled vehicle trips to the facilities on the day of sources testing. Based on a 20 mile round trip, and a 10 mile per gallon fuel efficiency, approximately 2 gallons of gasoline would be used on the source test day; annually for all 13 facilities would use 26 gal/yr.

Air Monitoring

Two trips per day to visit air monitors, based on average of 80 miles round trip and a 16 mile per gallon fuel efficiency, would consume approximately 5 gallons of gasoline on a peak day; annually for all 13 facilities would use 1,300 gal/yr (5 gal/day x 5 days/week x 52 weeks).

Table 2-9 Annual Total Projected Fuel Usage for Operational Activities

Type of Equipment	Diesel (gal/yr)	Gasoline (gal/yr)
Haul Trucks	1,040	N/A
Sweeper Vehicles	4,810	N/A
Aerial Lifts	855	N/A
Source Testing Vehicle	N/A	13
Air Monitoring Vehicle	N/A	1,300
Total:	6,705	1,313
Year 2012 Projected Basin Fuel Demand (gal/yr) [a]	524,000,000	5,589,000,000
Total % Above Baseline	0.0012	2.34 x 10-5

Exceed Significance?	**No**	**No**

[a] Figures taken from Table 3.3-3 of the 2012 AQMP Final EIR

The 2012 AQMP states that 524 million gallons of diesel and 5,589 million gallons gasoline are consumed per year in Los Angeles County. An additional 6,705 gallons of diesel consumed and 1,313 gallons of gasoline consumed per year of operation is not expected to have a significant adverse impact on fuel supplies.

Natural Gas Impacts

No new natural gas impacts are expected.

Therefore, based on the foregoing analysis, the SCAQMD has determined that operational-related activities associated with the implementation of the proposed amendments is necessary and will not use energy in a wasteful manner; will not result in substantial depletion of existing energy resource supplies; nor will significant amounts of fuel be needed when compared to existing supplies. Thus, there are no significant adverse energy/mineral resources impacts associated with the implementation of PR 1420.2.

Based upon these considerations, significant adverse energy impacts are not anticipated. Therefore, no further analysis or mitigation measures are required or necessary.

VII. GEOLOGY AND SOILS.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☑
• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☐	☑
• Strong seismic ground shaking?	☐	☐	☐	☑
• Seismic–related ground failure, including liquefaction?	☐	☐	☐	☑
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☑
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and	☐	☐	☐	☑

	potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☑
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☑

Significance Criteria

Impacts on the geological environment will be considered significant if any of the following criteria apply:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.
- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

Discussion

VII. a) The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Ambient air monitors may be placed off-site in the surrounding industrial area. All construction activities would occur on-site at the existing facilities.

Since the proposed project would result in construction activities at existing facilities located in developed industrial settings, minor site preparation is anticipated that could adversely affect geophysical conditions in the jurisdiction of the SCAQMD. PR 1420.2 does not cause the new facility construction. Southern California is an area of known seismic activity and the construction of total enclosures and installation of APCDs at existing facilities to comply with PR 1420.2 is expected to conform to the Uniform Building Code and all other applicable state and local building codes. As part of the issuance of building permits, local jurisdictions are responsible for assuring that the Uniform Building Code is adhered to and can conduct inspections to ensure compliance. The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represents the foundation condition at the site. The Uniform Building Code requirements also consider liquefaction potential and establish stringent requirements for building foundations in areas potentially subject to

liquefaction. Thus, the proposed project would not alter the exposure of people or property to geological hazards such as earthquakes, landslides, mudslides, ground failure, or other natural hazards. As a result, substantial exposure of people or structures to the risk of loss, injury, or death involving the rupture of an earthquake fault, seismic ground shaking, ground failure or landslides is not anticipated.

VII. b) Currently, 11 facilities are completely paved. As part of the housekeeping requirements in PR 1420.2, the facilities will be required to pave, concrete, asphalt, or otherwise stabilize with dust suppressants all facility grounds. Therefore, PR 1420.2 will reduce the potential for the loss of topsoil and soil erosion at the two facilities which will be paved.

VII. c) Since the proposed project will affect existing facilities, it is expected that the soil types present at the facilities will not be made further susceptible to expansion or liquefaction. Furthermore, subsidence is not anticipated to be a problem since only minor grading, or filling activities are expected occur at facilities. Additionally, the affected areas are not envisioned to be prone to new landslide impacts or have unique geologic features since the affected equipment units are located at existing facilities in industrial areas.

VII. d) & e) Since PR 1420.2 would affect existing facilities located in industrial zones, it is expected that people or property will not be exposed to new impacts related to expansive soils or soils incapable of supporting water disposal. Further, some facilities have some degree of existing wastewater treatment systems that will continue to be used and are expected to be unaffected by the proposed project. Sewer systems are available to handle wastewater produced and treated by each affected facility. Each existing facility affected by the proposed project does not require installation of septic tanks or alternative wastewater disposal systems. As a result, the proposed project will not require facility operators to utilize septic systems or alternative wastewater disposal systems. Thus, implementation of the proposed project will not adversely affect soils associated with a septic system or alternative wastewater disposal system.

Based upon these considerations, significant geology and soils impacts are not expected from the implementation of the proposed project. Since no significant geology and soils impacts were identified for any of the issues, no mitigation measures are necessary or required.

VIII. HAZARDS AND HAZARDOUS MATERIALS.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, and disposal of hazardous materials?	☐	☐	☑	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset conditions involving	☐	☐	☑	☐

	the release of hazardous materials into the environment?				
c)	Emit hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☑	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment?	☐	☐	☑	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☑	☐
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☑	☐
g)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☑
h)	Significantly increased fire hazard in areas with flammable materials?	☐	☐	☑	☐

Significance Criteria

Impacts associated with hazards will be considered significant if any of the following occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

Discussion

VIII. a) & b) The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity

requirements, such as wet washing, vacuuming, and stabilizing dirt areas. PR 1420.2 is expected to reduce the amount of fugitive lead that is currently being emitted into the atmosphere.

PR 1420.2 may increase the amount of captured lead and subsequently an increase in the amount of lead to be disposed. The additional captured lead emissions through additional housekeeping, air pollution control, building improvement would reduce the lead that is currently emitted into the air. Thus, the capture of these lead emissions would reduce lead exposure to the public and the environment.

Spent lead is already properly transported for treatment offsite and/or out of the Basin. The additional lead captured by new air pollution control systems would be hauled off to a hazardous landfill, which is what the facilities are currently doing. Hence, no new significant hazards are expected to the public or environment through its routine transport, use and disposal.

Therefore, PR 1420.2 is not expected to create a significant hazard to the public or environment through reasonably foreseeable upset conditions involving the release of hazardous materials into the environment.

VIII. c) One facility is located within a quarter mile of a school. However, it is expected that the one facility near the school are taking the appropriate and required actions to ensure proper handling of hazardous or acutely hazardous materials, substances or wastes within one-quarter mile of the existing school.

VIII. d) Government Code §65962.5 refers to hazardous waste handling practices at facilities subject to the Resources Conservation and Recovery Act (RCRA). PR 1420.2 would affect six facilities that are on lists of California Department of Toxics Substances Control hazardous waste facilities per Government Code §65962.5. However, compliance with PR 1420.2 is expected to enhance current hazardous waste handling practices by requiring enclosures or use of closed containers to store or transport lead containing material. Hazardous wastes from the existing facilities are required to be managed in accordance with applicable federal, state, and local rules and regulations. Therefore, compliance with PR 1420.2 would not create a significant hazard to the public or environment.

VIII. e) PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Two of the facilities are located within two miles of a public airport. Senior Aerospace is located approximately 0.6 miles east of the Burbank Airport but is not located within the airport influence area. Teledyne Battery Products is located approximately 1.7 miles southeast of the San Bernardino International Airport but is not within the airport safety review area. ~~However, the installation of enclosures or the addition of new APCDs would be consistent with any applicable airport land use plan.~~ Therefore, PR 1420.2 is not expected to result in a safety hazard for people residing or working in the project area even within the vicinity of an airport.

VIII. f) Emergency response plans are typically prepared in coordination with the local city or county emergency plans to ensure the safety of the public (surrounding local communities), and the facility employees as well. The proposed project would not impair implementation of, or physically interfere with any adopted emergency response plan or emergency evacuation plan. It

is expected that the existing facilities already have an emergency response plan in place, where required. The addition of air pollution control equipment or total enclosures may require a modification of the existing emergency response plan at the facilities. However, no environmental impacts are expected from the emergency plan's modifications. Thus, PR 1420.2 is not expected to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

VIII. g) The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas; therefore, there is no risk from wildland fires.

VIII. h) The Uniform Fire Code and Uniform Building Code set standards intended to minimize risks from flammable or otherwise hazardous materials. Local jurisdictions are required to adopt the uniform codes or comparable regulations. Local fire agencies require permits for the use or storage of hazardous materials and permit modifications for proposed increases in their use. Permit conditions depend on the type and quantity of the hazardous materials at the facility. Permit conditions may include, but are not limited to, specifications for sprinkler systems, electrical systems, ventilation, and containment. The fire departments make annual business inspections to ensure compliance with permit conditions and other appropriate regulations. Further, businesses are required to report increases in the storage or use of flammable and otherwise hazardous materials to local fire departments. Local fire departments ensure that adequate permit conditions are in place to protect against potential risk of upset. The proposed project would not change the existing requirements and permit conditions.

The proposed project would also not increase the existing risk of fire hazards in areas with flammable brush, grass, or trees. No substantial or native vegetation typically exists on or near the facilities (specifically because such areas could allow the accumulation of fugitive lead dust), the existing rule requires the encapsulating (paving or asphalting) of all facility grounds. So the proposed project is not expected to expose people or structures to wild fires. Therefore, no significant increase in fire hazards is expected at the facilities associated with the proposed project.

Based upon these considerations, significant adverse hazards and hazardous materials impacts are not anticipated. Therefore, no further analysis or mitigation measures are required or necessary.

IX. HYDROLOGY AND WATER QUALITY.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards, waste discharge requirements, exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, or otherwise substantially degrade water quality?	☐	☐	☑	☐

b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☑	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in substantial erosion or siltation on- or off-site or flooding on- or off-site?	☐	☐	☑	☐
d)	Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☑	☐
e)	Place housing or other structures within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, which would impede or redirect flood flows?	☐	☐	☐	☑
f)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑
g)	Require or result in the construction of new water or wastewater treatment facilities or new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
h)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☑	☐

i)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☑	☐

Significance Criteria
Potential impacts on water resources will be considered significant if any of the following criteria apply:

Water Demand:
- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.
- The project increases demand for total water by more than five million gallons per day.

Water Quality:
- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

Discussion
As identified in Table 2-1, some facilities with wastewater treatment systems have the potential to increase water demand in the district to comply with the housekeeping requirements. The facilities must treat process water and storm water before it is discharged to the publicly owned treatment works (POTWs). The discharged water must comply with existing lead water quality standards. The following sections discuss the water impacts in detail.

Using the assumption from facilities that already comply with similar housekeeping requirements, the facilities may use an additional 82,372 gallons/day and an additional 82,372 for those facilities that require a compliance plan (see Appendix B for details).

IX. a) PR 1420.2 would not alter any existing wastewater treatment requirements of the POTW and Regional Water Quality Control Board or otherwise substantially degrade water quality that the requirements are meant to protect. It is assumed that the facilities that choose to use water have wastewater discharge permits and must comply with the affluent limits. Discharge

concentrations are currently and would continue to be limited by the Industrial Wastewater Discharge Permit.[8]

IX. b) PR 1420.2 would not require the use of groundwater. The facilities use potable water that is supplied by their local utility company and then directed to the sanitary sewer. Therefore, it would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge.

IX. c) & d) While most of the facilities affected by PR 1420.2 are completely paved, two of the facilities will require paving of approximately 20.6 acres. The increased run-off from this paved area will be collected into the existing storm drain system and no physical changes are expected to alter the existing drainage pattern, storm water collection or wastewater treatment of their facility.

Therefore, PR 1420.2 is not expected to have significant adverse effects on any existing drainage patterns, or cause an increase rate or amount of surface runoff water that would exceed the capacity of the facilities' existing or planned storm water drainage systems.

IX. e) & f) The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Ambient air monitors may be placed off-site in the surrounding industrial area. All construction activities would occur on-site at the existing facilities. Therefore, PR 1420.2 is not expected to result in placing housing or structures in 100-year flood hazard areas that could create new flood hazards or create significant adverse risk impacts from flooding as a result of failure of a levee or dam or inundation by seiches, tsunamis, or mudflows.

IX. g) The potential increase in wastewater volume generated by the proposed amendments is well within the existing and projected overall capacity of POTWs in the district. Therefore, wastewater impacts associated with the disposal of waterborne clean-up waste material generated from implementing the proposed amendments are not expected to significantly adversely affect POTW operations.

IX. h) Using the assumption from facilities that already comply with similar housekeeping requirements[9] and compliance plan activities, the 13 facilities may use an additional 82,372 gallons/day and 5 facilities may use an additional 82,372 gallons/day for their Compliance Plans (see Appendix B for details).

[8] According to Los Angeles County Sanitation District- (June 28, 2013).

[9] Housekeeping operations include street sweeping, watering, and washing the facility.

Table 2-10: PR 1420.2 Additional Water Consumption

Water Application	Additional Water Usage (gal/day)
Housekeeping Measures	82,372
Compliance Plan Usage	82,372
Total:	164,744
Significance Threshold:	262,820
Exceed Significance Threshold?	**No**

Therefore, the total additional use would be 164,372 gal/day of water, which is less than the significance threshold of 262,820 gal/day of potable water and total water demand of more than five million gallons per day. Therefore, sufficient water supplies are expected to be available to serve the project from existing entitlements and resources without the need for new or expanded entitlements. Therefore, PR 1420.2 is not expected to be significant for operational water demand.

IX. i) Staff estimates the additional water usage from the facilities' housekeeping activities and compliance plan activities are expected to be 82,372 gal/year from facilities that are capable of handling the waste water from these activities. The facilities that do not have a wastewater treatment system may choose to vacuum/sweep their facility.

If the proposed project does trigger a facilities' wastewater discharge rate, the POTW may deem that a secondary peak permit could be required to allow the discharge during non-peak hours. Significance thresholds for industrial wastewater discharge are determined by its impact to the affected sewer system.

Therefore, based on the above analysis, there would be adequate capacity to serve the proposed project's projected demand addition to the provider's existing commitments.

Based upon these considerations, significant adverse hydrology and water quality impacts are not anticipated and, therefore, no further analysis is required or necessary.

X. LAND USE AND PLANNING.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☑
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the	☐	☐	☐	☑

general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Significance Criteria
Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by local jurisdictions.

Discussion
X. a) The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Therefore, PR 1420.2 is not expected to physically divide an established community.

X. b) There are no provisions in PR 1420.2 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments and no land use or planning requirements will be altered by PR 1420.2.

Based upon these considerations, significant land use planning impacts are not expected from the implementation of the proposed project. Further, since no significant impacts were identified for any of these issues, no mitigation measures are necessary or required.

XI. MINERAL RESOURCES.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☑

Significance Criteria
Project-related impacts on mineral resources will be considered significant if any of the following conditions are met:
- The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

- The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Discussion

XI. a) & b) The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. There are no provisions in PR 1420.2 that would result in the loss of availability of a known mineral resource of value to the region and the residents of the state such as aggregate, coal, clay, shale, et cetera, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Based upon these considerations, significant mineral resource impacts are not expected from the implementation of the proposed project. Since no significant mineral resource impacts were identified for any of these issues, no mitigation measures are necessary or required.

XII. NOISE.

Would the project result in:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of permanent noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☑	☐
c) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐
d) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

Significance Criteria

Impacts on noise will be considered significant if:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Discussion

XII. a), b), & c) The facilities affected by PR1420.2 are currently located in urbanized industrial or commercial areas. The existing noise environment at each of the facilities is typically dominated by noise from existing equipment onsite, vehicular traffic around the facilities, and trucks entering and exiting facility premises. The majority of the facilities are completely paved and large potentially noise intensive construction equipment would not be needed to build enclosures and install control equipment. For the two sites which have surfaces to be paved, the use of large construction equipment is also not anticipated due to the on-site space limitations. Since the facilities are located in industrial areas, which have a higher background noise level when compared to other areas, the noise generated during construction will likely be indistinguishable from the background noise levels.

PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. The construction of enclosures would decrease the noise currently being generated on-site. Pollution control devices are not typically equipment that generate substantial amounts of noise. Due to the attenuation rate of noise based on distance from the source, it is unlikely that noise levels exceeding local noise ordinances would occur beyond a facility's boundaries. Furthermore, the Occupational Safety and Health Administration (OSHA) and California-OSHA (Cal/OSHA) have established noise standards to protect worker health. Furthermore, compliance with local noise ordinances limiting the hours of construction will reduce the temporary noise impacts from construction to sensitive receptors. These potential noise increases are expected to be within the allowable noise levels established by the local noise ordinances for industrial areas, and thus are expected to be less than significant.

XII. d) Two of the facilities are located within two miles of a public airport. Senior Aerospace is located approximately 0.6 miles east of the Burbank Airport but is not located within the airport influence area. Teledyne Battery Products is located approximately 1.7 miles southeast of the San Bernardino International Airport but is not within the airport safety review area. ~~It is not known if the existing facilities are located within an airport land use plan, or within two miles of a public airport.~~ However, compliance with PR 1420.2 would not expose people residing or working in the project area to excessive noise levels.

Based upon these considerations, significant noise impacts are not expected from the implementation of the proposed project. Further, since no significant impacts were identified for any of these issues, no mitigation measures are necessary or required.

XIII. POPULATION AND HOUSING.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Induce substantial growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	☐	☐	☐	☑
b) Displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

Significance Criteria

Impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:

- The demand for temporary or permanent housing exceeds the existing supply.
- The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.

Discussion

XIII. a) PR 1420.2 would require the installation of pollution control equipment, require the placement of ambient air quality monitors, construction of total enclosures, additional APCDs, implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. The facilities may need 1 new employee each to comply with the housekeeping and maintenance requirements in PR 1420.2. The facilities may also need temporary construction workers during the installation of the total enclosure and the pollution control equipment. It is expected that new permanent workers and any construction workers would come from the local labor pool in Southern California. Any new pollution control equipment is expected to be operated by qualified existing employees at the facilities. The proposed project is not anticipated to generate any significant effects, either direct or indirect, on the district's population or population distribution. Human population within the jurisdiction of the SCAQMD is anticipated to grow regardless of implementing PR 1420.2. As such, PR 1420.2 would not result in changes in population densities or induce significant growth in population.

XIII. b) Because PR 1420.2 affects operations at existing lead melting facilities, PR 1420.2 is not expected to result in the creation of any industry that would affect population growth, directly or indirectly, induce the construction of single- or multiple-family units, or require the displacement of people elsewhere.

Based upon these considerations, significant adverse population and housing impacts are not anticipated. Therefore, no further analysis or mitigation measures are required or necessary.

XIV. PUBLIC SERVICES.

Would the proposal result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:	**Potentially Significant Impact**	**Less Than Significant With Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Fire protection?	☐	☐	☐	☑
b) Police protection?	☐	☐	☐	☑
c) Schools?	☐	☐	☐	☑
d) Other public facilities?	☐	☐	☐	☑

Significance Criteria

Impacts on public services will be considered significant if the project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives.

Discussion

XIV. a) & b) PR 1420.2 would require the installation of pollution control equipment, require the placement of ambient air quality monitors, construction of total enclosures, implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas, all the while continuing current operations at existing facilities. The proposed project may result in a greater demand for catalyst, scrubbing agents and other chemicals, which will need to be transported to the facilities to support the function of toxic emissions control equipment and stored onsite prior to use. As first responders to emergency situations, police and fire departments may assist local hazmat teams with containing hazardous materials, putting out fires, and controlling crowds to reduce public exposure to releases of hazardous materials. In addition, emergency or rescue vehicles operated by local, state, and federal law enforcement agencies, police and sheriff departments, fire departments, hospitals, medical or paramedic facilities, that are used for responding to situations where potential threats to life or property exist, including, but not limited to fire, ambulance calls, or life-saving calls, may be needed in the event of an accidental release or other emergency. While the specific nature or degree of such impacts is currently unknown, the facilities have existing emergency response plans so any changes to those plans would not be expected to dramatically alter how emergency personnel would respond to an accidental release or other emergency. In addition, due the low probability and unpredictable nature of accidental releases, the proposed project is not expected to increase the need or demand for additional public services (e.g., fire and police departments and related emergency services, et cetera) above current levels.

XIV. c) As noted in the previous "Population and Housing" discussion, the proposed project is not expected to induce population growth in any way because the local labor pool (e.g., workforce) is expected to be sufficient to accommodate any construction activities that may be necessary at facilities. The additional employee anticipated to be needed to implement the housekeeping and maintenance provisions at each facility will also likely be drawn from the local labor pool. Therefore, there will be no increase in local population and thus no impacts are expected to local schools or parks.

XIV. d) PR 1420.2 would require the installation of pollution control equipment, require the placement of ambient air quality monitors, construction of total enclosures, implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Besides permitting the equipment or altering permit conditions by the SCAQMD, there is no need for other types of government services. The proposed project would not result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives. There will be no increase in population and, therefore, no need for physically altered government facilities.

Based upon these considerations, significant public services impacts are not expected from the implementation of the proposed project. Since no significant public services impacts were identified for any of these issues, no mitigation measures are necessary or required.

XV. RECREATION.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment or recreational services?	☐	☐	☐	☑

Significance Criteria

Impacts to recreation will be considered significant if:

- The project results in an increased demand for neighborhood or regional parks or other recreational facilities.
- The project adversely affects existing recreational opportunities.

Discussion

XV. a) & b) As discussed earlier under the topic of "Population and Housing," there are no provisions in P 1420.2 that would affect or increase the demand for or use of existing neighborhood and regional parks or other recreational facilities or require the construction of new or the expansion of existing recreational facilities that might have an adverse physical effects on the environment because the proposed project will not directly or indirectly increase or redistribute population.

Based upon these considerations, significant recreation impacts are not expected from the implementation of PR 1420.2. Since no significant recreation impacts were identified, no mitigation measures are necessary or required.

XVI. SOLID/HAZARDOUS WASTE.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☑	☐
b) Comply with federal, state, and local statutes and regulations related to solid and hazardous waste?	☐	☐	☑	☐

Significance Criteria

The proposed project impacts on solid/hazardous waste will be considered significant if the following occurs:

- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

XVI.a) Landfills are permitted by the local enforcement agencies with concurrence from the California Department of Resources Recycling and Recovery (CalRecycle). Local agencies establish the maximum amount of solid waste which can be received by a landfill each day and the operational life of a landfill.

Construction

PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, implementation of housekeeping and maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. To comply with the proposed rule compliance plan, additional air pollution control equipment may be required. No demolition is expected from compliance with PR 1420.2; therefore, no solid waste will be generated during construction.

Operation

As noted in Table 2-11, operation of control equipment such as filters could have solid waste impacts.

This analysis of solid waste impacts assumes that safety and disposal procedures required by various agencies in the state of California will provide reasonable precautions against the improper disposal of hazardous wastes in a municipal waste landfill. Because of state and federal requirements, some facilities are attempting to reduce or minimize the generation of solid and hazardous wastes by incorporating source reduction technologies to reduce the volume or toxicity of wastes generated, including improving operating procedures, using less hazardous or nonhazardous substitute materials, and upgrading or replacing inefficient processes.

Filtration

Filtration includes usage of baghouse, HEPA filters. Mixed metal compounds could be captured with the use of filtration controls at a 99.9 percent control rate.

Currently, the facilities properly send their hazardous materials to their local melter or to Resource Conservation and Recovery Act (RCRA) landfill. It is estimated that the proposed rule's requirements of additional filters and APCDs may generate 5760 cubic yards/yr (8064 tons/yr) of hazardous waste.

The nearest RCRA landfills are the Republic Services and US Ecology. The Republic Services La Paz County Landfill has approximately 20,000,000 cubic yards of capacity remaining for the 50 year life expectancy (400,000 cubic yards per year). The US Ecology, Inc., facility in Beatty, Nevada has approximately 638,858 cubic yards of capacity remaining for the three year life expectancy (212,952 cubic yards per year. US Ecology, Inc., receives approximately 18,000 cubic yards per year of waste, so 194,952 cubic yards per year (212,952 cubic yard/year – 18,000 cubic yard/year) would be available

With an annual disposal of 5,760 cubic yards of filters, spent lead, and metals, the total solid/hazardous waste impact from the proposed rule are 1.44 percent and 2.95 percent of the available Republic Services and US Ecology landfill capacity, respectively.

The amount of hazardous waste generated by the proposed project will not require new RCRA landfills and is not considered to be a substantial impact to existing landfill capacity. Therefore, potential hazardous waste impacts are not considered significant.

Table 2-11 Total Solid Waste Generation

Control Type	Potential # APC Devices	Annual Waste per Control Device (cubic yards)	Total Waste Generated (cubic yards/year)
Filtration	9	640	5,760
TOTAL WASTE GENERATED FROM PROPOSED PROJECT			**5,760 cubic yards/yr or 15.7cubic yards/day**

All new enclosures and control equipment are expected to be installed within the currently developed footprint at already existing facilities. Because the newly installed control equipment has a finite lifetime (approximately 20 years), it will ultimately have to be replaced at the end of

its useful life. Affected equipment may be refurbished and used elsewhere or the scrap metal or other materials from replaced units has economic value and is expected to be recycled, so any solid or hazardous waste impacts specifically associated with the proposed project are expected to be minor. As a result, no substantial change in the amount or character of solid or hazardous waste streams is expected to occur.

XVI.b) It is assumed that facility operators at the facilities comply with all applicable local, state, or federal waste disposal regulations. Implementation of PR 1420.2 is not expected to interfere with any affected facility's ability to comply with applicable local, state, or federal waste disposal regulations. Since no significant solid/hazardous waste impacts were identified, no mitigation measures are required or necessary.

Based upon these considerations, significant adverse solid/hazardous waste impacts are not anticipated. Therefore, no further analysis or mitigation measures are required or necessary.

XVII. TRANSPORTATION/TRAFFIC.

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☑
b) Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☑
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑

d)	Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☐	☑
e)	Result in inadequate emergency access?	☐	☐	☐	☑
f)	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☑

Significance Criteria

Impacts on transportation/traffic will be considered significant if any of the following criteria apply:

- Peak period levels on major arterials are disrupted to a point where level of service (LOS) is reduced to D, E or F for more than one month.
- An intersection's volume to capacity ratio increase by 0.02 (two percent) or more when the LOS is already D, E or F.
- A major roadway is closed to all through traffic, and no alternate route is available.
- The project conflicts with applicable policies, plans or programs establishing measures of effectiveness, thereby decreasing the performance or safety of any mode of transportation.
- There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- The demand for parking facilities is substantially increased.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.
- The need for more than 350 employees
- An increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round trips per day
- Increase customer traffic by more than 700 visits per day.

Discussion

XVII. a) & b)

Construction

As noted in the "Discussion" sections of the other environmental topics, compliance with PR 1420.2 may require construction activities for control equipment. It has been estimated to need 10 delivery and/or disposal trucks and 9 construction worker trips on a peak construction day (during the total enclosure phases). Construction onsite is not expected to affect on-site traffic or parking. The additional 10 construction trips are less than the significance threshold of 350 round trips, therefore construction activities are not expected to cause a significance adverse impact to traffic or transportation.

Operation

Waste products may be generated from the use of control technologies. Waste could include dry solids from filtration controls. The majority of wastes will likely need to be transported to disposal or recycling facilities.

For a "worst case" analysis, SCAQMD staff assumed that for the four facilities required to install an additional control device to comply with PR 1420.2 compliance plan, these facilities at any given day would generate an additional 2 truck trips per day in the entire district additional for delivery and disposal. Overall, there would be an additional 2 worker trips for collecting samples. These potential truck trips are not expected to significantly adversely affect circulation patterns on local roadways or the level of service at intersections near facilities. In addition, this volume of additional daily truck traffic is negligible over the entire area of the district. Finally, the number of waste disposal transport trips substantially overestimates the number of anticipated trips because owners/operators at facilities may use other types of add-on control equipment that do not generate wastes and the actual volume of wastes is expected to much less than estimated here, resulting in fewer truck trips per day.

Table 2-12 Estimation of Vehicle Trips

Phase	Worker Vehicles	Delivery/Disposal Trucks
Construction	9 per day	10 per day[a]
Operation	2 per day	2 per day[b]

[a] A maximum of 9 worker vehicles and 10 delivery/disposal trucks per day were estimated from two facilities peak construction

[b] A maximum of 2 worker trips for collecting samples. A maximum of 2 delivery/disposal trucks can travel in the District for the 4 Facilities

XVII. c) Two of the facilities are located within two miles of a public airport. Senior Aerospace is located approximately 0.6 miles east of the Burbank Airport but is not located within the airport influence area. Teledyne Battery Products is located approximately 1.7 miles southeast of the San Bernardino International Airport but is not within the airport safety review area. ~~It is not known whether the location of existing facilities could be located at sites within an airport land use plan, or within two miles of a public airport.~~ ~~However~~Additionally, any actions taken by the facilities to comply with PR 1420.2 is not expected to change the air traffic patterns or change in location that results in substantial safety risks.

XVII. d) & e) The proposed project does involve construction of roadways, but all of the roads would be on-site. Thus, there will no change to current public roadway designs that could increase traffic hazards. Thus, the proposed project is not expected to substantially increase traffic hazards or create incompatible uses at or adjacent to the facilities. Emergency access at the facilities is not expected to be impacted by the proposed project. Further, each affected facility is expected to continue to maintain their existing emergency access. Since PR 1420.2 involves short-term construction activities and involves minor delivery/haul truck trips (street sweepings are on-site), the proposed project is not expected to alter the existing long-term circulation patterns. The proposed project is not expected to require a modification to circulation, thus, no long-term impacts on the traffic circulation system are expected to occur.

XVII. f) The facilities would still be expected to comply with, and not interfere with adopted policies, plans, or programs supporting alternative transportation (e.g. bicycles or buses). Since

all of the PR 1420.2s' compliance activities would occur on-site, PR 1420.2 would not hinder compliance with any applicable alternative transportation plans or policies.

Based upon these considerations, significant adverse transportation/traffic impacts are not anticipated. Therefore, no further analysis or mitigation measures are required or necessary.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☑
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☐	☑	☐
c)	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☑	☐

DISCUSSION

XVIII. a) As discussed in the "Biological Resources" section, PR 1420.2 is not expected to significantly adversely affect plant or animal species or the habitat on which they rely because any construction and operational activities associated with the facilities are expected to occur entirely within the boundaries of existing developed facilities in areas that have been greatly disturbed and that currently do not support any species of concern or the habitat on which they rely. PR 1420.2

is not expected to reduce or eliminate any plant or animal species or destroy prehistoric records of the past.

XVIII. b) Based on the foregoing analyses, PR 1420.2 would not result in significant adverse project-specific environmental impacts. Potential adverse impacts from implementing PR 1420.2 would not be "cumulatively considerable" as defined by CEQA Guidelines §15064(h)(1) for any environmental topic because there are no, or only minor incremental project-specific impacts that were concluded to be less than significant. Per CEQA Guidelines §15064(h)(4), the mere existing of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulative considerable. SCAQMD cumulative significant thresholds are the same as project-specific significance thresholds.

This approach was upheld by the Court in *Citizens for Responsible Equitable Environmental Development v. City of Chula Vista* (2011) 197 Cal. App. 4th 327, 334. The Court determined that where it can be found that a project did not exceed the South Coast Air Quality Management District's established air quality significance thresholds, the City of Chula Vista properly concluded that the project would not cause a significant environmental effect, nor result in a cumulatively considerable increase in these pollutants. The court found this determination to be consistent with CEQA Guidelines §15064.7, stating, "The lead agency may rely on a threshold of significance standard to determine whether a project will cause a significant environmental effect." The court found that, "Although the project will contribute additional air pollutants to an existing nonattainment area, these increases are below the significance criteria…" "Thus, we conclude that no fair argument exists that the Project will cause a significant unavoidable cumulative contribution to an air quality impact." As in *Chula Vista*, here the District has demonstrated, when using accurate and appropriate data and assumptions, that the project will not exceed the established South Coast Air Quality Management District significance thresholds. See also, *Rialto Citizens for Responsible Growth v. City of Rialto* (2012) 208 Cal. App. 4th 899. Here again the court upheld the South Coast Air Quality Management District's approach to utilizing the established air quality significance thresholds to determine whether the impacts of a project would be cumulatively considerable. Thus, it may be concluded that the Project will not cause a significant unavoidable cumulative contribution to an air quality impact.

Therefore, there is no potential for significant adverse cumulative or cumulatively considerable impacts to be generated by the proposed project for any environmental topic.

XVIII. c) Based on the foregoing analyses, PR 1420.2 is not expected to cause adverse effects on human beings for any environmental topic because the air quality impacts were determined to be less than the significance thresholds (See Section III-AQ), the energy demand, water demand and solid waste disposal can be met utilizing existing services (See Section VI-Energy, Section IX-Hydrology and Section XVI-Solid/Hazardous Waste) and the aesthetics, noise, hazards and public services will not be significantly impacted (See Section I-Aesthetics, Section VII-Hazards, Section XII-Noise, and Section XIV-Public Services).

As previously discussed in environmental topics I through XVIII, the proposed project has no potential to cause significant adverse environmental effects. Therefore, no further analysis or mitigation measures are required or necessary.

APPENDICES

APPENDIX A

PROPOSED RULE 1420.2

In order to save space and avoid repetition, please refer to the latest version of Proposed Rule 1420.2 located in the October 2, 2015 Governing Board Package. The version of Proposed Rule 1420.2 that was circulated with the Draft EA released on July 17, 2015 for a 32-day public review and comment period ending August 18, 2015 and the Revised Draft EA released on July 21, 2015 for a 30-day public review and comment period ending August 19, 2015 was "PR1420.2b" dated June 12, 2015.

Original hard copies of the Draft EA and Revised Draft EA, which include the draft version of the proposed rule listed above, can be obtained through the SCAQMD Public Information Center at the Diamond Bar headquarters or by calling (909) 396-2039.

APPENDIX B

ASSUMPTIONS AND CALCULATIONS

Table B-1
Paving Emissions

Asphalt Paving of Roads		
Worse-Case:	**20 acres**	
Construction Schedule	**20**	**days[a]**

Equipment Type[a]	**No. of Equipment**	**hr/day**	**Crew Size**
Pavers	1	7.0	10
Cement and Mortar Mixers	4	6.0	
Rollers	1	7.0	
Tractors/Loaders/Backhoes	1	7.0	

Construction Equipment Combustion Emission Factors

	CO	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**	**CO2**	**CH4**	**N2O**
Equipment Type[b]	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Pavers	0.526	0.810	0.056	0.052	0.143	0.001	78	0.013	0.000
Cement and Mortar Mixers	0.042	0.055	0.002	0.002	0.009	0.000	7	0.001	0.000
Rollers	0.401	0.616	0.042	0.039	0.091	0.001	67	0.008	0.000
Tractors/Loaders/Backhoes	0.374	0.498	0.034	0.031	0.073	0.001	67	0.007	0.000

Construction Vehicle (Mobile Source) Emission Factors[c]

	CO	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**	**CO2**	**CH4**	**N2O**
	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile
Automobile	4.12E-03	3.41E-04	1.04E-04	4.41E-05	4.50E-04	8.22E-06	0.73	2.01E-05	4.83E-06
Heavy-Duty Truck	3.98E-03	1.81E-02	5.40E-04	3.85E-04	7.84E-04	3.64E-05	3.76	3.64E-05	2.56E-04

Number of Trips and Trip Length

Vehicle	**No. of One-Way Trips/Day**	**One-Way Trip Length (miles)**
Worker	10	20
Delivery Truck[d]	3	40

Table B-1 (Continued)
Paving Emissions

Incremental Increase in Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Construction Emissions (lb/day)

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2	CH4	N2O
Equipment Type	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Pavers	3.68	5.67	0.39	0.36	0.1	0.00	51	0.01	0.00
Cement and Mortar Mixers	9.63	14.78	1.01	0.93	0.6	0.01	469	0.06	0.00
Rollers	0.29	0.39	0.02	0.02	0.0	0.00	0	0.00	0.00
Tractors/Loaders/Backhoes	2.62	3.48	0.24	0.22	0.0	0.00	0	0.00	0.00
Total	**16**	**24**	**1.66**	**1.52**	**0.70**	**0.01**	**520**	**0.06**	**0.00**

Incremental Increase in Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2	CH4	N2O
Vehicle	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Worker	1.649	0.137	0.0415	0.0177	0.1801	0.0033	291.3421	0.0080	0.0019
Delivery	0.956	4.346	0.1297	0.0923	0.1882	0.0087	901.2773	0.0087	0.0615
Total	**2.604**	**4.482**	**0.1712**	**0.1100**	**0.3683**	**0.0120**	**1192.6193**	**0.0168**	**0.0635**

Total Incremental Combustion Emissions from Construction Activities

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2eq
Sources	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	metric ton/year
Emissions	**19**	**29**	**1.8**	**1.6**	**1.1**	**0.0**	**15.7**
Significance Threshold[e]	**550**	**100**	**150**	**55**	**75**	**150**	
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	

Table B-1 (Continued)
Paving Emissions

Notes:

a) Estimated construction equipment assumed to operate one eight-hour shift per day.

b) Emission factors estimated using OFFROAD2011

c) Emission factors estimated using EMFAC2011 for the 2015 fleet year.

d) Assumed three deliver truck trips per day.

e) SCAQMD CEQA significance thresholds

Table B-2
Foundation Emissions

Foundation		
Construction Schedule	**5**	**days[a]**

Equipment Type[a]	**No. of Equipment**	**hr/day**	**Crew Size**
Pavers	1	7.0	10
Cement and Mortar Mixers	4	6.0	
Rollers	1	7.0	
Tractors/Loaders/Backhoes	1	7.0	

Construction Equipment Combustion Emission Factors

	CO	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**	**CO2**	**CH4**	**N2O**
Equipment Type[b]	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Pavers	0.526	0.810	0.056	0.052	0.143	0.001	78	0.013	0.000
Cement and Mortar Mixers	0.042	0.055	0.002	0.002	0.009	0.000	7	0.001	0.000
Rollers	0.401	0.616	0.042	0.039	0.091	0.001	67	0.008	0.000
Tractors/Loaders/Backhoes	0.374	0.498	0.034	0.031	0.073	0.001	67	0.007	0.000

Construction Vehicle (Mobile Source) Emission Factors[c]

	CO	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**	**CO2**	**CH4**	**N2O**
	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile
Automobile	4.12E-03	3.41E-04	1.04E-04	4.41E-05	4.50E-04	8.22E-06	0.73	2.01E-05	4.83E-06
Heavy-Duty Truck	3.98E-03	1.81E-02	5.40E-04	3.85E-04	7.84E-04	3.64E-05	3.76	3.64E-05	2.56E-04

Number of Trips and Trip Length

Vehicle	**No. of One-Way Trips/Day**	**One-Way Trip Length (miles)**
Worker	10	20
Delivery Truck[d]	3	40

Table B-2 (Continued)
Foundation Emissions

Incremental Increase in Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Construction Emissions (lb/day)

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2	CH4	N2O
Equipment Type	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Pavers	3.68	5.67	0.39	0.36	0.1	0.00	51	0.01	0.00
Cement and Mortar Mixers	9.63	14.78	1.01	0.93	0.6	0.01	469	0.06	0.00
Rollers	0.29	0.39	0.02	0.02	0.0	0.00	0	0.00	0.00
Tractors/Loaders/Backhoes	2.62	3.48	0.24	0.22	0.0	0.00	0	0.00	0.00
Total	**16**	**24**	**1.66**	**1.52**	**0.70**	**0.01**	**520**	**0.06**	**0.00**

Incremental Increase in Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2	CH4	N2O
Vehicle	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Worker	1.649	0.137	0.0415	0.0177	0.1801	0.0033	291.3421	0.0080	0.0019
Delivery	0.956	4.346	0.1297	0.0923	0.1882	0.0087	901.2773	0.0087	0.0615
Total	**2.604**	**4.482**	**0.1712**	**0.1100**	**0.3683**	**0.0120**	**1192.6193**	**0.0168**	**0.0635**

Total Incremental Combustion Emissions from Construction Activities

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2eq
Sources	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	metric ton/year
Emissions	**19**	**29**	**1.8**	**1.6**	**1.1**	**0.0**	**3.9**
Significance Threshold[e]	***550***	***100***	***150***	***55***	***75***	***150***	
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	

Table B-2 (Continued)
Foundation Emissions

Notes:

a) Estimated construction equipment assumed to operate one eight-hour shift per day.

b) Emission factors estimated using OFFROAD2011

c) Emission factors estimated using EMFAC2011 for the 2015 fleet year.

d) Assumed three deliver truck trips per day.

e) SCAQMD CEQA significance thresholds

Table B-3
Installation of APCD Emissions

Construction of APC

Construction Schedule	21	days

Equipment Type[a]	**No. of Equipment**	**hr/day**	**Crew Size**
Cranes	2	4.0	10
Forklifts	2	6.0	
Tractors/Loaders/Backhoes	1	8.0	

Construction Equipment Combustion Emission Factors

	CO	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**	**CO2**	**CH4**	**N2O**
Equipment Type[b]	lb/hr	lb/hr	lb/hr		lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Cranes	0.431	1.028	0.044	0.041	0.120	0.001	121	0.011	0.043
Forklifts	0.221	0.355	0.018	0.016	0.050	0.001	54	0.004	0.015
Tractors/Loaders/Backhoes	0.374	0.498	0.034	0.031	0.073	0.001	67	0.007	0.021

Construction Vehicle (Mobile Source) Emission Factors[c]

	CO	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**	**CO2**	**CH4**	**N2O**
	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile
Automobile	4.12E-03	3.41E-04	1.04E-04	4.41E-05	4.50E-04	8.22E-06	0.73	2.01E-05	4.83E-06
Heavy-Duty Truck	3.98E-03	1.81E-02	5.40E-04	3.85E-04	7.84E-04	3.64E-05	3.76	3.64E-05	2.56E-04

Number of Trips and Trip Length

Vehicle	**No. of One-Way Trips/Day**	**One-Way Trip Length (miles)**
Worker	10	20
Heavy-duty Trucks	3	40

Table B-3 (Continued)
Installation of APCD Emissions

Incremental Increase in Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Construction Emissions (lb/day)

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2	CH4	N2O
Equipment Type	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Cranes	3.5	8.2	0.35	0.33	1.0	0.01	967	0.09	0.34
Forklifts	2.7	4.3	0.21	0.20	0.60	0.01	652	0.05	0.18
Tractors/Loaders/Backhoes	3.0	4.0	0.27	0.25	0.58	0.01	534	0.05	0.17
Total	**9.1**	**16.5**	**0.8**	**0.8**	**2.1**	**0.02**	**2,154**	**0.19**	**0.68**

Incremental Increase in Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2	CH4	N2O
Vehicle	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Flatbed Trucks	1.59	7.2	0.216	0.154	0.314	1.45E-02	1,502	0.0146	0.1026
Water Trucks	0.96	4.3	0.13	0.092	0.19	9.00E-03	901	0.009	0.062
Total	**2.5**	**11.6**	**0.35**	**0.25**	**0.50**	**2.35E-02**	**2,403**	**0.024**	**0.165**

Total Incremental Combustion Emissions from Construction Activities

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2eq
Sources	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	metric ton/year
Emissions	**12**	**28**	**1.2**	**1.0**	**2.6**	**0.0**	**438**
Significance Threshold[e]	***550***	***100***	***150***	***55***	***75***	***150***	
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	

Table B-3 (Continued)
Installation of APCD Emissions

Notes:

a) Estimated construction equipment assumed to operate one eight-hour shift per day.
b) Emission factors estimated using
OFFROAD2011

c) Emission factors estimated using EMFAC2011 for the 2015 fleet year.

d) Assumed three deliver truck trips per day.

e) SCAQMD CEQA significance thresholds

Table 4
Total Enclosures Construction Emissions

Enclosures

Assumptions Largest total enclosure needed

Building	Width, m	Length, m	Height, m	Area, ft2	Area, acre	Construction Days	Construction Months
Total Enclosure	125	250	75	31,250	0.72	54.3	2.5

Example	**Construction Activity**					
	Total Enclosure	31,250	Square Foot Structure	Duration	55	days

Construction Schedule Unknown

Equipment Type[a,b]	**No. of Equipment**	**hr/day**	**Crew Size**
Forklifts	2	7.0	9
Cranes	2	8.0	
Tractors/Loaders/Backhoes	2	6.0	
Generator Sets	2	8.0	
Electric Welders	4	8.0	

Construction Equipment Combustion Emission Factors

	CO	**NOx**	**VOC**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
Equipment Type[c]	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Forklifts	0.232	0.516	0.069	0.001	0.028	0.026	54.4	0.006	0.006
Cranes	0.543	1.451	0.159	0.001	0.064	0.059	128.7	0.014	0.014
Tractors/Loaders/Backhoes	0.393	0.675	0.102	0.001	0.052	0.048	66.8	0.009	0.009
Generator Sets	0.329	0.644	0.096	0.001	0.040	0.036	61.0	0.009	0.008
Electric Welders	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 4 (Continued)
Total Enclosures Construction Emissions

Construction Vehicle (Mobile Source) Emission Factors

	CO	NOx	VOC	SOX	PM10	PM2.5	CO2	CH4	N2O
	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile
Heavy-Duty Truck[d]	0.01195456	0.03822102	0.00304157	0.00004131	0.00183062	0.00160083	4.21120578	0.00014201	0.00001058
Worker Vehicles	0.00826276	0.00091814	0.00091399	0.00001077	0.00008698	0.00005478	1.09568235	0.00008146	0.00010753

Construction Worker Number of Trips and Trip Length

Vehicle	No. of One-Way Trips/Day	Trip Length (miles)
Flatbed Truck[e]	10	40
Construction Workers	9	20

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Onsite Construction Emissions (lb/day)

	CO	NOx	VOC	SOX	PM10	PM2.5	CO2	CH4	N2O
Equipment Type	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Fork Lifts	3.25	7.23	0.96	0.01	0.39	0.36	762	0.09	0.08
Cranes	8.69	23.22	2.55	0.02	1.03	0.95	2,058	0.23	0.22
Tractors/Loaders/Backhoes	4.72	8.10	1.22	0.009	0.62	0.57	802	0.11	0.10
Generator Sets	5.27	10.30	1.54	0.01	0.63	0.58	976	0.14	0.13
Electric Welders	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**21.9**	**48.9**	**6.3**	**0.05**	**2.7**	**2.5**	**4,598**	**0.57**	**0.53**

Table 4 (Continued)
Total Enclosures Construction Emissions

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

	CO	**NOx**	**VOC**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
Vehicle	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Flatbed Truck	9.56	30.6	2.43	0.0330	1.46	1.28	3,369	0.11	0.01
Worker Vehicles	2.97	0.33	0.33	0	0.03	0.02	394	0.03	0.04
Total	**12.5**	**30.9**	**2.76**	**0.03**	**1.49**	**1.30**	**3,763**	**0.14**	**0.05**

Total Incremental Combustion Emissions from Construction Activities

	CO	**NOx**	**VOC**	**SOX**	**PM10**	**PM2.5**	**CO2[g]**	**CH4[g]**	**N2O[g]**
Sources	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	Mton/project/ 30 yrs	Mton/project/ 30 yrs	Mton/project/ 30 yrs
On-Site Emissions	**34**	**80**	**9.0**	**0.08**	**4.2**	**3.8**	**7**	**0.001**	**0.000**
Significance Threshold[f]	***550***	***100***	***75***	***150***	***150***	***55***	10,000 Mton/year	10,000 Mton/year	10,000 Mton/year
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**			

Notes:

a) Assumption

b) Equipment name must match CARB Off-Road Model (see Off-Road Model EF worksheet) equipment name for sheet to look up EFs automatically.

c) SCAB values provided by the ARB, Oct 2006. Assumed equipment is diesel fueled except the welders which are powered by the generator. N2O values estimated from ratio of N2O and CH4 EF presented for on-road vehicles
in the ARB Regulation for Mandatory Reporting of GHG Emissions.

d) 2010 fleet year. http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html. N2) values from ARB Regulation for Mandatory Reporting of GHG Emissions.

e) Assumed haul truck travels 40 miles round trip

f) SCAQMD Regional Significance Thresholds

g) GHG are reported in metric tons (Mton) over 30 years.

Table B-5
Installation of Blowers Emissions

Installation of blowers		
Construction Schedule	5	days

Equipment Type[a]	**No. of Equipment**	**hr/day**	**Crew Size**
Cranes	1	4.0	10
Forklifts	2	6.0	
Tractors/Loaders/Backhoes	1	8.0	

Construction Equipment Combustion Emission Factors

	CO	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**	**CO2**	**CH4**	**N2O**
Equipment Type[b]	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Cranes	0.431	1.028	0.044	0.041	0.120	0.001	121	0.011	0.043
Forklifts	0.221	0.355	0.018	0.016	0.050	0.001	54	0.004	0.015
Tractors/Loaders/Backhoes	0.374	0.498	0.034	0.031	0.073	0.001	67	0.007	0.021

Construction Vehicle (Mobile Source) Emission Factors[c]

	CO	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**	**CO2**	**CH4**	**N2O**
	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile
Automobile	4.12E-03	3.41E-04	1.04E-04	4.41E-05	4.50E-04	8.22E-06	0.73	2.01E-05	4.83E-06
Heavy-Duty Truck	3.98E-03	1.81E-02	5.40E-04	3.85E-04	7.84E-04	3.64E-05	3.76	3.64E-05	2.56E-04

Number of Trips and Trip Length

Vehicle	**No. of One-Way Trips/Day**	**One-Way Trip Length (miles)**
Worker	10	20
Heavy-duty Truck[d]	3	40

Table B- 5 (Continued)
Installation of Blowers Emissions

Incremental Increase in Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/hr) x No. of Equipment x Work Day (hr/day) = Construction Emissions (lb/day)

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2	CH4	N2O
Equipment Type	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Cranes	1.7	4.1	0.18	0.16	0.5	0.01	484	0.04	0.17
Forklifts	2.7	4.3	0.21	0.20	0.60	0.01	652	0.05	0.18
Tractors/Loaders/Backhoes	3.0	4.0	0.27	0.25	0.58	0.01	534	0.05	0.17
Total	**7.4**	**12.3**	**0.7**	**0.6**	**1.7**	**0.02**	**1,670**	**0.15**	**0.51**

Incremental Increase in Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2	CH4	N2O
Vehicle	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Flatbed Trucks	1.59	7.2	0.216	0.154	0.314	1.45E-02	1,502	0.0146	0.1026
Water Trucks	0.96	4.3	0.13	0.092	0.19	9.00E-03	901	0.009	0.062
Total	**2.5**	**11.6**	**0.35**	**0.25**	**0.50**	**2.35E-02**	**2,403**	**0.024**	**0.165**

Total Incremental Combustion Emissions from Construction Activities

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2eq
Sources	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	metric ton/year
Emissions	**10**	**24**	**1.0**	**0.9**	**2.2**	**0.0**	**389**
Significance Threshold[e]	***550***	***100***	***150***	***55***	***75***	***150***	
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	

Notes:

a) Estimated construction equipment assumed to operate one eight-hour shift per day.

b) Emission factors estimated using OFFROAD2011

c) Emission factors estimated using EMFAC2011 for the 2015 fleet year.

d) Assumed three deliver truck trips per day.

e) SCAQMD CEQA significance thresholds

Table B-6
Operational Emissions (Mobile Sources)

Operational

	CO	NOx	PM10	PM2.5	VOC	SOx	CO2	CH4	N2O
	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile
Automobile	4.12E-03	3.41E-04	1.04E-04	4.41E-05	4.50E-04	8.22E-06	0.73	2.01E-05	4.83E-06
Heavy-Duty Truck[a]	3.98E-03	1.81E-02	5.40E-04	3.85E-04	7.84E-04	3.64E-05	3.76	3.64E-05	2.56E-04

Number of Trips and Trip Length

Vehicle	**No. of One-Way Trips/Day**	**One-Way Trip Length (miles)**
Automobile (Source Test)	1	20
Heavy-duty Truck	1	200

Incremental Increase in Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	**CO** lb/day	**NOx** lb/day	**PM10** lb/day	**PM2.5** lb/day	**VOC** lb/day	**SOx** lb/day	**CO2** lb/day	**CH4** lb/day	**N2O** lb/day
Automobile (Source Test)	0.16	0.01	0.0042	0.0018	0.02	0.0003	29	0.0008	4.83E-06
Haul Truck	1.6	7.2	0.216	0.154	0.31	0.0145	1,502	0.0146	0.103

Total Incremental Emissions from Operational Activities

Sources	**CO** lb/day	**NOx** lb/day	**PM10** lb/day	**PM2.5** lb/day	**VOC** lb/day	**SOx** lb/day	**CO2** metric ton/year
Emissions	**1.8**	**7.3**	**0.2**	**0.2**	**0.3**	**0.01**	**0.71**
Significance Threshold[b]	***550***	***55***	***150***	***55***	***75***	***150***	***10,000***
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Table B-7
Vehicle Sweeping Emissions

All Facilities	Area (ft^2)	Area (acres)	Width of Sweeper Path (ft)	Linear Feet Traveled (ft)	Linear Feet Traveled (miles)
Total	1,700,000	39.0	7	242,857	46.0

Assumed sweepers are nine feet wide with two foot overlap

Description	**CO, lb/mile**	**NOx, lb/mile**	**VOC, lb/mile**	**SOX, lb/mile**	**PM10, lb/mile**	**PM2.5, lb/mile**	**CO2, lb/mile**	**CH4, lb/mile**	**N2O, lb/mile**
Medium-Duty Truck	0.018438	0.020625	0.002590	0.000027	0.000751	0.000642	2.732222	0.000126	0.000011

Both Facilities Roundtrip

Description	**VMT, mile/day**	**CO, lb/day**	**NOx, lb/day**	**VOC, lb/day**	**SOX, lb/day**	**PM10, lb/day**	**PM2.5, lb/day**	**CO2, Mton/year**	**CH4, Mton/year**	**N2O, Mton/year**	**CO2eq, Mton/year**
Medium-Duty Truck	92.0	1.70	1.90	0.24	0.0025	0.069	0.0591	41.6	0.0019	0.000161	41.6
Medium-Duty Truck For 5 facilities	35.4	0.65	0.73	0.09	0.0010	0.027	0.0227	16.0	0.0007	0.000062	16.0

All EF from EMFAC2007, N2O from ARB's Regulation for the Mandatory Reporting of Greenhouse Gases,

Table B-8
Ambient Monitoring Vehicle Emissions

Assumption: Two facilities per day

	CO	NOx	VOC	SOX	PM10	PM2.5	CO2	CH4	N2O
	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile
Gasoline Vehicles	0.00826276	0.00091814	0.00091399	0.00001077	0.00008698	0.00005478	1.09568235	0.00008146	0.00010753

Description	VMT, mile/day	CO, lb/day	NOx, lb/day	VOC, lb/day	SOX, lb/day	PM10, lb/day	PM2.5, lb/day	CO2, Mton/year	CH4, Mton/year	N2O, Mton/year	CO2eq, Mton/year
Gasoline vehicle	160	1.32	0.15	0.15	0.0017	0.014	0.0088	14.5	0.0011	0.001424	14.5

Table B-9
Aerial Lift Usage and Delivery Emissions

	CO	NOx	VOC	SOx	PM10	PM2.5	CO2	CH4	N2O
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Aerial Lifts	0.209304495	0.360045405	0.066987904	0.000399208	0.02478674	0.02	34.7	0.0060	0.006

Usage, hr/day	CO, lb/day	NOx, lb/day	VOC, lb/day	SOX, lb/day	PM10, lb/day	PM2.5, lb/day	CO2, Mton/year	CH4, Mton/year	N2O, Mton/year
6	1.26	2.16	0.40	0.002	0.15	0.14	11.3	0.0004	0.0007

	CO	NOx	VOC	SOX	PM10	PM2.5	CO2	CH4	N2O
	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile
Heavy-Duty Truck	0.01195456	0.03822102	0.00304157	0.00004131	0.00183062	0.00160083	4.21120578	0.00014201	0.00001058

Description	VMT, mile/day	CO, lb/day	NOx, lb/day	VOC, lb/day	SOX, lb/day	PM10, lb/day	PM2.5, lb/day	CO2, Mton/year	CH4, Mton/year	N2O, Mton/year
Heavy-Duty Truck	80.0	0.96	3.06	0.24	0.00	0.15	0.13	15.3	0.0005	0.000038

Table B-10
Estimated Water Usage

Facility	Size of Building Housing Furnaces (sq. ft)	Bldg Ht (ft)	Total Size of All Buildings (sq. ft)	Total Facility Size (sq. ft)	Facility Size w/Buidlings Backed out (sq. ft)	one time per day (gpd)
A	9350	30	8350	61,194	52,844	3,801
B	47250	30	91000	159,600	68,600	9,913
C	6750	30	14575	75,000	60,425	4,658
D				4,842,500	1,000,000	0
E	43500	30	43500	82,775	39,275	5,141
F	50600	30	64500	169,275	104,775	10,514
G	18175	30	18175	32,175	14,000	1,998
H	4500	30	4500	151,940	147,440	9,437
I	30750	30	88100	157100	69,000	9,758
J	27000	30	107800	173250	65,450	10,761
K	12000	20	16900	53000	36,100	3,292
L	3375	20	7625	25625	18,000	1,592
M	16000	30	100675	185250	84,575	11,506
				Total	1,760,484	82,372

Table B-11
Fuel Use

Building/Installation of APCD

Schedule 21 **days**

Equipment Type	No. of Equipment	Op Time, hr/day	Fuel Economy, gal/hr	Fuel Used, gal/day
Cranes	3	4.0	3.52	42.24
Forklifts	2	6.0	0.96	11.52
Tractors/Loaders/Backhoes	2	8.0	1.9	30.4

Total Diesel Used for Phase	1767.36	**gal/phase**

Vehicle	No. of One-Way, Trips/Day	One-Way Trip Length, miles	Fuel Economy, mpg	Fuel Used, gal/day
Automobile	10	20	10	40
Heavy-duty Truck	3	40	40	6

Total Diesel Used for Phase	126	**gal/phase**
Total Gasoline Used for Phase	840	**gal/phase**

Building/Installation of Blowers

Schedule 5 **days**

Equipment Type	No. of Equipment	Op Time, hr/day	Fuel Economy, gal/hr	Fuel Used, gal/day
Cranes	1	4.0	3.52	14.08
Forklifts	2	6.0	0.96	11.52
Tractors/Loaders/Backhoes	1	8.0	1.9	15.2

Total Diesel Used for Phase	204	**gal/phase**

Vehicle	No. of One-Way, Trips/Day	One-Way Trip Length, miles	Fuel Economy, mpg	Fuel Used, gal/day
Automobile	10	20	10	40
Heavy-duty Truck	3	40	40	6

Total Diesel Used for Phase	30	**gal/phase**
Total Gasoline Used for Phase	200	**gal/phase**

Paving of Roads

Schedule 14 **days**

Equipment Type	No. of Equipment	Op Time, hr/day	Fuel Economy, gal/hr	Fuel Used, gal/day
Pavers	1	7.0	2.8	19.6
Cement and Mortar Mixers	4	6.0	0.331	7.944
Rollers	1	7.0	1.6	11.2
Tractors/Loaders/Backhoes	1	7.0	1.9	13.3

Vehicle	No. of One-Way, Trips/Day	One-Way Trip Length, miles	Fuel Economy, mpg	Fuel Used, gal/day
Automobile	10	20	10	40
Heavy-duty Truck	3	40	40	6

Total Diesel Used for Phase	728.616	**gal/phase**

Total Diesel Used for Phase	84	**gal/phase**
Total Gasoline Used for Phase	560	**gal/phase**

Foundation

Schedule 5 days

Equipment Type	No. of Equipment	Op Time, hr/day	Fuel Economy, gal/hr	Fuel Used, gal/day
Pavers	1	7.0	2.8	19.6
Cement and Mortar Mixers	4	6.0	0.331	7.944
Rollers	1	7.0	1.6	11.2
Tractors/Loaders/Backhoes	1	7.0	1.9	13.3

Vehicle	No. of One-Way, Trips/Day	One-Way Trip Length, miles	Fuel Economy, mpg	Fuel Used, gal/day
Automobile	10	20	10	40
Heavy-duty Truck	3	40	40	6

Total Diesel Used for Phase	260.22	**gal/phase**

Total Diesel Used for Phase	30	**gal/phase**
Total Gasoline Used for Phase	200	**gal/phase**

Total Enclosures

Schedule 66 **days**

Equipment Type	No. of Equipment	Op Time, hr/day	Fuel Economy, gal/hr	Fuel Used, gal/day
Forklifts	2	7.0	2.5	35
Cranes	2	8.0	3.5	56
Tractors/Loaders/Backhoes	2	6.0	1.9	23
Generator Sets	2	8.0	2.8	45

Vehicle	No. of One-Way, Trips/Day	One-Way Trip Length, miles	Fuel Economy, mpg	Fuel Used, gal/day
Automobile	9	20	10	36
Heavy-duty Truck	10	40	40	20

Total Diesel Used for Phase	8157.60	**gal/phase**

Total Diesel Used for Phase	1320	**gal/phase**
Total Gasoline Used for Phase	2376	**gal/phase**

Grand Total Diesel Used	11117.80	**gal/project**

Grand Total Diesel Used	1590.00	**gal/project**
Grand Total Gasoline Used	4176	**gal/project**

Diesel Use (Equipment + Vehicles)	**12707.80**	**gal/project**

A P P E N D I X C

COMMENT LETTER AND RESPONSES TO COMMENTS

INTRODUCTION

A Draft Environmental Assessment (EA) was released for a 32-day public review and comment period from July 17, 2015 to August 18, 2015. Subsequently, a Revised Draft EA, which included formatting changes to Appendix B, was released for a 30-day public review and comment period from July 21, 2015 to August 19, 2015. The environmental analysis in the Draft EA and Revised Draft EA concluded that PR 1420.2 would not generate any significant adverse environmental impacts. The SCAQMD received one comment letter regarding the environmental analysis in the Draft EA during the public comment period.

The individual comments within the comment letter have been bracketed and numbered. Following each comment is SCAQMD staff's response.

GERDAU

August 19, 2015

Via First Class mail and
Via Email to: ccarter@aqmd.gov

Ms. Cynthia Carter, c/o CEQA
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182

Re: Comments on Draft Environmental Assessment for Proposed Rule 1420.2

Dear Ms. Carter:

Our Rancho Cucamonga facility is one of only thirteen facilities that will be regulated by Proposed Rule 1420.2. As such, we have first-hand knowledge regarding the regulated equipment and activities, insight into the challenges of compliance, and potential environmental and economic impacts. We appreciate the opportunity to comment on the Draft Environmental Assessment prepared by the SCAQMD for Rule 1420.2. Our complete comments are attached. 1-1

Our greatest concern during the rule development process has been that the rule would contain technologically or economically infeasible provisions that would not produce meaningful emissions reductions in the community. We appreciate the time that District staff has taken to better understand our equipment, emissions, and business. We believe that the August 5, 2015 version of the rule is better for the community as well as for Gerdau. However, the Draft EA evaluates an earlier version of the proposed rule. If provisions of earlier versions of the rule were to be restored, or new requirements added prior to rule adoption, the rule would very likely cause the closure of the Rancho Cucamonga facility. In such case, the Draft EA would be deficient under CEQA, because it fails to evaluate the substantial environmental effects of facility closure. 1-2

Again, we appreciate the opportunity to provide comments on the draft EA. If you have any questions regarding our comments, please do not hesitate to contact me.

Sincerely,

Mark Olson, Vice President/General Manager
Rancho Cucamonga Mill
Gerdau Long Steel North America

GERDAU

DETAILED COMMENTS

PART I. GENERAL COMMENTS

1. Version of the Rule Reviewed

As originally proposed, Rule 1420.2 would have had a substantial negative effect on our plant in Rancho Cucamonga. Many of the requirements in the early versions of the rule would have been technologically infeasible. Other early provisions would have imposed extraordinary costs of compliance while having no or negligible benefit in reducing ambient lead concentrations in the community. As a result, the early versions of the rule would have caused the closure of the Rancho Cucamonga plant.

We realize that the staff continues to fine tune details regarding the proposed rule. Some of the issues described in our comments may be moot, with the release of the August 5, 2015 version of the rule, and others may become moot with additional rule revisions prior to adoption. However, to comment on the Draft EA, it is necessary to comment in the context of the version of the rule reviewed in that document. If the adopted version of the rule excludes provisions in the June 12, 2015 version of the proposed rule for which the Draft EA is deficient, then the CEQA deficiency may be addressed (provided the change does not implicate other potentially significant impacts). Conversely, if the adopted rule includes provisions that were present in the earlier drafts of the rule but not in the June 12, 205 version evaluated in the Draft EA, or if new requirements are added, then CEQA Guidelines Section 15073.5 would require at a minimum that the Draft EA be revised and recirculated for public comment prior to adoption of the rule in order to evaluate additional adverse environmental impacts, including direct and indirect environmental impacts associated with closure of the Ranch Cucamonga facility. 1-3

2. The EA Should Be Revised to Evaluate the Current Proposed Rule.

As noted, the Draft EA analyzes the impacts of the June 12, 2015 version of the proposed rule. The proposed rule has been changed in important ways since that time. In order for the EA to achieve CEQA's objective of informing the public and the decision-makers about the environmental consequences of the proposed decision, the EA should be revised to include analysis of the latest version of the draft PR 1420.2. All edits made in the August 5, 2015 draft PR 1420.2 need to be reflected in an updated Project Description section of the EA. In addition, the environmental analysis needs to be updated to account for additional project components as listed in the August 5, 2015 draft proposed rule. EA revision should occur before either the EA or the rule is presented to the Governing Board for adoption. In addition, it is expected that changes in response to these and other public comments will disclose for the first time that the rule may result in significant adverse environmental impacts. Therefore, a revised draft EA should be recirculated for public comment before adoption of the EA or the rule. 1-4

3. **The EA Omits Impacts from the Most Significant Undertaking Required by the Rule: Construction of Gerdau's Meltshop/Baghouse.**

The District acknowledges that Gerdau's Rancho Cucamonga facility will not be able to meet many of the requirements of the rule without completion of its meltshop/baghouse project. Yet the EA omits all discussion of the impacts of constructing and operating this project. Page 2-7 of the EA explains that the environmental analysis for the rule includes only impacts from installation of a negative air pressure system and increased housekeeping. 1-5

The Draft EA dismisses impacts from the meltshop/baghouse project because the project was initially proposed and permits to construct issued before Rule 1420.2 was proposed. Even so, Rule 1420.2 will fundamentally change the regulatory landscape for the company. Completion of the project will essentially be mandated by the rule, as the only other means of compliance would be to cease operations. CEQA precedents confirm that the change in legal status of even an ongoing activity can cause environmental impacts that must be reviewed in an EIR. See, e.g., *Lighthouse Field Beach Rescue v. City of Santa Cruz* (2005) 131 Cal. App. 4th 1170. Adoption or amendment of a regulation in recognition of the status quo can nonetheless require CEQA review because a change in enforceability can result in changes in the physical environment. The environmental impacts of a change in regulatory status are even more closely tied to the proposed rule here, where the meltshop/baghouse project has not yet been constructed, and progress on the project has been suspended since the District announced its intention to adopt proposed Rule 1420.2. 1-6

Omission of the impacts of the meltshop/baghouse project also creates deficiencies in detailed analyses in the Draft EA. For example, the discussion of construction impacts (starting on pg.2-15 of the Draft EA) implies that construction of air pollution control devices for the compliance plan were assessed in the EA, but Gerdau's construction was omitted. Also, the EA states that construction impacts will not overlap between facilities: "Given the short duration of construction and the amount of time for facilities to comply with PR 1420.2, staff assumed that the construction phases at these different facilities would not overlap (pg. 2-17)." However, this assumption does not take into account the lengthy construction schedule for the Gerdau's meltshop/baghouse project. In Appendix B of the Draft EA, the construction phase of the air pollution control devices is listed as only 21 days. Thus, it is quite possible that, on a peak-day, construction of the meltshop/baghouse project will overlap with construction by other facilities subject to proposed Rule 1420.2. The schedule that Gerdau has previously submitted to the District shows that construction of the meltshop/baghouse project will take approximately two years, not a few days. 1-7

Similarly, the EA analyzes only 54 days of construction of a total enclosure, while Gerdau's construction will require additional months following completion of the new baghouse. The EA also severely underestimates the size of the assumed enclosure, analyzing only 31,250 square feet of enclosure compared to the 285,000 feet proposed for Gerdau's project.

If the District continues to exclude Gerdau's meltshop/baghouse project from the proposed Rule 1420.2 impact analysis, at a minimum the project must be included in the cumulative impacts analysis for both air quality and greenhouse gas impacts. Gerdau's meltshop/baghouse project will overlap with implementation of other construction required to comply with Rule 1420.2. As 1-8

noted above, the cumulative impacts would be significant for air quality and require preparation of Environmental Impact Report (EIR).

4. The EA Must Evaluate Environmental Impacts Resulting from Economic Impacts.

CEQA Guidelines Section 15131 provides:

> Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes.

As explained above, the pre-June 12, 2015 versions of the rule contained provisions that would have been technologically or economically infeasible, and would have resulted in the closure of the Rancho Cucamonga facility. For example, it likely would be technologically infeasible to achieve the point source control efficiency required by Subsection (f) for small point sources with low concentrations of lead in the exhaust. Even if achievable, this requirement would have resulted in no measurable benefit in the community, at great expense. Similarly, pre-June versions of the rule would have required total enclosure of handling and storage of lead-containing materials, including slag. For Gerdau, this would have required construction of total enclosure for our lead handling and slag storage area, which currently spans approximately 12.4 acres. The cost of construction of such an enclosure would have been many millions of dollars, and it could not have been completed within the time frame specified. Testing has shown that our slag has a lead content within the range of naturally occurring soils in California, so this expense would not have produced a meaningful reduction in lead concentrations in the community. 1-9

The June 12, 2015 version of the rule likewise contained a number of provisions that were technologically, economically or legally infeasible. If adopted, these provisions would result in the closure of the Rancho Cucamonga plant. This consequence will be discussed in greater detail in our comments on the proposed rule and the Draft Socio-economic Report.

CEQA does not require the EA to discuss the direct economic impact to the company or the community from the closure. But facility closure would cause substantial environmental effects in the immediate vicinity, in the region, and beyond. These impacts must be discussed in the EA if any of the above-listed provisions is contained in the final rule as adopted.

The Rancho Cucamonga facility is a major employer and contributor to the local economy, and its closure could set in motion localized environmental impacts considered blight or urban decay. Vacancy of a major business or structure can trigger a downward spiral of other business closures and long-term vacancies. In CEQA, "urban decay" is generally defined as visible symptoms of physical deterioration that invite vandalism, loitering, and graffiti. Urban decay may include boarded doors and windows, deferred maintenance of structures, unauthorized use of buildings and parking lots, littering, dead or overgrown vegetation, and third party dumping of refuse. Thus,

a deteriorating economic condition may cause deterioration of the physical conditions. These changes in the physical environment would be adverse environmental impacts that must be evaluated under CEQA.

The Draft EA would also need to evaluate the alternative scenario of removal of the facility to avoid blight. There would be substantial environmental impacts associated with dismantling the facility. These include engine emissions from demolition equipment and off-road and on-road motor vehicles, including vehicles removing waste from the site. It also would include fugitive emissions associated with demolition and vehicular travel on the site.

Many of our employees are highly skilled and highly compensated workers. But the Rancho Cucamonga facility is the last remaining steel mill in California; therefore, their skills may not match the requirements of other employers in the immediate vicinity. Closure of the plant may initiate an extended period during which the employees drive substantial additional miles looking for new employment. An increase in vehicle miles traveled translates into additional traffic and air quality impacts that would need to be quantified and evaluated in the Draft EA.

On the regional, statewide and global levels, closure of the Rancho Cucamonga facility would affect major market chains, including waste management, metals recycling, and the production of seismic rebar, with consequential environmental impacts. The Rancho Cucamonga facility receives scrap metal from sources throughout Southern California. (Approximately 90% comes from sources within 75 miles of the plant, 6% from sources between 75-125 miles, and the remainder from sources more than 125 miles, including small amounts from Arizona and Nevada.) The plant recycles the scrap metal to produce seismic rebar needed for construction in California. Loss of this facility would cause dislocation in construction, demolition, and metals recycling, manufacturing and supply.

1-9 cont

These dislocations would directly cause environmental impacts. Scrap metal would have to be hauled longer distances. Because there is no other steel mini-mill in California, the scrap metal would have to be hauled out of state or out of the country. Given our knowledge of the metals industry, we believe the most likely outcome is that the scrap metal would be hauled by truck or train to the Ports of Los Angeles or Long Beach, transshipped onto marine vessels, and transported to Asia. There, it would be recycled into new steel products. This may or may not include seismic rebar, depending upon the market interests of the scrap purchaser or recycler. In any event, California's need for seismic rebar would need to be met by manufacturers outside California. Thus, the CEQA analysis would need to include the substantial traffic, transportation, air emissions and other impacts associated with transporting the scrap out of California, and transporting seismic rebar into the state. In addition, given California's groundbreaking regulation of greenhouse gas emissions, it is most likely that recycling the scrap metal and manufacturing the seismic rebar outside the state will produce much greater greenhouse gas emissions than baseline emissions for these same activities.

Our air quality expert, Joseph Hower of Ramboll Environ US Corporation, prepared a simple air quality analysis assuming that the work and the Rancho Cucamonga facility would shift to an existing facility in Arizona. Even under this scenario, air emissions impacts of closing the Rancho Cucamonga facility would be significant, as shown in Table 1 below:

Table 1. Emissions Increase due to Transportation of Scrap Metal and Final Product in the event of Shutdown of the Gerdau TAMCO Facility

Parameter	Delivery Trucks to and from Nucor Plant in Arizona	Delivery Trucks to and from TAMCO	Increase from TAMCO Steel Mill Shutdown
Vehicle Miles Travelled (miles/day)[1]			
Total VMT	141,823	44,738	97,085
Criteria Air Pollutant Emissions (lb/day)[2]			
NO_x	1,934	610	1,324
CO	382.3	120.6	261.7
PM_{10}	60.6	19.1	41.5
$PM_{2.5}$	39.1	12.3	26.7
SO_x	5.2	1.6	3.5
VOC	75.2	23.7	51.5
Greenhouse Gas Emissions (MT/yr)[3]			
CO_2	85,215	26,881	58,334
CH_4	0.6	0.2	0.4
N_2O	2.9	0.9	2.0
Total GHG[4]	86,127	27,169	58,958

Notes:
[1] Project VMT were estimated by multiplying the 2013 VMT by the production rate scaling factor.
[2] Criteria pollutant emissions were estimated using the VMT in SCAB.
[3] Greenhouse gas emissions were estimated using the VMT in California.
[4] Calculated using the following global warming potentials from the Intergovernmental Panel on Climate Change Second Assessment Report. Available at http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html#table-2-14, Accessed August, 2014.

1-9 cont

As noted above, the more likely outcome would be a shift in the scrap and manufacturing to Asia, resulting in air emissions far greater than those in Table 1.

Given the magnitude of all these impacts, a full environmental impact report would likely be required.

5. The Draft Relies Excessively on Unsubstantiated Assumptions.

Many conclusions in the Draft EA are based on nothing more than staff impressions with no supporting information. There are several variations on unsupported conclusions:

- For some impact topics, where the rule allows two or more compliance options, the Draft EA analysis seems to assume only one of the options will be followed, and ignores the impacts associated with the other option(s). For example Subsection (h)(5) of the rule requires that all materials capable of generating any amount of fugitive lead dust, including slag, be stored in sealed, leak-proof containers, located within a total enclosure, or stabilized using dust suppressants. The Draft EA does not appear to evaluate any impacts (e.g., construction air emissions, conflict with land use zoning and other restrictions, stormwater runoff from additional impermeable surfaces) associated with fully enclosed storage of slag. If the analysis in the Draft EA is based on the assumption that all regulated companies will use the dust suppressant compliance option, this assumption should be clearly stated. Alternatively, the Draft EA should evaluate the impacts associated with construction and operation of full enclosure of slag. 1-10

- For some impact topics, where there is a potential exemption from the rule, the analysis appears to assume that the exemption will apply to all companies and their activities that would otherwise be regulated, and the Draft EA does not discuss the impacts of any compliance actions whatsoever. For example, the Draft EA appears to assume that all slag handling will be exempt from the sealed container requirement in Subsection ___, because it does not consider construction or operational impacts associated with totally enclosed slag conveyance systems handling hot slag. 1-11

- Some assumptions are articulated but the basis for the assumptions are not documented, or the assumptions are not supported with references to relevant data or technical references demonstrating the reasonableness of the assumptions. The Draft EA makes broad and unsubstantiated assumptions regarding zoning, land use, and noise ordinances, among others. In many cases, it would be fairly simple to obtain accurate information or data rather than making broad, unsupported assumptions, yet the Draft EA makes no effort to do so. For example, the discussion of Questions XII. d) and XVII. c) in the Checklist state that it is not known whether the regulated facilities are in an airport land use plan or within two miles of a public airport. The District expects the rule to affect thirteen known facilities at thirteen known locations. (DEA, p. 1.6). Given the known locations of the facilities and of the region's airports, it would be a straightforward task to locate this information. Similarly, it would be a simple matter to determine how the requirements of the rule would be treated under local zoning, land use and other ordinances regulating landscaping, aesthetics, building heights, noise and other parameters in the relevant cities and counties. The Draft EA fails to do so. 1-12

Given the very small number of sources regulated by the rule, the Draft EA's failure to provide meaningful detail is contrary to CEQA's requirements for public disclosure and opportunity to comment.

PART II. DETAILED COMMENTS

GERDAU

Page	Comment	
1-2	**Introduction**: The text states that the rule will reduce "the further accumulation of lead dust in and around these" metal melting facilities. The Draft EA does not provide any evidence that accumulation has occurred or is occurring in and around these facilities. Therefore, the Draft EA should not take credit for such reductions in evaluating the effects of the rule.	1-13
1-2	**Project Location:** The text following this heading describes the entire South Coast Air Basin and portions of the Salton Sea and Mojave Desert Air Basins. The inference is that this entire area is the Project Location. This is misleading in that the rule affects specifically 13 facilities that have been identified by the SCAQMD. As summarized in EPA's Integrated Science Assessment (ISA; see 78 Fed.Reg. 38318, June 26, 2013), "Since the phase-out of Pb in on-road gasoline, Pb is widely recognized as a source-oriented air pollutant. Variability in air Pb concentrations is highest in areas including a Pb source, with high concentrations downwind of the sources and low concentration at areas far from sources." (80 Fed.Reg. 278, 283, January 5, 2015.) This means that lead emission reductions from the rule will have an effect near the source but there will be no measurable change in the SCAB as whole. Presenting the project area as the entire SCAB and portions of two more basins causes deficiencies in the EA. The Draft EA fails to present relevant information about the existing environment in the vicinity of the 13 regulated facilities. The SCAQMD's network of ten non-source oriented monitors shows ambient concentrations in 2007 to 2013 "well below the 2008 NAAQS for lead of 0.15 $\mu g/m^3$," ranging from 0.01 to 0.03 $\mu g/m^3$. (Preliminary Draft Staff Report dated April 2015, p. 1-7.) Information is presented in the April 2015 Staff Report regarding fence-line monitoring for the Gerdau/Tamco facility, but even for this facility there is no information presented in the Staff Report or the Draft EA about ambient lead levels in the surrounding community. Information is presented in the Draft Staff Report about Trojan Battery, but it the text does not disclose whether the measurements are taken at the fenceline or in the community. Without relevant information regarding the environmental setting, it is impossible to accurately assess the effects of the rule.	1-14 1-15

Page	Comment	
1-4	**Health Effects of Lead:** The Draft EA references and quotes a few selective phrases from U.S. EPA documents to create the misleading impression that there is substantial doubt and uncertainty regarding a health protective lead exposure level to ensure young children do not experience nervous system effects including cognitive effects. Selective quotes suggest that the federal NAAQS of 0.15 $\mu g/m^3$ is not health protective for young children. In fact, EPA's January 5, 2015 Federal Register Notice clearly explains that the agency proposes to retain the 0.15 $\mu g/m^3$ primary NAAQS because it will protect the public welfare from any known or anticipated adverse effects associated with the presence of lead in the ambient air, including an adequate margin of safety to address uncertainties and a reasonable degree of protection against hazards that research has not yet even identified. (80 Fed.Reg. 278 *et seq.*) EPA also stated that when a standard of a particular level is just met at a monitor sited to record the highest source-oriented concentration in an area, the large majority of children in the surrounding area would likely experience exposures to concentrations well below that level. (80 Fed.Reg at 287.) The misleading presentation of EPA's research and conclusions taints the Draft EA's discussion of the environmental and regulatory setting, as well as the policy decisions reflected in the rule. The EPA's work should be presented more fully and accurately in the EA.	1-16
1-6	**Table 1-1:** The SIC codes presented in this table do not correspond to the NAIC codes used on pages 1-8 to 1-16, making it difficult for the reader to follow the descriptions of the regulated companies and the Project Description. References should be standardized. Both Table 1-1 and the discussion on pages 1-8 to 1-16 would be improved by identifying the facilities by name. Naming the facilities would also aid the reader in reviewing assumptions regarding construction and other actions required for compliance, to confirm the accuracy of emissions estimates and other impact analyses.	1-17
1-10	**Process Emission Points and Controls:** Gerdau strongly disagrees that transfer, handling and storage of slag can be a source of fugitive lead dust emissions. Gerdau has submitted test data to the District showing that the lead content of its slag is within the range of lead concentration present in native soils in California. The EA does not present any data supporting its statement that slag is a source of lead emissions. As such, the EA misrepresents the environmental setting for the project. This in turn results in the EA attributing emissions benefits to implementation of the rule.	1-18

Page	Comment	
1-17	**Applicability:** The EA states that data from SCAQMD monitors at two metal mantling facilities have shown the potential for this source category to exceed the NAAQS lead limit of 0.15 $\mu g/m^3$ averaged over a rolling 3 month period. This statement does not accurately reflect the data. At least with respect to data gathered at TAMCO/Gerdau, monitoring occurred on the grounds of the facilities, near the fenceline. Monitoring did not occur in the ambient air as defined for purposes of compliance with the federal NAAQS. By overstating data regarding the lead concentrations in the existing setting, the EA in turn attributes environmental benefits to implementation of the proposed rule. In this regard, it also should be noted that the definition of ambient air in the proposed rule does not conform to federal definitions. This should be fully explained in the EA so that the public is not misled by quotes from federal documents taken out of context.	1-19
2-6	**Discussion and Evaluation of Environmental Impacts:** Paragraph 3 states that the CEQA analysis assumes a worst case scenario where facilities are expected to do further actions to meet the core requirements of the proposed rule, or additional controls as part of a compliance plan. However, as noted in Part I of these comments, the analysis omits all impacts associated with Gerdau's construction and operation of its meltshop/baghouse project. In addition, the analysis omits impacts associated with the potential closure of the Gerdau facility if the rule as analyzed in the EA were to be promulgated. As such, the EA fails to evaluate all impacts associated with the proposed rule.	1-20
2-7	**Discussion and Evaluation of Environmental Impacts:** The text at the top of the page suggests that most facilities are expected to meet point source requirements in the rule. Table 2-3 on page 2-16. In fact, the EA assumes that ***no*** construction of point source controls will be required, and so attributes no impacts to this portion of the rule. The EA should be more explicit in stating the assumptions underlying its analysis and conclusions. The EA also should explain the basis for assuming that no additional point source controls will be required. For example, the EA might explain that point sources not already equipped with air pollution control devices are expected to be exempt through other provisions of the rule. In addition, the proposed rule contains many requirements that are not addressed in the assumptions presented on pages 2-6 to 2-7. For example, the explanation of assumptions does not address the requirements for total enclosure of materials storage areas, including slag storage. If the EA is based on the assumption that no construction or operation is required because all regulated facilities will use dust suppressants on slag piles and handling of hot slag will be exempt, this must be stated clearly in the EA.	1-21 1-22

Page	Comment	
2-8/9	**Table 2-1:** The table does not list Transportation as an *Environmental Topic to be Analyzed* for Total Enclosures or Compliance Plan. Because Total Enclosures will need to be constructed for two facilities and the Compliance Plan requirement of the PR 1420.2 is expected to result in construction of new air pollution control devices, construction activities will involve additional vehicle trips to the applicable site. This should be captured in the transportation analysis and listed in the *Environmental Topic to be Analyzed* column of Table 2-1.	1-23
2-10 to 2-11	**Aesthetics:** The Draft EA dismisses the topic of aesthetic impacts with the observation that the 13 regulated facilities are located in urbanized industrial or commercial areas. This is not sufficient under CEQA. Aesthetic issues can be of particular interest to neighbors in highly urbanized settings. In addition, requirements for total enclosure of slag handling and storage could result in the construction of new conveyor systems and tall new walls that would be visible from a distance. There are only 13 regulated facilities. The EA should more specifically describe the setting of the 13 facilities, and provide a meaningful, supported explanation for the conclusion that there will be no significant aesthetic impacts.	1-24
2-13 to 2-23	**Air Quality:** See Part 1, General Comments. The air quality analysis fails to consider the construction and operational emissions associated with the Gerdau meltshop/baghouse project.	1-25
2-14	**III. a):** The Draft EA concludes that there would be no adverse impact related to inconsistency with an air quality plan because the proposed rule is consistent with the plan. This reasoning improperly equates the Project and Project Objectives with the Project impacts. The Draft EA must discuss whether the emissions associated with the construction and operational actions needed to achieve compliance will conflict with an approved air quality plan.	1-26
2-17	The text at the top of the page presents very limited actions required to comply with the requirements of the rule. This picture is not accurate with respect to construction of total enclosure of slag handling and storage. If the EA is premised on the assumption that no facility will need to construct enclosed conveyors and storage enclosures, this assumption should be disclosed and explained. In the same vein, there is no support for the assumption in footnote 4 that no grading would be required, particularly if Gerdau is required to construct enclosed slag conveyors and total enclosures for slag storage. The last paragraph states that staff assumed construction periods for the various facilities will not overlap. See Part 1, General Comments, with respect to the long construction schedule required to complete the Gerdau meltshop/baghouse.	1-27
2-19	**Operational Impacts:** The EA assumes that a round trip distance of 200 miles to transport hazardous waste. The EA does not contain sufficient information regarding the location of the regulated facilities or the waste disposal sites to substantiate this assumption.	1-28

Page	Comment	
2-21	**III. d) Toxic Air Contaminants:** See comments above regarding construction schedule assumptions. Twenty-one days is insufficient time to construct the Gerdau meltshop/baghouse. It also is insufficient time to construct enclosed conveyors for slag handling, total enclosures for slag storage, site paving the large Gerdau site, and other requirements of the rule. If the EA is premised on the assumption that compliance with these standards will not be required due to use of other compliance options or exemptions, the assumptions should be disclosed and explained.	1-29
2-22	**Greenhouse Gas Impacts:** See comments above. In the same manner that the EA underestimates construction and operational emission of criteria pollutants, so too it underestimates emissions of greenhouse gas emissions. In addition, as described in Part I, General Comments, closure of the Rancho Cucamonga facility would cause major disruptions and shifts in scrap metal hauling and recycling and the manufacture of seismic rebar for the California market. These shifts would result in a substantial increase in greenhouse gas emissions that must be evaluated in the EA, if the proposed rule retains any provisions that would result in the closure of the Rancho Cucamonga facility.	1-30
2-23 to 2-25	**Biological Impacts:** The EA dismisses impacts to biological resources because the regulated facilities are within urban areas. This is not sufficient analysis under CEQA. The June 2015 version of the rule evaluated in the EA would require elimination of nearly all landscaped areas at the Gerdau plant. The same may be true of other regulated facilities. Within an urban environment, even non-native vegetation can be important in connecting habitats of sensitive species. Moreover, CEQA requires analysis of impacts to migratory birds regardless whether a specific species is listed as threatened or endangered.	1-31
2-24	**Biological Impacts:** The EA suggests that the proposed rule would have a beneficial impact "more closely in line with protecting biological resources" because it is designed to reduce lead emissions. Implicit in this claimed environmental benefit is the assumption that current levels of lead in the environment are harming biological resources. The EA must provide support for this assumption or delete the unsubstantiated claim of environmental benefit to biological resources.	1-32
2-26	**Cultural Resources Discussion, V. a):** The EA states that none of the facilities include any existing structures that would be considered historically significant, that have contributed to California history, or that pose high artistic values. The EA provides no substantiation for this conclusion in the form of cultural resources surveys or even site visits by trained historians or architects.	1-33
2-27 to 2-31	**Energy:** The Draft EA fails to quantify and evaluate the following energy (gas, electricity, gasoline and diesel) requirements of compliance with the proposed rule: construction and operation of enclosed slag conveyors; construction of enclosed slag storage; construction and operation of the Gerdau meltshop/baghouse, including three new 1,500 hp exhaust fans; 1-in-3 day air monitoring.	1-34

Page	Comment	
2-33	**Geology and Soils, VII. b):** The EA fails to evaluate any impacts on soil erosion or loss of topsoil associated with removing landscaping, grading and paving the site. If it is assumed that no facility will be required to take these actions due to other compliance options or exemptions, the EA should clearly state the assumptions and the underlying support for the assumptions.	1-35
2-41	**Land Use and Planning, X. b):** The Draft EA summarily dismisses this topic because the regulated facilities are located in urbanized, industrial or commercial areas. This is inadequate under CEQA. Rule requirements implicating the zoning, planning and other land use controls of local governments include the construction of tall walls or buildings, installation of enclosed conveyors, removal of landscaping, to illustrate just a few. The EA must be revised to include a meaningful discussion of potential land use impacts.	1-36
2-43	**Noise, XII. a), b), and c):** The Draft EA omits discussion of the potential noise impacts associated with the construction and operation of enclosed slag conveyors. If it is assumed that no facility will be required to construct and operate enclosed slag conveyors due to other compliance options or exemptions, the EA should clearly state the assumptions and the underlying support for the assumptions.	1-37
2-43	**Noise, XII. d):** The Draft EA states that it is not known whether existing facilities are located within an airport land use plan or within 2 miles of a public airport. Only 13 facilities are regulated by the rule. This information is readily available and should be disclosed in the Draft EA.	1-38
2-47 to 2-49	**Solid and Hazardous Waste:** The Draft EA states that no demolition is expected as a result of the proposed rule. See comments above regarding the EA's failure to evaluate Gerdau's substantial meltshop/baghouse construction, which will include generation of demolition waste. In addition, cities and counties are required by state law to reduce the amount of waste, including construction waste, going to landfills. In the event that onerous or infeasible requirements are restored or added to the rule, causing closure of the Rancho Cucamonga facility, then either cities and counties will struggle to meet their diversion requirements under state law, or the scrap metal currently processed at the Rancho Cucamonga facility will need to be transported to out of state or out of country facilities, causing environmental impacts described elsewhere in these comments.	1-39
2-49 to 2-51	**Transportation and Traffic:** See Part I, General Comments. In the event that onerous or infeasible requirements are restored or added to the rule, causing closure of the Rancho Cucamonga facility, then the scrap metal currently processed at the Rancho Cucamonga facility will need to be transported to out of state or out of country facilities, causing environmental impacts described elsewhere in these comments.	1-40

PART III. LIST OF ATTACHMENTS

Federal Register

78 Fed. Reg. 38318, June 26, 2013.

80 Fed. Reg. 278, January 5, 2015 (National Ambient Air Quality Standards for Lead, Proposed Rule).

FEDERAL REGISTER

Vol. 80 Monday,

No. 2 January 5, 2015

Part II

Environmental Protection Agency

40 CFR Part 50

National Ambient Air Quality Standards for Lead; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 50

[EPA–HQ–OAR–2010–0108; FRL–9915–57–OAR]

RIN 2060–AQ44

National Ambient Air Quality Standards for Lead

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule.

SUMMARY: Based on the Environmental Protection Agency's (EPA's) review of the air quality criteria and the national ambient air quality standards (NAAQS) for lead (Pb), the EPA is proposing to retain the current standards, without revision.

DATES: Comments must be received on or before April 6, 2015.

Public Hearings: If, by January 26, 2015, the EPA receives a request from a member of the public to speak at a public hearing concerning the proposed decision, we will hold a public hearing, with information about the hearing provided in a subsequent notice in the **Federal Register**.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA–HQ–OAR–2010–0108 by one of the following methods:

- *Federal eRulemaking Portal: http://www.regulations.gov:* Follow the on-line instructions for submitting comments.
- *Email: a-and-r-Docket@epa.gov.* Include docket ID No. EPA–HQ–OAR–2010–0108 in the subject line of the message.
- *Fax:* 202–566–9744.
- *Mail:* Docket No. EPA–HQ–OAR–2010–0108, Environmental Protection Agency, Mail Code 28221T, 1200 Pennsylvania Ave. NW., Washington, DC 20460.
- *Hand Delivery:* Docket No. EPA–HQ–OAR–2010–0108, Environmental Protection Agency, EPA WJC West Building, Room 3334, 1301 Constitution Ave. NW., Washington, DC. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to Docket ID No. EPA–HQ–OAR–2010–0108. The EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *www.regulations.gov*, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *www.regulations.gov* or email. The *www.regulations.gov* Web site is an "anonymous access" system, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to the EPA without going through *www.regulations.gov*, your email address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD–ROM you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about the EPA's public docket, visit the EPA Docket Center homepage at *http://www.epa.gov/epahome/dockets.htm.*

Public Hearing: To request a public hearing or information pertaining to a public hearing on this document, contact Ms. Eloise Shepherd, Health and Environmental Impacts Division, Office of Air Quality Planning and Standards (C504–02), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711; telephone number (919) 541–5507; fax number (919) 541–0804; email address: *shepherd.eloise@epa.gov.* See the **SUPPLEMENTARY INFORMATION** for further information about a possible public hearing.

Docket: All documents in the docket are listed on the *www.regulations.gov* Web site. This includes documents in the rulemaking docket (Docket ID No. EPA–HQ–OAR–2010–0108) and a separate docket, established for the Integrated Science Assessment for this review (Docket ID No. EPA–HQ–ORD–2011–0051) that has been incorporated by reference into the rulemaking docket. All documents in these dockets are listed on the *www.regulations.gov* Web site. Although listed in the index, some information is not publicly available, *e.g.*, CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and may be viewed, with prior arrangement, at the EPA Docket Center. Publicly available docket materials are available either electronically in *www.regulations.gov* or in hard copy at the Air and Radiation Docket Information Center, EPA/DC, WJC West Building, Room 3334, 1301 Constitution Ave. NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744 and the telephone number for the Air and Radiation Docket Information Center is (202) 566–1742.

FOR FURTHER INFORMATION CONTACT: Dr. Deirdre L. Murphy, Healtb and Environmental Impacts Division, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Mail Code C504–06, Rasearch Triangle Park, NC 27711; telephone: (919) 541–0729; fax: (919) 541–0237; email: *murphy.deirdre@epa.gov.* To request a public hearing or information pertaining to a public hearing on this document, contact Ms. Eloise Shepherd, Health and Environmental Impacts Division, Office of Air Quality Planning and Standards (C504–02), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711; telephone number (919) 541–5507; fax number (919) 541–0804; email address: *shepherd.eloise@epa.gov.*

SUPPLEMENTARY INFORMATION:

General Information

Preparing Comments for the EPA

1. *Submitting CBI.* Do not submit tbis information to the EPA througb *www.regulations.gov* or email. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD–ROM that you mail to the EPA, mark the outside of the disk or CD–ROM as CBI and then identify electronically within the disk or CD–ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. *Tips for Preparing Your Comments.* When submitting comments, remember to:

- Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).
- Follow directions—the agency may ask you to respond to specific questions or organize comments by referencing a

Code of Federal Regulations (CFR) part or section number.

- Explain why you agree or disagree, suggest alternatives, and substitute language for your requested changes.
- Describe any assumptions and provide any technical information and/or data that you used.
- Provide specific examples to illustrate your concerns, and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified.

Availability of Information Related to This Action

A number of the documents that are relevant to this action are available through the EPA's Office of Air Quality Planning and Standards (OAQPS) Technology Transfer Network (TTN) Web site at *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html*. These documents include the *Plan for Review of the National Ambient Air Quality Standards for Lead* (USEPA, 2011a), available at *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_2010_pd.html*, the *Integrated Science Assessment for Lead* (USEPA, 2013a), available at *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_2010_isa.html*, the *Review of the National Ambient Air Quality Standards for Lead: Risk and Exposure Assessment Planning Document* (USEPA, 2011b), available at *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_2010_pd.html*, and the *Policy Assessment for the Review of the Lead National Ambient Air Quality Standards* (USEPA, 2014), available at *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_2010_pa.html*. These and other related documents are also available for inspection and copying in the EPA docket identified above.

Information About a Possible Public Hearing

To request a public hearing or information pertaining to a public hearing on this document, contact Ms. Eloise Shepherd, Health and Environmental Impacts Division, Office of Air Quality Planning and Standards (C504–02), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711; telephone number (919) 541–5507; fax number (919) 541–0804; email address: *shepherd.eloise@epa.gov*.

Table of Contents

The following topics are discussed in this preamble:

I. Background

A. Legislative Requirements

Two sections of the Clean Air Act (CAA or the Act) govern the establishment and revision of the NAAQS. Section 108 (42 U.S.C. 7408) directs the Administrator to identify and list certain air pollutants and then to issue air quality criteria for those pollutants. The Administrator is to list those air pollutants that in her "judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare;" "the presence of which in the ambient air results from numerous or diverse mobile or stationary sources;" and "for which . . . [the Administrator] plans to issue air quality criteria . . ." Air quality criteria are intended to "accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of [a] pollutant in the ambient air . . ." 42 U.S.C. 7408(b). Section 109 (42 U.S.C. 7409) directs the Administrator to propose and promulgate "primary" and "secondary" NAAQS for pollutants for which air quality criteria are issued. Section 109(b)(1) defines a primary standard as one "the attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health."[1] A secondary standard, as defined in section 109(b)(2), must "specify a level of air quality the attainment and maintenance of which, in the judgment of the Administrator, based on such criteria, is requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of [the] pollutant in the ambient air."[2]

The requirement that primary standards provide an adequate margin of safety was intended to address uncertainties associated with

[1] The legislative history of section 109 indicates that a primary standard is to be set at "the maximum permissible ambient air level . . . which will protect the health of any [sensitive] group of the population," and that for this purpose "reference should be made to a representative sample of persons comprising the sensitive group rather than to a single person in such a group." See S. Rep. No. 91–1196, 91st Cong., 2d Sess. 10 (1970).

[2] Welfare effects as defined in section 302(h) (42 U.S.C. 7602(h)) include, but are not limited to, "effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being."

inconclusive scientific and technical information available at the time of standard setting. It was also intended to provide a reasonable degree of protection against hazards that research has not yet identified. *See Lead Industries Association* v. *EPA*, 647 F.2d 1130, 1154 (D.C. Cir 1980), *cert. denied*, 449 U.S. 1042 (1980); *American Petroleum Institute* v. *Costle*, 665 F.2d 1176, 1186 (D.C. Cir. 1981), *cert. denied*, 455 U.S. 1034 (1982); *American Farm Bureau Federation* v. *EPA*, 559 F.3d 512, 533 (D.C. Cir. 2009); *Association of Battery Recyclers* v. *EPA*, 604 F.3d 613, 617–18 (D.C. Cir. 2010). Both kinds of uncertainties are components of the risk associated with pollution at levels below those at which human health effects can be said to occur with reasonable scientific certainty. Thus, in selecting primary standards that provide an adequate margin of safety, the Administrator is seeking not only to prevent pollution levels that have been demonstrated to be harmful but also to prevent lower pollutant levels that may pose an unacceptable risk of harm, even if the risk is not precisely identified as to nature or degree. The CAA does not require the Administrator to establish a primary NAAQS at a zero-risk level or at background concentration levels, *see* Lead Industries v. EPA, 647 F.2d at 1156 n.51, but rather at a level that reduces risk sufficiently so as to protect public health with an adequate margin of safety.

In addressing the requirement for an adequate margin of safety, the EPA considers such factors as the nature and severity of the health effects involved, the size of sensitive population(s) at risk,[3] and the kind and degree of the uncertainties that must be addressed. The selection of any particular approach to providing an adequate margin of safety is a policy choice left specifically to the Administrator's judgment. See *Lead Industries Association* v. *EPA*, 647 F.2d at 1161–62.

In setting primary and secondary standards that are "requisite" to protect public health and welfare, respectively, as provided in section 109(b), the EPA's task is to establish standards that are neither more nor less stringent than necessary for these purposes. In so doing, the EPA may not consider the costs of implementing the standards. See generally, *Whitman* v. *American Trucking Associations*, 531 U.S. 457, 465–472, 475–76 (2001). Likewise, "[a]ttainability and technological feasibility are not relevant considerations in the promulgation of national ambient air quality standards." *American Petroleum Institute* v. *Costle*, 665 F.2d at 1185.

Section 109(d)(1) requires that "not later than December 31, 1980, and at 5-year intervals thereafter, the Administrator shall complete a thorough review of the criteria published under section 108 and the national ambient air quality standards . . . and shall make such revisions in such criteria and standards and promulgate such new standards as may be appropriate. . . ." Section 109(d)(2) requires that an independent scientific review committee "shall complete a review of the criteria . . . and the national primary and secondary ambient air quality standards . . . and shall recommend to the Administrator any new . . . standards and revisions of existing criteria and standards as may be appropriate. . . ." Since the early 1980s, this independent review function has been performed by the Clean Air Scientific Advisory Committee (CASAC).[4]

B. Related Lead Control Programs

States are primarily responsible for ensuring attainment and maintenance of the NAAQS. Under section 110 of the Act (42 U.S.C. 7410) and related provisions, states are to submit, for EPA approval, state implementation plans (SIPs) that provide for the attainment and maintenance of such standards through control programs directed to sources of the pollutants involved. The states, in conjunction with the EPA, also administer the Prevention of Significant Deterioration program (42 U.S.C. 7470–7479) for these pollutants.

The NAAQS is only one component of the EPA's programs to address Pb in the environment. Federal programs additionally provide for nationwide reductions in air emissions of these and other air pollutants through the Federal Motor Vehicle Control program under Title II of the Act (42 U.S.C. 7521–7574), which involves controls for automobile, truck, bus, motorcycle, nonroad engine, and aircraft emissions; the new source performance standards under section 111 of the Act (42 U.S.C. 7411); emissions standards for solid waste incineration units and the national emission standards for hazardous air pollutants (NESHAP) under sections 129 (42 U.S.C. 7429) and 112 (42 U.S.C. 7412) of the Act, respectively.

The EPA has taken a number of actions associated with these air pollution control programs since the last review of the Pb NAAQS, including completion of several regulations which will result in reduced Pb emissions from stationary sources regulated under the CAA sections 112 and 129. For example, in January 2012, the EPA updated the NESHAP for the secondary lead smelting source category (77 FR 555, January 5, 2012). These amendments to the original maximum achievable control technology standards apply to facilities nationwide that use furnaces to recover Pb from Pb-bearing scrap, mainly from automobile batteries (15 existing facilities, one under construction). By the effective date in 2014, this action is estimated to result in a Pb emissions reduction of 13.6 tons per year (tpy) across the category (a 68% reduction). Somewhat lesser Pb emissions reductions are also expected from regulations completed in 2013 for commercial and industrial solid waste incineration units (78 FR 9112, February 7, 2013), as well as several other regulations since 2007 (72 FR 73179, December 26, 2007; 72 FR 74088, December 28, 2007; 73 FR 225, November 20, 2008; 78 FR 10006, February 12, 2013; 76 FR 15372, March 21, 2011; 78 FR 7138, January 31, 2013; 74 FR 51368, October 6, 2009; Policy Assessment, Appendix 2A).

The presentation below briefly summarizes additional ongoing activities that, although not directly pertinent to the review of the NAAQS, are associated with controlling environmental Pb levels and human Pb exposures more broadly. Among those identified are the EPA programs intended to encourage exposure reduction programs in other countries.

Reducing Pb exposures has long been recognized as a federal priority as environmental and public health agencies continue to grapple with soil and dust Pb levels from the historical use of Pb in paint and gasoline and from other sources (Alliance to End Childhood Lead Poisoning, 1991; 62 FR 19885, April 23, 1997; 66 FR 52013, October 11, 2001; 68 FR 19931, April 23, 2003). A broad range of federal programs beyond those that focus on air pollution control provide for nationwide reductions in environmental releases and human exposures. For example, pursuant to section 1412 of the Safe Drinking Water Act (SDWA), the EPA regulates Pb in public drinking water systems through corrosion control

[3] As used here and similarly throughout this notice, the term population (or group) refers to persons having a quality or characteristic in common, such as a specific pre-existing illness or a specific age or life stage. As discussed more fully in section II.B.4 below, the identification of sensitive groups (called at-risk groups or at-risk populations) involves consideration of susceptibility and vulnerability.

[4] Lists of CASAC members and of members of the CASAC Lead Review Panel are available at: *http://yosemite.epa.gov/sab/sabproduct.nsf/WebCASAC/CommitteesandMembership?OpenDocument*.

and other utility actions which work together to minimize Pb levels at the tap (40 CFR 141.80–141.91). Under section 1417 of the SDWA, pipes, fittings and fixtures for potable water applications may not be used or introduced into commerce unless they are considered "lead free" as defined by that Act (40 CFR 141.43).[5] Additionally, federal Pb abatement programs provide for the reduction in human exposures and environmental releases from in-place materials containing Pb (*e.g.*, Pb-based paint, urban soil and dust, and contaminated waste sites). Federal regulations on disposal of Pb-based paint waste help facilitate the removal of Pb-based paint from residences (68 FR 36487, June 18, 2003).

Federal programs to reduce exposure to Pb in paint, dust, and soil are specified under the comprehensive federal regulatory framework developed under the Residential Lead-Based Paint Hazard Reduction Act (Title X). Under Title X (codified as Title IV of the Toxic Substances Control Act [TSCA]), the EPA has established regulations and associated programs in six categories: (1) Training, certification and work practice requirements for persons engaged in Pb-based paint activities (abatement, inspection and risk assessment); accreditation of training providers; and authorization of state and tribal Pb-based paint programs; (2) training, certification, and work practice requirements for persons engaged in home renovation, repair and painting (RRP) activities; accreditation of RRP training providers; and authorization of state and tribal RRP programs; (3) ensuring that, for most housing constructed before 1978, information about Pb-based paint and Pb-based paint hazards flows from sellers to purchasers, from landlords to tenants, and from renovators to owners and occupants; (4) establishing standards for identifying dangerous levels of Pb in paint, dust and soil; (5) providing grant funding to establish and maintain state and tribal Pb-based peint programs; and (6) providing information on Pb hazards to the public, including steps that people can take to protect themselves and their families from Pb-based paint hazards. The most recent rule issued under Title IV of TSCA is for the Lead Renovation, Repair and Painting Program (73 FR 21692, April 22, 2008), which became fully effective in April 2010 and which applies to compensated renovators and maintenance professionals who perform RRP activities in housing and child-care facilities built prior to 1978. To foster adoption of the rule's measures, the EPA has been conducting an extensive education and outreach campaign to promote awareness of these new requirements among both the regulated entities and the consumers who hire them (*http://www2.epa.gov/lead/renovation-repair-and-painting-program*). In addition, the EPA is investigating whether Pb hazards are also created by RRP activities in public and commercial buildings, in which case the EPA plans to issue RRP requirements, where appropriate, for this class of buildings (79 FR 31072, May 30, 2014).

Programs associated with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) and Resource Conservation Recovery Act (RCRA) also implement abatement programs, reducing exposures to Pb and other pollutants. For example, the EPA determines and implements protective levels for Pb in soil at Superfund sites and RCRA corrective action facilities. Federal programs, including those implementing RCRA, provide for management of hazardous substancas in hazardous and municipal solid waste (*e.g.*, 66 FR 58258, November 20, 2001). Federal regulations concerning batteries in municipal solid waste facilitate the collection and recycling or proper disposal of batteries containing Pb.[6] Similarly, federal programs provide for the reduction in environmental releases of hazardous substances such as Pb in the management of wastewater (*http://www.epa.gov/owm/*).

A variety of federal nonregulatory programs also provide for reduced environmental release of Pb-containing materials by encouraging pollution prevention, promotion of reuse and recycling, reduction of priority and toxic chemicals in products and waste, and conservation of energy and materials. These include the "Resource Conservation Challenge" (*http://www.epa.gov/epaoswer/osw/conserve/index.htm*), the "National Waste Minimization Program" (*http://www.epa.gov/epaoswer/hazwaste/minimize/leadtire.htm*), "Plug in to eCycling" (a partnership between the EPA and consumer electronics manufacturers and retailers; *http://www.epa.gov/epaoswer/hazwaste/recycle/electron/crt.htm#crts*), and activities to reduce the practice of backyard trash burning (*http://www.epa.gov/msw/backyard/pubs.htm*).

The EPA's research program identifies, encourages and conducts research needed to locate and assess serious risks and to develop methods and tools to characterize and help reduce risks related to Pb exposure. For example, the EPA's Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK model) is widely used and accepted as a tool that informs the evaluation of site-specific data. More recently, in recognition of the need for a single model that predicts Pb concentrations in tissues for children and adults, the EPA has been developing the All Ages Lead Model (AALM) to provide researchers and risk assessors with a pharmacokinetic model capable of estimating blood, tissue, and bone concentrations of Pb based on estimates of exposure over the lifetime of the individual (USEPA, 2006a, sections 4.4.5 and 4.4.8; USEPA, 2013a, section 3.6). The EPA's research activities on substances including Pb, such as those identified here, focus on improving our characterization of health and environmental effects, exposure, and control or management of environmental releases (see *http://www.epa.gov/research/*).

Other federal agencies also participate in programs intended to reduce Pb exposures. For example, programs of the Centers for Disease Control and Prevention (CDC) provide for the tracking of children's blood Pb levels in the U.S. and provide guidance on levels at which medical and environmental case management activities should be implemented (CDC, 2012; ACCLPP, 2012). As a result of coordinated, intensive efforts at the national, state and local levels, including those programs described above, blood Pb levels in all segments of the population have continued to decline from levels observed in the past. For example, blood Pb levels for the general population of children 1 to 5 years of age have dropped to a geometric mean level of 1.17 µg/dL in the 2009–2010 National Health and Nutrition Examination Survey (NHANES) as compared to the geometric mean in 1999–2000 of 2.23 µg/dL and in 1988–1991 of 3.6 µg/dL (USEPA, 2013a, section 3.4.1; USEPA, 2006a, AX4–2). Similarly, blood Pb levels in non-Hispanic black, Mexican American and lower socioeconomic groups, which are generally higher than those for the general population, have also declined (USEPA, 2013a, sections 3.4.1, 5.2.3 and 5.2.4; Jones et al., 2009).

The EPA also participates in a broad range of international programs focused on reducing environmental releases and human exposures in other countries. For example, the Partnership for Clean Fuels and Vehicles program engages governments and stakeholders in developing countries to eliminate Pb in gasoline globally.[7] From 2007 to 2011, the number of countries known to still be using leaded gasoline was reduced from just over 20 to six, with three of the six also offering unleaded fuel. All six were expected to eliminate Pb from fuel in the near future (USEPA, 2011c). The EPA is a contributor to the Global Alliance to Eliminate Lead Paint, a cooperative initiative jointly led by the World Health Organization and the United Nations Environment Programme (UNEP) to focus and catalyze the efforts to achieve international goals to prevent children's Pb exposure from paints containing Pb and to minimize occupational exposures to Pb paint. This alliance has the broad objective of promoting a phase-out of the manufacture and sale of paints containing Pb and eventually to eliminate the risks that such paints pose. The UNEP is also engaged on the problem of managing wastes containing Pb, including Pb-containing batteries. The Governing Council of the UNEP, of which the U.S. is a member, has adopted decisions focused on promoting the environmentally sound management of products, wastes and contaminated sites containing Pb and reducing risks to human health and the environment from Pb and cadmium throughout the life cycles of those substances (UNEP Governing Council, 2011, 2013). The EPA is also engaged in the issue of environmental impacts of spent Pb-acid betteries internationally through the Commission for Environmental Cooperation (CEC), where the EPA Administrator along with the cabinet-level or equivalent representatives of Mexico and Canada comprise the CEC's senior governing body (CEC Council).[8]

C. Review of the Air Quality Criteria and Standards for Lead

Unlike pollutants such as particulate matter and carbon monoxide, air quality criteria had not been issued for Pb as of the enactment of the CAA of 1970, which first set forth the requirement to set NAAQS based on air quality criteria. In the years just after enactment of the CAA, the EPA did not list Pb under Section 108 of the Act, having determined to control Pb air pollution through regulations to phase out the use of Pb additives in gasoline (See 41 FR 14921, April 8, 1976). However, the decision not to list Pb under Section 108 was challenged by environmental and public health groups, and the U.S. District Court for the Southern District of New York concluded that the EPA was required to list Pb under Section 108. *Natural Resources Defense Council v. EPA*, 411 F. Supp. 864 21 (S.D. N.Y. 1976), affirmed, 545 F.2d 320 (2d Cir. 1978). Accordingly, on April 8, 1976, the EPA published a notice in the **Federal Register** that Pb had been listed under Section 108 as a criteria pollutant (41 FR 14921, April 8, 1976) and on October 5, 1978, the EPA promulgated primary and secondary NAAQS for Pb under Section 109 of the Act (43 FR 46246, October 5, 1978). Both primary and secondary standards were set at a level of 1.5 micrograms per cubic meter (µg/m^3), measured as Pb in total suspended particles (Pb–TSP), not to be exceeded by the maximum arithmetic mean concentration averaged over a calendar quarter. These standards were based on the 1977 *Air Quality Criteria for Lead* (USEPA, 1977).

The first review of the Pb standards was initiated in the mid-1980s. The scientific assessment for that review is described in the 1986 *Air Quality Criteria for Lead* (USEPA, 1986a; henceforth referred to as the 1986 CD), the associated Addendum (USEPA, 1986b) and the 1990 Supplement (USEPA, 1990a). As pert of the review, the agency designed and performed human exposure and health risk analyses (USEPA, 1989), the results of which were presented in a 1990 Staff Paper (USEPA, 1990b). Based on the scientific assessment and the human exposure and health risk analyses, the 1990 Staff Paper presented recommendations for consideration by the Administrator (USEPA, 1990b). After consideration of the documents developed during the review and the significantly changed circumstances since Pb was listed in 1976, the agency did not propose any revisions to the 1978 Pb NAAQS. In a parallel effort, the agency developed the broad, multi-program, multimedia, integrated *U.S. Strategy for Reducing Lead Exposure* (USEPA, 1991). As part of implementing this strategy, the agency focused efforts primarily on regulatory and remedial clean-up actions aimed at reducing Pb exposures from a variety of nonair sources judged to pose more extensive public health risks to U.S. populations, as well as on actions to reduce Pb emissions to air, such as bringing more areas into compliance with the existing Pb NAAQS (USEPA, 1991). The EPA continues this broad, multi-program, multimedia approach to reducing Pb exposures today, as described in section I.B above.

The last review of the Pb air quality criteria and standards was initiated in November 2004 (69 FR 64926, November 9, 2004); the agency's plans for preparation of the Air Quality Criteria Document and conduct of the NAAQS review were presented in documents completed in 2005 and early 2006 (USEPA, 2005a; USEPA 2006b).[9] The schedule for completion of the review was governed by a judicial order in *Missouri Coalition for the Environment v. EPA* [No. 4:04CV00660 ERW, September 14, 2005; and amended on April 29, 2008 and July 1, 2008).

The scientific assessment for the review is described in the 2006 *Air Quality Criteria for Lead* (USEPA, 2006a; henceforth referred to as the 2006 CD), multiple drafts of which received review by CASAC and the public. The EPA also conducted human exposure and health risk assessments and a pilot ecological risk assessment for the review, after consultation with CASAC and receiving public comment on a draft analysis plan (USEPA, 2006c). Drafts of these quantitative assessments were reviewed by CASAC and the public. The pilot ecological risk assessment was released in December 2006 (ICF International, 2006), and the final health risk assessment report was released in November 2007 (USEPA, 2007a). The policy assessment, based on both of these assessments, air quality analyses and key evidence from the 2006 CD, was presented in the Staff Paper (USEPA, 2007b), a draft of which also received CASAC and public review. The final Staff Paper presented OAQPS staff's evaluation of the public health and welfare policy implications of the key studies and scientific information contained in the 2006 CD and presented and interpreted results from the quantitative risk/exposure analyses

[5] Effective in January 2014, the amount of Pb permitted in pipes, fittings, and fixtures was lowered (see "Summary of the Reduction of Lead in Drinking Water Act and Frequently Asked Questions" at *http://water.epa.gov/drink/info/lead/index.cfm*).

[6] See, *e.g.*, "Implementation of the Mercury-Containing and Rechargeable Battery Management Act" at *http://www.epa.gov/epawaste/hazard/recycling/battery.pdf* and "Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2005 *http://www.epa.gov/epawaste/nonhaz/municipal/pubs/msw-2005.pdf*.

[7] International programs in which the U.S. participates, including those identified here, are described at: *http://epa.gov/international/air/pcfv.html, http://www.unep.org/transport/pcfv/, http://www.unep.org/hazardoussubstances/Home/tabid/197/hazardoussubstances/LeadCadmium/PrioritiesforAction/GAELP/tabid/6176/Default.aspx*.

[8] The CEC was established to support cooperation among the North American Free Trade Agreement partners to address environmental issues of continental concern, including the environmental challenges and opportunities presented by continent-wide free trade.

[9] In the current review, these two documents have been combined in the *Integrated Review Plan for the National Ambient Air Quality Standards for Lead* (USEPA, 2011a).

conducted for this review. Based on this evaluation, the Staff Paper presented OAQPS staff recommendations that the Administrator give consideration to substantially revising the primary and secondary standards to a range of levels at or below 0.2 $\mu g/m^3$.

Immediately subsequent to completion of the Staff Paper, the EPA issued an advance notice of proposed rulemaking (ANPR) that was signed by the Administrator on December 5, 2007 (72 FR 71488, December 17, 2007).[10] CASAC provided advice and recommendations to the Administrator with regard to the Pb NAAQS based on its review of the ANPR and the previously released final Staff Paper and risk assessment reports. In 2008, the proposed decision on revisions to the Pb NAAQS was signed on May 1 and published in the **Federal Register** on May 20 (73 FR 29184, May 20, 2008). Members of the public provided comments and the CASAC Pb Panel also provided advice and recommendations to the Administrator based on its review of the proposal notice. The final decision on revisions to the Pb NAAQS was signed on October 15, 2008, and published in the **Federal Register** on November 12, 2008 (73 FR 66964, November 12, 2008).

The November 2008 notice described the EPA's decision to revise the primary and secondary NAAQS for Pb, as discussed more fully in section II.A.1 below. In consideration of the much-expanded health effects evidence on neurocognitive effects of Pb in children, the EPA substantially revised the primary standard from a level of 1.5 $\mu g/m^3$ to a level of 0.15 $\mu g/m^3$. The averaging time was revised to a rolling 3-month period with a maximum (not-to-be-exceeded) form, evaluated over a 3-year period. The indicator of Pb–TSP was retained, reflecting the evidence that Pb particles of all sizes pose health risks. The secondary standard was revised to be identical in all respects to the revised primary standard (40 CFR 50.16). Revisions to the NAAQS were accompanied by revisions to the data handling procedures, the treatment of exceptional events and the ambient air monitoring and reporting requirements, as well as emissions inventory reporting requirements. One aspect of the revised data handling requirements is the allowance for the use of monitoring for particulate matter with mean diameter below 10 microns ($Pb–PM_{10}$) for Pb NAAQS attainment purposes in certain limited circumstances at non-source-oriented sites. Subsequent to the 2008 rulemaking, additional revisions were made to the monitoring network requirements (75 FR 81126, December 27, 2010). Guidance on the approach for implementation of the new standards was described in the **Federal Register** notices for the proposed and final rules (73 FR 29184, May 20, 2008; 73 FR 66964, November 12, 2008).

On February 26, 2010, the EPA formally initiated its current review of the air quality criteria and standards for Pb, requesting the submission of recent scientific information on specified topics (75 FR 8934, February 28, 2010). Soon after this, the EPA held a workshop to discuss the policy-relevant science, which informed identification of key policy issues and questions to frame the review of the Pb NAAQS (75 FR 20843, April 21, 2010). Drawing from the workshop discussions, the EPA developed the draft Integrated Review Plan (draft IRP, USEPA, 2011d). The draft IRP was made available in late March 2011 for consultation with the CASAC Pb Review Panel and for public comment (76 FR 20347, April 12, 2011). This document was discussed by the Panel via a publicly accessible teleconference consultation on May 5, 2011 (76 FR 21346, April 15, 2011; Frey, 2011a). The final *Integrated Review Plan for the National Ambient Air Quality Standards for Lead* (IRP), developed in consideration of the CASAC consultation and public comment, was released in November 2011 (USEPA, 2011a; 76 FR 76972, December 9, 2011).

In developing the Integrated Science Assessment (ISA) for this review, the EPA held a workshop in December 2010 to discuss with invited scientific experts preliminary draft materials and released the first external review draft of the document for CASAC review and public comment in May 2011 (USEPA, 2011e; 76 FR 26284, May 6, 2011; 78 FR 36120, June 21, 2011). The CASAC Pb Review Panel met at a public meeting on July 20, 2011, to review the draft ISA (76 FR 36120, June 21, 2011). The CASAC provided comments in a December 9, 2011, letter to the EPA Administrator (Frey and Samet, 2011). The second external review draft ISA was released for CASAC review and public comment in February 2012 (USEPA, 2012a; 77 FR 5247, February 2, 2012) and was the subject of a public meeting on April 10–11, 2012 (77 FR 14783, March 13, 2012). The CASAC provided comments in a July 20, 2012, letter (Samet and Frey, 2012). The third external review draft was released for CASAC review and public comment in November 2012 (USEPA, 2012b; 77 FR 70776, November 27, 2012) and was the subject of a public meeting on February 5–6, 2013 (78 FR 938, January 7, 2013). The CASAC provided comments in a June 4, 2013, letter (Frey, 2013a). The final ISA was released in late June 2013 (USEPA, 2013a, henceforth referred to as the ISA; 78 FR 38318, June 26, 2013).

In June 2011, the EPA developed and released the *Risk and Exposure Assessment Planning Document* (REA Planning Document) for consultation with CASAC and public comment (USEPA, 2011b; 76 FR 58509). This document presented a critical evaluation of the information related to Pb human and ecological exposure and risk (*e.g.*, data, modeling approaches) newly available in this review, with a focus on consideration of the extent to which new or substantially revised REAs for health and ecological risk might be warranted by the newly available evidence. Evaluation of the newly available information with regard to designing and implementing health and ecological REAs for this review led us to conclude that the currently available information did not provide a basis for developing new quantitative risk and exposure assessments that would have substantially improved utility for informing the agency's consideration of health and welfare effects and evaluation of the adequacy of the current primary and secondary standards, respectively (REA Planning Document, sections 2.3 and 3.3, respectively). The CASAC Pb Review Panel provided consultative advice on that document and its conclusions at a public meeting on July 21, 2011 (76 FR 36120, June 21, 2011; Frey, 2011b). Based on their consideration of the REA Planning Document analysis, the CASAC Pb Review Panel generally concurred with the conclusion that a new REA was not warranted in this review (Frey, 2011b; Frey, 2013b). In consideration of the conclusions reached in the REA Planning Document and CASAC's consultative advice, the EPA has not developed REAs for health and ecological risk for this review. Accordingly, we consider the risk assessment findings from the last review for human exposure and health risk (USEPA, 2007a, henceforth referred to as the 2007 REA) and ecological risk (ICF International, 2006; henceforth referred to as the 2006 REA) with regard to any appropriate further interpretation in light of the evidence newly available in this review.

A draft of the Policy Assessment (PA) was released for public comment and review by CASAC in January 2013 (USEPA, 2013b; 77 FR 70776, November 27, 2012) and was the subject of a public meeting on February 5–6, 2013 (78 FR 938, January 7, 2013). Comments provided by the CASAC in a June 4, 2013 letter (Frey, 2013b), as well as public comments received on the draft PA were considered in preparing the final PA, which was released in May 2014 (USEPA, 2014; 79 FR 26751, May 9, 2014).

[10] The ANPR, one of the features of the revised NAAQS review process that EPA instituted in 2006, was replaced by reinstatement of the Policy Assessment prepared by OAQPS staff (previously termed the OAQPS Staff Paper) in 2009 (Jackson, 2009).

D. Multimedia, Multipathway Aspects of Lead

Since Pb distributes from air to other media and is persistent, our review of the NAAQS for Pb considers the protection provided against such effects associated both with exposures to Pb in ambient air and with exposures to Pb that makes its way into other media from ambient air. Additionally, in assessing the adequacy of protection afforded by the current NAAQS, we are mindful of the long history of greater and more widespread atmospheric emissions that occurred in previous years (both before and after establishment of the 1978 NAAQS) and that contributed to the Pb that exists in human populations and ecosystems today. Likewise, we also recognize the role of other, nonair sources of Pb now and in the past that also contribute to the Pb that exists in human populations and ecosystems today.

Lead emitted to ambient air is transported through the air and is also distributed from air to other media. This multimedia distribution of Pb emitted into ambient air (air-related Pb) contributes to multiple air-related pathways of human and ecosystem exposure (ISA, sections 3.1.1 and 3.7.1). Air-related pathways may also involve media other than air, including indoor and outdoor dust, soil, surface water and sediments, vegetation and biota. Air-related Pb exposure pathways for humans include inhalation of ambient air or ingestion of food, water or other materials, including dust and soil, that have been contaminated through a pathway involving Pb deposition from ambient air (ISA, section 3.1.1.1). Ambient air inhalation pathways include both inhalation of air outdoors and inhalation of ambient air that has infiltrated into indoor environments. The air-related ingestion pathways occur as a result of Pb passing through the ambient air, being distributed to other environmental media and contributing to human exposures via contact with and ingestion of indoor and outdoor dusts, outdoor soil, food and drinking water.

Lead exposures via the various inhalation and ingestion air-related pathways may vary with regard to the time in which they respond to changes in air Pb concentrations. For example, exposures resulting from human exposure pathways most directly involving Pb in ambient air and exchanges of ambient air with indoor air (*e.g.*, inhalation) can respond most quickly, while those for pathways involving exposure to Pb deposited from ambient air into the environment (*e.g.*, diet) may be expected to respond more slowly. The extent of this will be influenced by the magnitude of change, as well as—for deposition-related pathways—the extent of prior deposition and environment characteristics influencing availability of prior deposited Pb.

Lead currently occurring in nonair media may also derive from sources other than ambient air (nonair Pb sources) (ISA, sections 2.3 and 3.7.1). For example, Pb in dust inside some houses or outdoors in some urban areas may derive from the common past usage of leaded paint, while Pb in drinking water may derive from the use of leaded pipe or solder in drinking water distribution systems (ISA, section 3.1.3.3). We also recognize the history of much greater air emissions of Pb in the past, such as that associated with leaded gasoline usage and higher industrial emissions which have left a legacy of Pb in other (nonair) media.

The relative importance of different pathways of human exposure to Pb, as well as the relative contributions from Pb resulting from recent and historic air emissions and from nonair sources, vary across the U.S. population as a result of both extrinsic factors, such as a home's proximity to industrial Pb sources or its history of leaded paint usage, and intrinsic factors, such as a person's age and nutritional status (ISA, sections 5.1, 5.2, 5.2.1, 5.2.5 and 5.2.6). Thus, the relative contributions from specific pathways is situation specific (ISA, p. 1–11), although a predominant Pb exposure pathway for very young children is the incidental ingestion of indoor dust by hand-to-mouth activity (ISA, section 3.1.1.1). For adults, however, diet may be the primary Pb exposure pathway (2006 CD, section 3.4). Similarly, the relative importance of air-related and nonair-related Pb also varies with the relative magnitudes of exposure by those pathways, which may vary with different circumstances.

The distribution of Pb from ambient air to other environmental media also influences the exposure pathways for organisms in terrestrial and aquatic ecosystems. Exposure of terrestrial animals and vegetation to air-related Pb can occur by contact with ambient air or by contact with soil, water or food items that have been contaminated by Pb from ambient air (ISA, section 6.2). Transport of Pb into aquatic systems similarly provides for exposure of biota in those systems, and exposures may vary among systems as a result of differences in sources and levels of contamination, as well as characteristics of the systems themselves, such as salinity, pH and turbidity (ISA, section 2.3.2). In addition to Pb contributed by current atmospheric deposition, Pb may occur in aquatic systems as a result of nonair sources such as industrial discharges or mine-related drainage, of historical air Pb emissions (*e.g.*, contributing to deposition to a water body or via runoff from soils near historical air sources) or combinations of different types of sources (*e.g.*, resuspension of sediments contaminated by urban runoff and surface water discharges).

The persistence of Pb contributes an important temporal aspect to lead's environmental pathways, and the time (or lag) associated with realization of the impact of air Pb concentrations on concentrations in other media can vary with the media (*e.g.*, ISA, section 6.2.2). For example, exposure pathways most directly involving Pb in ambient air or surface waters can respond more quickly to changes in ambient air Pb concentrations while pathways involving exposure to Pb in soil or sediments generally respond more slowly. An additional influence on the response time for nonair media is the environmental presence of Pb associated with past, generally higher, air concentrations. For example, after a reduction in air Pb concentrations, the time needed for sediment or surface soil concentrations to indicate a response to reduced air Pb concentrations might be expected to be longer in areas of more substantial past contamination than in areas with lesser past contamination. Thus, considering the Pb concentrations occurring in nonair environmental media as a result of air quality conditions that meet the current NAAQS is a complexity of this review, as it also was, although to a lesser degree, with regard to the prior standard in the last review.

E. Air Quality Monitoring

Lead emitted to the air is predominantly in particulate form. Once emitted, particle-bound Pb can be transported long or short distances depending on particle size, which influences the amount of time spent in the aerosol phase. In general, larger particles tend to deposit more quickly, within shorter distances from emissions points, while smaller particles remain in aerosol phase and travel longer

distances before depositing (ISA, section 1.2.1). Accordingly, airborne concentrations of Pb near sources are much higher (and the representation of larger particles generally greater) than at sites not directly influenced by sources (PA, Figure 2–11; ISA sections 2.3.1 and 2.5.3).

Ambient air monitoring data for Pb, in terms of Pb–TSP, Pb–PM_{10} or Pb in particulate matter with mean diameter smaller than 2.5 microns (Pb–$PM_{2.5}$), are currently collected in several national networks. Monitoring conducted for purposes of Pb NAAQS surveillance is regulated to ensure accurate and comparable data for determining compliance with the NAAQS. In order to be used in NAAQS attainment designations, ambient Pb concentration data must be obtained using either the federal reference method (FRM) or a federal equivalent method (FEM). The FRMs for sample collection and analysis are specified in 40 CFR part 50. The procedures for approval of FRMs and FEMs are specified in 40 CFR part 53. In 2013, after consultation with CASAC's Ambient Air Monitoring and Methods Subcommittee, the EPA adopted a new FRM for Pb–TSP, based on inductively coupled plasma-mass spectrometry (78 FR 40000, July 3, 2013). The previous FRM was retained as an FEM, and existing FEMs were retained as well.

The Pb monitoring network design requirements (40 CFR part 58, Appendix D, paragraph 4.5) include two types of monitoring sites—source-oriented monitoring sites and non-source-oriented monitoring sites—as well as the collection of a year of Pb–TSP measurements at 15 specific airports. The indicator for the current Pb NAAQS is Pb–TSP, although in some situations,[11] ambient Pb–PM_{10} concentrations may be used in judging nonattainment. Currently, approximately 260 Pb–TSP monitors are in operation; these are a mixture of source- and non-source-oriented monitors.

Since the phase-out of Pb in on-road gasoline, Pb is widely recognized as a source-oriented air pollutant. Variability in air Pb concentrations is highest in areas including a Pb source, "with high concentrations downwind of the sources and low concentration at areas far from sources" (ISA, p. 2–92). The current requirements for source-oriented monitoring include placement of monitor sites near sources of air Pb emissions which are expected to or have been shown to contribute to ambient air Pb concentrations in excess of the NAAQS. At a minimum, there must be one source-oriented site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons of Pb per year and from each airport which emits 1.0 or more tons of Pb per year.[12] The EPA Regional Administrators may require additional monitoring beyond the minimum requirements where the likelihood of Pb air quality violations is significant. Such locations may include those near additional industrial Pb sources, recently closed industrial sources and other sources of resuspended Pb dust, as well as airports where piston-engine aircraft emit Pb associated with combustion of leaded aviation fuel (40 CFR part 58, Appendix D, section 4.5(c)). A single year of monitoring was also required near 15 specific airports[13] in order to gather additional information on the likelihood of NAAQS exceedances due to the combustion of leaded aviation gasoline (75 FR 81126, December 27, 2010; 40 CFR part 58, Appendix D, 4.5(a)(iii)). These airport monitoring data along with other data gathering and analyses will inform the EPA's ongoing investigation into the potential for Pb emissions from piston-engine aircraft to cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare. This investigation is occurring under section 231 of the CAA, separate from the Pb NAAQS review. As a whole, the various data gathering and analyses are expected to improve our understanding of Pb concentrations in ambient air near airports and conditions influencing these concentrations.

Monitoring agencies are also required, under 40 CFR part 58, Appendix D, to conduct non-source-oriented Pb monitoring at the NCore sites[14] required in metropolitan areas with a population of 500,000 or more (as defined by the U.S. Census Bureau).[15] Either Pb–TSP or Pb–PM_{10} monitoring may be performed at these sites. Currently, all 50 NCore Pb sites are operational and measuring Pb concentrations, with 28 measuring Pb in TSP and 24 measuring Pb in PM_{10} (2 sites are measuring both Pb in TSP and Pb in PM_{10}). In a separate action addressing a range of issues related to monitoring requirements for criteria pollutants, the EPA is proposing to remove the requirement for Pb monitoring at NCore sites (79 FR 54395, September 11, 2014). This change is being proposed in consideration of current information indicating concentrations at these sites to be well below the Pb NAAQS and of the presence of other monitoring networks that provide information on Pb concentrations in urban areas not directly impacted by Pb sources. The data available for these sites indicate maximum 3-month average concentrations (of Pb–PM_{10} or Pb–TSP) well below the level of the Pb NAAQS, with the vast majority of sites showing concentrations less than 0.01 $\mu g/m^3$. Additionally, other monitoring networks provide data on Pb in PM_{10} or $PM_{2.5}$, at non-source-oriented urban, and some rural, sites. These include the National Air Toxics Trends Stations for PM_{10} and the Chemical Speciation Network for $PM_{2.5}$. Data on Pb in $PM_{2.5}$ are also provided at the rural sites of the Interagency Monitoring of Protected Visual Environments network.

The long-term record of Pb monitoring data documents the dramatic decline in atmospheric Pb concentrations that has occurred since the 1970s in response to reduced emissions (PA, Figures 2–1 and 2–7). Currently, the highest concentrations occur near some metals industries where some individual locations have concentrations that exceed the NAAQS (PA, Figure 2–10). Concentrations at non-source-oriented monitoring sites are much lower than those at source-oriented sites and well below the standard (PA, Figure 2–11).

[11] The Pb–PM_{10} measurements may be used for NAAQS monitoring as an alternative to Pb–TSP measurements in certain conditions defined in 40 CFR part 58, Appendix C, section 2.10.1.2. These conditions include where Pb concentrations are not expected to equal or exceed 0.10 $\mu g/m^3$ as an arithmetic 3-month mean and where the source of Pb emissions is expected to emit a substantial majority of its Pb in the size fraction captured by PM_{10} monitors.

[12] The Regional Administrator may waive this requirement for monitoring near Pb sources if the state or, where appropriate, local agency can demonstrate the Pb source will not contribute to a maximum 3-month average Pb concentration in ambient air in excess of 50 percent of the NAAQS level based on historical monitoring data, modeling, or other means (40 CFR part 58, Appendix D, section 4.5(a)(ii)).

[13] These airports were selected based on three criteria: annual Pb inventory between 0.5 ton/year and 1.0 ton/year, ambient air within 150 meters of the location of maximum emissions (*e.g.*, the end of the runway or run-up location), and airport configuration and meteorological scenario that leads to a greater frequency of operations from one runway. These criteria are expected, collectively, to identify airports with the highest potential to have ambient air Pb concentrations approaching or exceeding the Pb NAAQS (75 FR 81126).

[14] The NCore network, that formally began in January 2011, is a subset of the state and local air monitoring stations network that is intended to meet multiple monitoring objectives (*e.g.*, long-term trends analysis, model evaluation, health and ecosystem studies, as well as NAAQS compliance). The complete NCore network consists of 63 urban and 15 rural stations, with each state containing at least one NCore station; 46 of the states plus Washington, DC and Puerto Rico have at least one urban station.

[15] *http://www.census.gov/population/www/metroareas/metroarea.html.*

II. Rationale for Proposed Decision on the Primary Standard

This section presents the rationale for the Administrator's proposed decision to retain the existing Pb primary standard. As discussed more fully below, this rationale is based on a thorough review, in the ISA, of the latest scientific information, generally published through September 2011,[16] on human health effects associated with Pb and pertaining to the presence of Pb in the ambient air. This proposal also takes into account: (1) The PA's staff assessments of the most policy-relevant information in the ISA and staff analyses of air quality, human exposure and health risks, upon which staff conclusions regarding appropriate considerations in this review are based; (2) CASAC advice and recommendations, as reflected in discussions of drafts of the ISA and PA at public meetings, in separate written comments, and in CASAC's letters to the Administrator; and (3) public comments received during the development of these documents, either in connection with CASAC meetings or separately.

In presenting the rationale and its foundations, section II.A provides background on the general approach for review of the primary NAAQS for Pb, including a summary of the approach used in the last review (section II.A.1) and the general approach for the current review (section II.A.2). Sections II.B and II.C summarize the body of evidence supporting this rationale, focusing on consideration of key policy-relevant questions, and section II.D summarizes the exposure/risk information for this review. Section II.E presents the Administrator's proposed conclusions on adequacy of the current standard, drawing on both evidence-based and exposure/risk-based considerations (sections II.E.1 and II.E.2), and advice from CASAC (section II.E.3).

A. General Approach

The past and current approaches described below are both based, most fundamentally, on using the EPA's assessment of the current scientific evidence and associated quantitative analyses to inform the Administrator's judgment regarding a primary standard for Pb that protects public health with an adequate margin of safety. We note that in drawing conclusions with regard to the primary standard, the final decision on the adequacy of the current standard is largely a public health policy judgment to be made by the Administrator. The Administrator's final decision must draw upon scientific information and analyses about health effects, population exposure and risks, as well as judgments about how to consider the range and magnitude of uncertainties that are inherent in the scientific evidence and analyses. Our approach to informing these judgments, discussed more fully below, is based on the recognition that the available health effects evidence generally reflects a continuum, consisting of levels at which scientists generally agree that health effects are likely to occur, through lower levels at which the likelihood and magnitude of the response become increasingly uncertain. This approach is consistent with the requirements of the NAAQS provisions of the Act and with how the EPA and the courts have historically interpreted the Act. These provisions require the Administrator to establish primary standards that, in the judgment of the Administrator, are requisite to protect public health with an adequate margin of safety. In so doing, the Administrator seeks to establish standards that are neither more nor less stringent than necessary for this purpose. The Act does not require that primary standards be set at a zero-risk level, but rather at a level that avoids unacceptable risks to public health including the health of sensitive groups.[17] The four basic elements of the NAAQS (indicator, averaging time, level, and form) are considered collectively in evaluating the health protection afforded by the current standard.

1. Approach in the Last Review

The last review of the NAAQS for Pb was completed in 2008 (73 FR 66964, November 12, 2008). The 2008 decision to substantially revise the primary standard was based on the extensive body of scientific evidence published over almost three decades, from the time the standard was originally set in 1978 through 2005–2006. In so doing, the 2008 decision considered the body of evidence as assessed in the 2006 CD (USEPA, 2006a), as well as the 2007 Staff Paper assessment of the policy-relevant information contained in the CD and the quantitative risk/exposure assessment (USEPA, 2007a, 2007b), the advice and recommendations of CASAC (Henderson 2007a, 2007b, 2008a, 2008b), and public comment. While recognizing that Pb has been demonstrated to exert "a broad array of deleterious effects on multiple organ systems," the review focused on the effects most pertinent to ambient air exposures, which given ambient air Pb reductions over the past 30 years, are those associated with relatively lower exposures and associated blood Pb levels (73 FR 66975, November 12, 2008). In so doing, the EPA recognized the general consensus that the developing nervous system in children is among the most sensitive health endpoints associated with Pb exposure, if not the most sensitive one. Thus, primary attention was given to consideration of nervous system effects, including neurocognitive and neurobehavioral effects, in children (73 FR 66976, November 12, 2008). The body of evidence included associations of such effects in study populations of variously aged children with mean blood Pb levels below 10 $\mu g/dL$, extending from 8 down to 2 $\mu g/dL$ (73 FR 66976, November 12, 2008). The public health implications of effects of air-related Pb on cognitive function (*e.g.*, IQ) in young children were given particular focus in the review.

The conclusions reached by the Administrator in the last review were based primarily on the scientific evidence, with the risk- and exposure-based information providing support for various aspects of the decision. In reaching his conclusion on the adequacy of the then-current standard, which was set in 1978, the Administrator placed primary consideration on the large body of scientific evidence available in the review including significant new evidence concerning effects at blood Pb concentrations substantially below those identified when the standard was initially set (73 FR 66987, November 12, 2008; 43 FR 46246, October 5, 1978). Given particular attention was the robust evidence of neurotoxic effects of Pb exposure in children, recognizing: (1) That while blood Pb levels in U.S. children had decreased notably since the late 1970s, newer epidemiological studies had investigated and reported

[16] In addition to the review's opening "call for information" (75 FR 8934), "literature searches were conducted routinely to identify studies published since the last review, focusing on studies published from 2006 (close of the previous scientific assessment) through September 2011," and references "that were considered for inclusion or actually cited in this ISA can be found at *http://hero.epa.gov/lead*" (ISA, p. 1–2).

[17] The at-risk population groups identified in a NAAQS review may include low-income or minority groups. Where low-income/minority groups are among the at-risk populations, the rulemaking decision will be based on providing protection for these and other at-risk populations and lifestages (*e.g.*, children, older adults, persons with pre-existing heart and lung disease). To the extent that low-income/minority groups are not among the at-risk populations identified in the ISA, a decision based on providing protection of the at-risk lifestages and populations would be expected to provide protection for the low-income/minority groups.

associations of effects on the neurodevelopment of children with those more recent lower blood Pb levels and (2) that the toxicological evidence included extensive experimental laboratory animal evidence substantiating well the plausibility of the epidemiological findings observed in human children and expanding our understanding of likely mechanisms underlying the neurotoxic effects (73 FR 66987, November 12, 2008). Additionally, within the range of blood Pb levels investigated in the available evidence base, a threshold level for neurocognitive effects was not identified (73 FR 66984, November 12, 2008; 2006 CD, p. 8–67). Further, the evidence indicated a steeper concentration-response (C–R) relationship for effects on cognitive function at those lower blood Pb levels than at higher blood Pb levels that were more common in the past, "indicating the potential for greater incremental impact associated with exposure at these lower levels" (73 FR 66987, November 12, 2008). As at the time when the standard was initially set in 1978, the health effects evidence and exposure/risk assessment available in the last review supported the conclusion that air-related Pb exposure pathways contribute to blood Pb levels in young children by inhalation and ingestion (73 FR 66987, November 12, 2008). The available information in the last review also indicated, however, a likely greater change in blood Pb per unit of air Pb than was estimated when the standard was initially set (73 FR 66987, November 12, 2008).

In the Administrator's decision on the adequacy of the 1978 standard, the Administrator considered the evidence using a very specifically defined framework, referred to as an air-related IQ loss evidence-based framework. This framework integrates evidence for the relationship between Pb in air and Pb in young children's blood with evidence for the relationship between Pb in young children's blood and IQ loss (73 FR 66987, November 12, 2008). This evidence-based approach considers air-related effects on neurocognitive function (using the quantitative metric of IQ loss) associated with exposure in those areas with elevated air concentrations equal to potential alternative levels for the Pb standard. In simplest terms, the framework focuses on children exposed to air-related Pb in those areas with elevated air Pb concentrations equal to specific potential standard levels, providing for estimation of a mean air-related IQ decrement for young children in the high end of the national distribution of air-related exposures. Thus, the conceptual context for the framework is that it provides estimates of air-related IQ loss for the subset of U.S. children living in close proximity to air Pb sources that contribute to such elevated air Pb concentrations. In such cases, when a standard of a particular level is just met at a monitor sited to record the highest source-oriented concentration in an area, the large majority of children in the larger surrounding area would likely experience exposures to concentrations well below that level.

The two primary inputs to the evidence-based air-related IQ loss framework are air-to-blood ratios and C–R functions for the relationship between blood Pb and IQ response in young children. Additionally taken into consideration in applying and drawing conclusions from the framework were the uncertainties inherent in these inputs. Application of the framework also entailed consideration of an appropriate level of protection from air-related IQ loss to be used in conjunction with the framework. The framework estimates of mean air-related IQ loss are derived through multiplication of the following factors: standard level ($\mu g/m^3$), air-to-blood ratio (albeit in terms of $\mu g/dL$ blood Pb per $\mu g/m^3$ air concentration), and slope for the C–R function in terms of points IQ decrement per $\mu g/dL$ blood Pb.

Based on the application of the air-related IQ loss framework to the evidence, the Administrator concluded that, for exposures projected for air Pb concentrations at the level of the 1978 standard, the quantitative estimates of IQ loss associated with air-related Pb indicated risk of a magnitude that, in his judgment, was significant from a public health perspective, and that the evidence-based framework supported a conclusion that the 1978 standard did not protect public health with an adequate margin of safety (73 FR 66987, November 12, 2008). The Administrator further concluded that the evidence indicated the need for a substantially lower standard level to provide increased public health protection, especially for at-risk groups (most notably children), against an array of effects, most importantly including effects on the developing nervous system (73 FR 66987, November 12, 2008). In addition to giving primary consideration to the much expanded evidence base since the standard was set, the Administrator also took into consideration the exposure/risk assessments. In so doing, he observed that, while taking into consideration their inherent uncertainties and limitations, the quantitative estimates of IQ loss associated with air-related Pb in air quality scenarios just meeting the then-current standard also indicated risk of a magnitude that, in his judgment, was significant from a public health perspective. Thus, the Administrator concluded the exposure/risk estimates provided additional support to the evidence-based conclusion that the standard needed revision (73 FR 66987, November 12, 2008).

In considering appropriate revisions to the prior standard in the review completed in 2008, each of the four basic elements of the NAAQS (indicator, averaging time, form and level) was evaluated. The rationale for decisions on those elements is summarized below.

With regard to indicator, consideration was given to replacing Pb–TSP with Pb–PM_{10}. The EPA recognized, however, that Pb in all particle sizes contributes to Pb in blood and associated health effects, additionally noting that the difference in particulate Pb captured by TSP and PM_{10} monitors may be on the order of a factor of two in some areas (73 FR 66991, November 12, 2008). Further, the Administrator recognized uncertainty with regard to whether a Pb–PM_{10}-based standard would also effectively control ultra-coarse [18] Pb particles, which may have a greater presence in areas near sources where Pb concentrations are highest (73 FR 66991, November 12, 2008). The Administrator decided to retain Pb–TSP as the indicator to provide sufficient public health protection from the range of particle sizes of ambient air Pb, including ultra-coarse particles (73 FR 66991, November 12, 2008). Additionally, a role was provided for Pb–PM_{10} in the monitoring required for a Pb–TSP standard (73 FR 66991, November 12, 2008) based on the conclusion that use of Pb–PM_{10} measurements at sites not influenced by sources of ultra-coarse Pb, and where Pb concentrations are well below the standard, would take advantage of the increased precision of these measurements and decreased spatial variation of Pb–PM_{10} concentrations, without raising the same concerns over a lack of protection against health risks from all particulate Pb emitted to the ambient air that

[18] The term "ultra-coarse" refers to particles collected by a TSP sampler but not by a PM_{10} sampler. This terminology is consistent with the traditional usage of "fine" to refer to particles collected by a $PM_{2.5}$ sampler, and "coarse" to refer to particles collected by a PM_{10} sampler but not by a $PM_{2.5}$ sampler, recognizing that there will be some overlap in the particle sizes in the three types of collected material.

support retention of Pb–TSP as the indicator (versus revision to Pb–PM_{10}) (73 FR 66991, November 12, 2008). Accordingly, allowance was made for the use of Pb–PM_{10} monitoring for Pb NAAQS attainment purposes in certain limited circumstances, at non-source-oriented sites, where the Pb concentrations are expected to be substantially below the standard and ultra-coarse particles are not expected to be present (73 FR 66991, November 12, 2008).

With regard to averaging time and form for the revised standard, consideration was given to a monthly averaging time, with a form of second maximum, and to 3-month and calendar quarter averaging times, with not-to-be exceeded forms. While the Administrator recognized that there were some factors that might imply support for a period as short as a month for averaging time, he also noted other factors supporting use of a longer time. He additionally took note of the complexity inherent in this consideration for the primary Pb standard, which is greater than in the case of other criteria pollutants due to the multimedia nature of Pb and its multiple pathways of human exposure. In this situation for Pb, the Administrator emphasized the importance of considering all of the relevant factors, both those pertaining to the human physiological response to changes in Pb exposures and those pertaining to the response of air-related Pb exposure pathways to changes in airborne Pb, in an integrated manner.

As discussed further in the PA, the evidence on human physiological response to changes in Pb exposure available in the last review indicated that children's blood Pb levels respond quickly to increased Pb exposure, particularly during the time of leaded gasoline usage but likely with lessened immediacy since that time as children's exposure pathways have changed (PA, section 4.1.1.2). The Administrator also recognized limitations and uncertainties in the evidence and variability with regard to the information regarding the response time of indoor dust Pb to ambient airborne Pb. In consideration of the uncertainty associated with the evidence, the Administrator noted that the two changes in form for the standard (to a rolling 3-month average and to providing equal weighting to each month in deriving the 3-month average) both afford greater weight to each individual month than did the calendar quarter form of the 1978 standard, tending to control both the likelihood that any month will exceed the level of the standard and the magnitude of any such exceedance. Thus, based on an integrated consideration of the range of relevant factors, the averaging time was revised to a rolling 3-month period with a maximum (not-to-be-exceeded) form, evaluated over a 3-year period. As compared to the previous averaging time and form of calendar quarter (not-to-be exceeded), this revision was considered to be more scientifically appropriate and more health protective (73 FR 66998, November 12, 2008). The rolling average gives equal weight to all 3-month periods, and the new calculation method gives equal weight to each month within each 3-month period (73 FR 66996, November 12, 2008). Further, the rolling average yields twelve 3-month averages each year to be compared to the NAAQS versus four averages in each year for the block calendar quarters pertaining to the previous standard (73 FR 66996, November 12, 2008).

Lastly, based on the body of scientific evidence and information available, as well as CASAC recommendations and public comment, the Administrator decided on a standard level that, in combination with the specified choice of indicator, averaging time, and form, he judged requisite to protect public health, including the health of sensitive groups, with an adequate margin of safety (73 FR 67006, November 12, 2008). In reaching the decision on level for the revised standard, the Administrator considered as a useful guide the evidence-based framework developed in that review. As described above, that framework integrates evidence for the relationship between Pb in air and Pb in children's blood and the relationship between Pb in children's blood and IQ loss. Application of the air-related IQ loss evidence-based framework was recognized, however, to provide "no evidence- or risk-based bright line that indicates a single appropriate level" for the standard (73 FR 67006, November 12, 2008). Rather, the framework was seen as a useful guide for consideration of health risks from exposure to ambient levels of Pb in the air, in the context of a specified averaging time and form, with regard to the Administrator's decision on a level for a revised NAAQS that provides public health protection that is sufficient but not more than necessary under the Act (73 FR 67004, November 12, 2008).

As noted above, use of the evidence-based air-related IQ loss framework to inform selection of a standard level involved consideration of the evidence with regard to two input parameters. The two input parameters are an air-to-blood ratio and a C–R function for population IQ response associated with blood Pb level (73 FR 67004, November 12, 2008). The evidence at the time of the last review indicated a broad range of air-to-blood ratio estimates,[19] each with limitations and associated uncertainties. Based on the then-available evidence, the Administrator concluded that 1:5 to 1:10 represented a reasonable range to consider and identified 1:7 as a generally central value on which to focus (73 FR 67004, November 12, 2008). With regard to C–R functions, in light of the evidence of nonlinearity and of steeper slopes at lower blood Pb levels, the Administrator concluded it was appropriate to focus on C–R analyses based on blood Pb levels that most closely reflected the then-current population of children in the U.S.,[20] recognizing the EPA's identification of four such analyses and giving weight to the central estimate or median of the resultant C–R functions (73 FR 67003, November 12, 2008, Table 3; 73 FR 67004, November 12, 2008). The median estimate for the four C–R slopes of −1.75 IQ points decrement per $\mu g/dL$ blood Pb was selected for use with the framework. With the framework, potential alternative standard levels ($\mu g/m^3$) are multiplied by estimates of air-to-blood ratio ($\mu g/dL$ blood Pb per $\mu g/m^3$ air Pb) and the median slope for the C–R function (points IQ decrement per $\mu g/dL$ blood Pb), yielding estimates of a mean air-related IQ decrement for a specific subset of young children (*i.e.*, those children exposed to air-related Pb in areas with elevated air Pb concentrations equal to specified alternative levels). As such, the application of the framework yields estimates for the mean air-related IQ decrements of the subset of children expected to experience air-related Pb exposures at the high end of the distribution of such exposures. The associated mean IQ loss estimate is the average for this highly exposed subset and is not the average air-related IQ loss projected for the entire U.S. population of children. Uncertainties and limitations were recognized in the use

[19] The term "air-to-blood ratio" describes the increase in blood Pb (in $\mu g/dL$) estimated to be associated with each unit increase of air Pb (in $\mu g/m^3$). Ratios are presented in the form of 1:x, with the 1 representing air Pb (in $\mu g/m^3$) and x representing blood Pb (in $\mu g/dL$). Description of ratios as higher or lower refers to the values for x (*i.e.*, the change in blood Pb per unit of air Pb).

[20] The geometric mean blood Pb level for U.S. children aged 5 years and below, reported for NHANES in 2003–04 (the most recent years for which such an estimate was available at the time of the 2006 decision) was 1.8 $\mu g/dL$ and the 5th and 95th percentiles were 0.7 $\mu g/dL$ and 5.1 $\mu g/dL$, respectively (73 FR 67002).

of the framework and in the resultant estimates (73 FR 67000, November 12, 2008).

In considering the use of the evidence-based air-related IQ loss framework to inform his judgment as to the appropriate degree of public health protection that should be afforded by the NAAQS to provide requisite protection against risk of neurocognitive effects in sensitive populations, such as IQ loss in children, the Administrator recognized in the 2008 review that there were no commonly accepted guidelines or criteria within the public health community that would provide a clear besis for such a judgment. During the 2008 review, CASAC commented regarding the significance from a public health perspective of a 1–2 point IQ loss in the entire population of children and along with some commenters, emphasized that the NAAQS should prevent air-related IQ loss of a significant magnitude, such as on the order of 1–2 IQ points, in all but a small percentile of the population. Similarly, the Administrator stated that "ideally air-related (as well as other) exposures to environmental Pb would be reduced to the point that no IQ impact in children would occur" (73 FR 66998, November 12, 2008). The Administrator further recognized that, in the case of setting a NAAQS, he was requirad to make a judgment as to what degree of protection is requisite to protect public health with an adequate margin of safety (73 FR 66998, November 12, 2008). The NAAQS must be sufficient but not more stringent than necessary to achieve that result, and the Act does not require a zero-risk standard (73 FR 66998, November 12, 2008). The Administrator additionally recognized that the evidence-based air-related IQ loss framework did not provide estimates pertaining to the U.S. population of children as a whole. Rather, the framework provided estimates (with associated uncertainties and limitations) for the mean of a subset of that population, the subset of children assumed to be exposed to the level of the standard. As described in the final decision "[t]he framework in effect focuses on the sensitive subpopulation that is the group of children living near sources and more likely to be exposed at the level of the standard" (73 FR 67000, November 12, 2008). As further noted in the final decision (73 FR 67000, November 12, 2008):

EPA is unable to quantify the percentile of the U.S. population of children that corresponds to the mean of this sensitive subpopulation. Nor is EPA confident in its ability to develop quantified estimates of air-related IQ loss for higher percentiles than the mean of this subpopulation. EPA expects that the mean of this subpopulation represents a high, but not quantifiable, percentile of the U.S. population of children. As a result, EPA expects that a standard based on consideration of this framework would provide the same or greater protection from estimated air-related IQ loss for o high, albeit unquantifiable, percentage of the entire population of U.S. children.

In reaching a judgment as to the appropriate degree of protection, the Administrator considered advice and recommendations from CASAC and public comments and recognized the uncertainties in the health effects evidence and related information as well as the role of, and context for, a selected air-related IQ loss in the application of the framework, as described above. Based on these considerations, the Administrator identified an air-related IQ loss of 2 points for use with the framework, as a tool for considering the evidence with regard to the level for the standard (73 FR 67005, November 12, 2008). In so doing, the Administrator was not determining that such an IQ decrement value was appropriate in other contexts (73 FR 67005, November 12, 2008). Given the various uncertainties associated with the framework and the scientific evidence base, and the focus of the framework on the sensitive subpopulation of children that are more highly exposed to air-related Pb, a standard level selected in this way, in combination with the selected averaging time and form, was expected to significantly reduce and limit for a high percentage of U.S. children the risk of experiencing an air-related IQ loss of that magnitude (73 FR 67005, November 12, 2008). At the standard level of 0.15 $\mu g/m^3$, with the combination of the generally central estimate of air-to-blood ratio of 1:7 and the median of the four C–R functions (−1.75 IQ point decrement per µg/dL blood Pb), the framework estimates of air-related IQ loss were below 2 IQ points (73 FR 67005, November 12, 2008, Table 4).

In reaching the decision in 2008 on a level for the revised standard, the Administrator also considered the results of the quantitative risk assessment to provide a useful perspective on risk from air-related Pb. In light of important uncertainties and limitations for purposes of evaluating potential standard levels, however, the Administrator placed less weight on the risk estimates than on the evidence-besed assessment. Nevertheless, in recognition of the general comparability of quantitative risk estimates for the case studies considered most conceptually similar to the scenario represented by the evidence-based framework, he judged the quantitative risk estimates to be "roughly consistent with and generally supportive" of the evidence-based framework estimates (73 FR 67006, November 12, 2008).

Based on consideration of the entira body of evidence and information available in the review, as well as the recommendations of CASAC and public comments, the Administrator decided that a level for the primary Pb standard of 0.15 $\mu g/m^3$, in combination with the specified choice of indicator, averaging time and form, was requisite to protect public health, including the bealth of sensitive groups, witb an adequate margin of safety (73 FR 67006, November 12, 2008). In reaching decisions on level as well as the other elements of the revised standard, the Administrator took note of the complexity associated with consideration of health effects caused by different ambient air concentrations of Pb and with uncertainties with regard to the relationships between air concentrations, exposures, and healtb effects. For example, selection of a maximum, not to be exceeded, form in conjunction with a rolling 3-month averaging time over a 3-year span was expected to have the effect that the at-risk population of cbildren would be exposed below the standard most of the time (73 FR 67005, November 12, 2008). The Administrator additionally considered the provision of an adequate margin of safety in making decisions on each of the elements of the standard, including, for example "selection of TSP as the indicator and the rejection of the use of PM_{10} scaling factors; selection of a maximum, not to be exceeded form, in conjunction with a 3-month averaging time that employs a rolling average, with the requirement that each month in tbe 3-month period be weighted equally (rather than being averaged by individual data) and that a 3-year span be used for comparison to the standard; and the use of a range of inputs for the evidence-based framework, that includes a focus on higher air-to-blood ratios than the lowest ratio considered to be supportable, and steeper rather than shallower C–R functions, and the consideration of these inputs in selection of 0.15 $\mu g/m^3$ as the level of the standard" (73 FR 67007, November 12, 2008).

The Administrator additionally noted that a standard with this level would reduce the risk of a variety of health effects associated with exposure to Pb, including effects indicated in the epidemiological studies at lower blood Pb levels, particularly including neurological effects in children, and the potential for cardiovascular and renal effects in adults (73 FR 67006, November 12, 2008). The Administrator additionally considered higher and lower levels for the standard, concluding that a level of 0.15 $\mu g/m^3$ provided for a standard that was neither more or less stringent tban necessary for this purpose, recognizing that the Act does not require that primary standards be set at a zero-risk level, but rather at a level that reduces risk sufficiently so as to protect public health with an adequate margin of safety (73 FR 67007, November 12, 2008). For example, the Administrator additionally considered potential public health protection provided by standard levels above 0.15 $\mu g/m^3$, which he concluded were insufficient to protect public bealth with an adequate margin of safety. The Administrator also noted that in light of all of the evidence, including the evidence-based framework, the degree of public health protection likely afforded by standard levels below 0.15 $\mu g/m^3$ would be greater tban what is necessary to protect public safety with an adequate margin of safety.

The Administrator concluded, based on review of all of the evidence (including the evidence-based framework), that when taken as a whole the selected standard, including the indicator, averaging time, form, and level, would be "sufficient but not more than necessary to protect public health, including the health of sensitive subpopulations, with an adequate margin of safety" (73 FR 67007, November 12, 2008).

2. Approach for the Current Review

The approach in this review of the current primary standard takes into consideration the approach used in the last Pb NAAQS review, addressing key policy-relevant questions in light of currently available scientific and technical information. To evaluate whether it is appropriate to consider retaining the current primary Pb standard, or whether consideration of ravision is appropriate, the EPA has adopted an approacb in this review that builds upon the general approacb used in the last review and reflects the broader body of evidence and information now available. As summarized above, the Administrator's decisions in the prior raview were based on an integration of information on health effects associated with exposure to Pb witb tbat on relationships between ambient air Pb and blood Pb; expert judgments on the adversity and public health significance of key bealth effects; and policy judgments as to when the standard is requisite to protect public health with an adequate margin of safety. These considerations were informed by air quality and related analyses, quantitative exposure and risk assessments, and qualitative assessment of impacts that could not be quantified.

Similarly in this review, as described in tbe PA, we draw on the current evidence and quantitative assessments of exposure pertaining to the public health risk of Pb in ambient air. In considering the scientific and technical information here as in the PA, we consider both the information available at the time of the last review and information newly available since the last review, including most particularly that which has been critically analyzed and cbaracterized in the current ISA. We additionally consider the quantitative exposure/risk assessments from the last review that estimated Pb-related IQ decrements associated with different air quality conditions in simulated at-risk populations in multiple case studies (PA, section 3.4; 2007 REA). The evidence-based discussions presented below draw upon evidence from epidemiological studies and experimental animal studies evaluating bealth effects related to exposures to Pb, as discussed in tbe ISA. The exposure/risk-based discussions have drawn from the quantitative health risk analyses for Pb performed in the last Pb NAAQS review in light of the currently available evidence (PA, section 3.4; 2007 REA; REA Planning Document). Sections II.B through II.D below summarize the current health effects and exposure/risk information with a focus on the specific policy-relevant questions identified for tbese categories of information in the PA (PA, chapter 3).

B. Health Effects Information

1. Array of Effects

Lead has been demonstrated to exert a broad array of deleterious effects on multiple organ systems as described in the assessment of the evidence available in tbis review and consistent with conclusions of past CDs (ISA, section 1.6; 2006 CD, section 8.4.1). A sizeable number of studies on Pb health effects are newly available in this review and are critically assessed in the ISA as part of the full body of evidence. Tbe newly available evidence reaffirms conclusions on the broad array of effects recognized for Pb in the last review (see ISA, section 1.10).[21] Consistent witb those conclusions, in the context of pollutant exposures considered relevant to the Pb NAAQS review,[22] the ISA determines that causal relationships[23] exist for Pb with effects on the nervous system in children (cognitive function decrements and the group of externalizing behaviors comprising attention, impulsivity and hyperactivity), the hematological system (altered beme synthesis and decreased red blood cell survival and function), and the cardiovascular system (hypertension and coronary heart disease), and on reproduction and development (postnatal development and male reproductive function) (ISA, Table 1–2). Additionally, the ISA describes relationships between Pb and effects on the nervous system in adults, on immune system function and with cancer[24] as likely to be causal[25] (ISA, Table 1–2, sections 1.6.4 and 1.6.7).

In some categories of health effects, tbere is newly available evidence regarding some aspects of the effects described in the last review or that strengtbens our conclusions regarding aspects of Pb toxicity on a particular

[21] Since the last Pb NAAQS review, the ISAs which have replaced CDs in documenting each review of the scientific evidence (or air quality criteria) employ a systematic framework for weighing the evidence and describing associated conclusions with regard to causality using established descriptors: "causal" relationship with relevant exposure, "likely" to be a causal relationship, evidence is "suggestive" of a causal relationship, "inadequate" evidence to infer a causal relationship, and "not likely" to be a causal relationship (ISA, Preamble).

[22] In drawing judgments regarding causality for the criteria air pollutants, the ISA places emphasis "on evidence of effects at doses (*e.g.*, blood Pb concentration) or exposures (*e.g.*, air concentrations) that are relevant to, or somewhat above, those currently experienced by the population. The extent to which studies of higher concentrations are considered varies . . . but generally includes those with doses or exposures in the range of one to two orders of magnitude above current or ambient conditions. Studies that use higher doses or exposures may also be considered . . . [t]hus, a causality determination is based on weight of evidence evaluation . . ., focusing on the evidence from exposures or doses generally ranging from current levels to one or two orders of magnitude above current levels" (ISA, pp. lx–lxi).

[23] In determining a causal relationship to exist for Pb with specific health effects, the EPA concludes that "[e]vidence is sufficient to conclude that there is a causal relationship with relevant pollutant exposures (*i.e.*, doses or exposures generally within one to two orders of magnitude of current levels)" (ISA, p. lxii).

[24] The EPA concludes that a causal relationship is likely to exist between Pb exposure and cancer, based primarily on consistent, strong evidence from experimental animal studies, but inconsistent epidemiological evidence (ISA, section 4.10.5). Lead has also been classified as a probable human carcinogen by the International Agency for Research on Cancer, based mainly on sufficient animal evidence, and as reasonably anticipated to be a human carcinogen by the U.S. National Toxicology Program (ISA, section 4.10).

[25] In determining that there is likely to be a causal relationship for Pb with specific health effects, the EPA has concluded that "[e]vidence is sufficient to conclude that a causal relationship is likely to exist with relevant pollutant exposures, but important uncertainties remain" (ISA, p. lxii).

physiological system. Among the nervous system effects of Pb, the newly available evidence is consistent with conclusions in the previous review which recognized that "[t]he neurotoxic effects of Pb exposure are among those most studied and most extensively documented among human population groups" (2006 CD, p. 8–25) and took note of the diversity of studies in which such effects of Pb exposure early in development (from fetal to postnatal childhood periods) have been observed (2006 CD, p. E–9). Nervous system effects that receive prominence in the current review, as in previous reviews, include those affecting cognitive function and behavior in children (ISA, section 4.3), with conclusions that are consistent with findings of the last review.

Across the broad array of Pb effects for systems and processes other than the nervous system, the evidence base has been augmented with additional epidemiological investigations in a number of areas, including developmental outcomes, such as puberty onset, and adult outcomes related to cardiovascular function, for which several large cohorts have been analyzed (ISA, Table 1–8 and sections 4.4 and 4.8). Conclusions on these other systems and processes are generally consistent with conclusions reached in the last review, while also extending our conclusions on some aspects of these effects (ISA, section 4.4 and Table 1–8).

Based on the extensive assessment of the full body of evidence available in this review, the major conclusions drawn by the ISA regarding health effects of Pb in children include the following (ISA, p. lxxxvii).

Multiple epidemiologic studies conducted in diverse populations of children consistently demonstrate the harmful effects of Pb exposure on cognitive function (as measured by IQ decrements, decreased academic performance and poorer performance on tests of executive function). . . . Evidence suggests that some Pb-related cognitive effects may be irreversible and that the neurodevelopmental effects of Pb exposure may persist into adulthood (Section 1.9.4). Epidemiologic studies also demonstrate that Pb exposure is associated with decreased attention, and increased impulsivity and hyperactivity in children (externalizing behaviors). This is supported by findings in animal studies demonstrating both analogous effects and biological plausibility at relevant exposure levels. Pb exposure can also exert harmful effects on blood cells and blood producing organs, and is likely to cause an increased risk of symptoms of depression and anxiety and withdrawn behavior (internalizing behaviors),decreases in auditory and motor function, asthma and allergy, as well as conduct disorders in children and young adults. There is some uncertainty about the Pb exposures contributing to the effects and blood Pb levels observed in epidemiologic studies; however, these uncertainties are greater in studies of older children and adults than in studies of young children (Section 1.9.5).

Based on the extensive assessment of the full body of evidence available in this review, the major conclusions drawn by the ISA regarding health effects of Pb in adults include the following (ISA, p. lxxxviii).

A large body of evidence from both epidemiologic studies of adults and experimental studies in animals demonstrates the effect of long-term Pb exposure on increased blood pressure (BP) and hypertension (Section 1.6.2). In addition to its effect on BP, Pb exposure can also lead to coronary heart disease and death from cardiovascular causes and is associated with cognitive function decrements, symptoms of depression and anxiety, and immune effects in adult humans. The extent to which the effects of Pb on the cardiovascular system are reversible is not well-characterized. Additionally, the frequency, timing, level, and duration of Pb exposure causing the effects observed in adults has not been pinpointed, and higher past exposures may contribute to the development of health effects measured later in life.

As in prior reviews of the Pb NAAQS, this review is focused on those effects most pertinent to ambient air Pb exposures. Given the reductions in ambient air Pb concentrations over the past decades, these effects are generally those associated with the lowest levels of Pb exposure that have been evaluated. Additionally, we recognize the limitations on our ability to draw conclusions regarding the exposure conditions contributing to the findings from epidemiological analyses of blood Pb levels in populations of older children and adults, particularly in light of their history of higher Pb exposures. Evidence available in future reviews may better inform this issue. In the last review, while recognizing the range of health effects in variously aged populations related to Pb exposure, we focused on the health effects for which the evidence was strongest with regard to relationships with the lowest exposure levels, neurocognitive effects in young children.

As is the case for studies of nervous system effects in children (discussed in more detail in section II.B.3 below), newly available studies of other effects in child and adult cohorts include cohorts with similar or somewhat lower mean blood Pb levels than in previously available studies. Categories of effects for which a causal relationship has been concluded in the ISA and for which there are a few newly available epidemiological studies indicating blood Pb associations with effects in study groups with somewhat lower blood Pb levels than previously available for these effects include effects on development (delayed puberty onset) and reproduction (male reproductive function) and on the cardiovascular system (hypertension) (ISA, sections 4.4 and 4.8; 2006 CD, sections 6.5 and 6.6). With regard to the former category, study groups in the newly available studies include groups composed of older children ranging up to age 18 years, for which there is increased uncertainty regarding historical exposures and their role in the observed effects.[26] An additional factor that handicaps our consideration of exposure levels associated with these findings is the appreciable uncertainty associated with our understanding of Pb biokinetics during this lifestage (ISA, sections 3.2, 3.3, and 4.8.6). The evidence newly available for Pb relationships with cardiovascular effects in adults include some studies with somewhat lower blood Pb levels than in the last review. The long exposure histories of these cohorts, as well as the generally higher Pb exposures of the past, complicate conclusions regarding exposure levels that may be eliciting observed effects (ISA, sections 4.4.2.4 and 4.4.7).[27] Accordingly, as discussed further below, we focus in this review, as in the last, on neurocognitive effects in young children.

2. Critical Periods of Exposure

As in the last review, we base our current understanding of health effects associated with different Pb exposure circumstances at various stages of life or in different populations on the full body of available evidence and primarily on epidemiological studies of health effects associated with population Pb biomarker levels (discussed further in section II.B.3 below). The epidemiological evidence is overwhelmingly composed of studies that rely on blood Pb for the exposure metric, with the remainder largely including a focus on bone Pb. Because these metrics reflect Pb in the body (*e.g.*, as compared to Pb exposure concentrations) and, in the case of blood Pb, reflect Pb available for distribution to target sites, they strengthen the

[26] Several of these studies involve NHANES III cohorts for which early childhood exposures were generally much higher than those common in the U.S. today (ISA, section 4.8.5).

[27] Studies from the late 1960s and 1970s suggest that adult blood Pb levels during that period ranged from roughly 13 to 16 μg/dL and from 15 to 30 μg/dL in children aged 6 and younger (ISA, section 4.4.1).

evidence base for purposes of drawing causal conclusions with regard to Pb generally. The complexity of Pb exposure pathways and internal dosimetry, however, tends to limit the extent to which these types of studies inform our more specific understanding of the Pb exposure circumstances (*e.g.*, timing within lifetime, duration, frequency and magnitude) eliciting the various effects.

As at the time of the last review (and discussed more fully in section II.B.3 below), assessment of the full evidence base, including evidence newly available in this review, demonstrates that Pb exposure prenatally and also in early childhood can contribute to neurocognitive impacts in childhood, with evidence also indicating the potential for effects persisting into adulthood (ISA, sections 1.9.4, 1.9.5, and 1.10). In addition to the observed associations of prenatal and childhood blood Pb with effects at various ages in childhood, there is also evidence of Pb-related cognitive function effects in non-occupationally exposed adults (ISA, section 4.3.11). This includes evidence of associations of such effects in adulthood with childhood blood Pb levels and in other cohorts, with concurrent (adult) blood Pb levels (ISA, sections 4.3.2.1, 4.3.2.7 and 4.3.11). As the studies finding associations of adult effects with childhood blood Pb levels did not examine adult blood Pb levels, the relative influence of adult Pb exposure cannot be ascertained, and a corresponding lack of early life exposure or biomarker measurements for the latter studies limits our ability to draw conclusions regarding specific Pb exposure circumstances eliciting the observed effects (4.3.11). Findings of stronger associations for adult neurocognitive effects with bone Pb, however, indicate the role of historical or cumulative exposures for those effects (ISA, section 4.3).

A critical aspect of much of the epidemiological evidence, particularly studies focused on adults (and older children) in the U.S. today, is the backdrop of generally declining environmental Pb exposure (from higher exposures during their younger years) that is common across many study populations (ISA, p. 4–2).[28] An additional factor complicating the interpretation of health effect associations with blood Pb measurements in older children and younger adults is the common behaviors of younger children (*e.g.*, hand-to-mouth contact) that generally contribute to relatively greater exposures earlier in life (ISA, sections 3.1.1, 4.2.1). Such exposure histories for adults and older children complicate our ability to draw conclusions regarding critical time periods and lifestages for Pb exposures eliciting the effects for which associations with Pb biomarkers have been observed in these populations (*e.g.*, ISA, section 1.9.6).[29] Thus, our confidence is greatest in the role of early childhood exposure in contributing to Pb-related neurocognitive effects that have been associated with blood Pb levels in young children. This is due, in part, to the relatively short exposure histories of young children (ISA, sections 1.9.4, 1.9.6 and 4.3.11).

Epidemiological analyses evaluating risk of neurocognitive impacts (*e.g.*, reduced IQ) associated with different blood Pb metrics in cohorts with differing exposure patterns (including those for which blood Pb levels at different ages were not highly correlated) also indicate associations with blood Pb measurements concurrent with full scale IQ (FSIQ) tests at ages of approximately 6–7 years. The analyses did not, however, conclusively demonstrate stronger findings for early (*e.g.*, age 2 years) or concurrent blood Pb (ISA, section 4.3.11).[30] The experimental animal evidence additionally indicates early life susceptibility (ISA, section 4.3.15 and p. 5–21). Thus, while uncertainties remain with regard to the role of Pb exposures during a particular age of life in eliciting nervous system effects, such as cognitive function decrements, the full evidence base continues to indicate prenatal and early childhood lifestages as periods of increased Pb-related risk (ISA, sections 4.3.11 and 4.3.15). We recognize increasing uncertainty, however, in our understanding of the relative impact on neurocognitive function of additional Pb exposure of children by school age or later that is associated with limitations of the currently available evidence, including epidemiological cohorts with generally similar temporal patterns of exposure.

As in the last review, there is also substantial evidence of other neurobehavioral effects in children, including effects on externalizing behaviors (reduced attention span, increased impulsivity, hyperactivity, and conduct disorders) and on internalizing behaviors. The evidence for many of these endpoints, as with neurocognitive effects, also includes associations of effects at various ages in childhood and for some effects, into adulthood, with blood Pb levels reflective of several different lifestages (*e.g.*, prenatal and several different ages in childhood) (ISA, sections 4.3.3 and 4.3.4). There is similar or relatively less extensive evidence to inform our understanding of such effects associated with specific time periods of exposure at specific lifestages than is the case for effects on cognitive function.

Across the range of Pb effects on physiological systems and processes other than the nervous system, the evidence base for blood pressure and hypertension is somewhat more informative with regard to the circumstances of Pb exposure eliciting the observed effects than are the evidence bases for many other effects. In the case of Pb-induced increases in blood pressure, the evidence indicates an importance of long-term exposure (ISA, sections 1.6.2 and 4.4.7.1). The greater uncertainties regarding the time, duration and magnitude of exposure contributing to these observed health effects complicate identification of sensitive lifestages and associated exposure patterns that might be compared with our understanding of the sensitivity of young children to neurocognitive impacts of Pb. Thus, while augmenting the evidence base on these additional endpoints, the newly available evidence does not lead us to identify a health endpoint expected to be more sensitive to Pb exposure than neurocognitive endpoints in children, leading us to continue to conclude that the appropriate primary focus for our review is on neurocognitive endpoints in children.

[28] The declines in Pb exposure concentrations occurring from the 1970s through the early 1990s (and experienced by middle aged and older adults of today), as indicated by NHANES blood Pb information, were particularly dramatic (ISA, section 3.4.1).

[29] The evidence from experimental animal studies can be informative with regard to key aspects of exposure circumstances in eliciting specific effects, thus informing our interpretation of epidemiological evidence. For example, the animal evidence base with regard to Pb effects on blood pressure demonstrates the etiologically-relevant role of long-term exposure (ISA, section 4.4.1). This finding then informs consideration of epidemiological studies of adult populations for whom historical exposures were likely more substantial than concurrent ones, suggesting that the observed effects may be related to the past exposure (ISA, section 4.4.1). For other health effects, the animal evidence base may or may not be informative in this manner.

[30] In the collective body of evidence of nervous system effects in children, it is difficult to distinguish exposure in later lifestages (*e.g.*, school age) and its associated risk from risks resulting from exposure in prenatal and early childhood (ISA, section 4.3.11). While early childhood is recognized as a time of increased susceptibility, a difficulty in identifying a discrete period of susceptibility from epidemiological studies has been that the period of peak exposure, reflected in peak blood Pb levels, is around 18–27 months when hand-to-mouth activity is at its maximum (ISA, section 3.4.1 and 5.2.1.1; 2006 CD, p. 6–60). The task is additionally complicated by the role of maternal exposure history in contributing Pb to the developing fetus (ISA, section 3.2.2.4.).

In summary, as in the last review, we continue to recognize a number of uncertainties regarding the circumstances of Pb exposure, including timing or lifestages, eliciting specific health effects. Consideration of the evidence newly available in this review has not appreciably changed our understanding on this topic. The relationship of long-term exposure to Pb with hypertension and increased blood pressure in adults is substantiated despite some uncertainty regarding the exposures circumstances (*e.g.*, magnitude and timing) contributing to blood Pb levels measured in epidemiological studies. Across the full evidence base, the effects for which our understanding of relevant exposure circumstances is greatest are neurocognitive effects in young children. Moreover, available evidence does not suggest a more sensitive endpoint. Thus, we continue to recognize and give particular attention to the role of Pb exposures relatively early in childhood in contributing to neurocognitive effects, some of which may persist into adulthood.

3. Nervous System Effects in Children

In considering the question of levels of Pb exposure at which health effects occur, we recognize, as discussed in sections II.B.1 and II.B.2 above, that the epidemiological evidence base for our consideration in this review, as in the past, includes substantial focus on internal biomarkers of exposure, such as blood Pb, with relatively less information specific to exposure levels, including those derived from air-related pathways. Given that blood and bone Pb are integrated markers of aggregate exposure across all sources and exposure pathways, our interpretation of studies relying on them is informed by what is known regarding the historical context and exposure circumstances of the study populations. For example, a critical aspect of much of the epidemiological evidence is the backdrop of generally declining Pb exposure over the past several decades (*e.g.*, ISA, sections 2.5 and 3.4.1; 2006 CD, section 3.4). Thus, as a generality, recent epidemiological studies of populations with similar characteristics as those studied in the past tend to involve lower overall Pb exposures and accordingly lower blood Pb levels. This has been of particular note in the evidence of blood Pb associations with nervous system effects, particularly impacts on cognitive function in children, for which we have seen associations with progressively lower childhood blood Pb levels across past reviews (ISA, section 4.3.12; 1986 CD; USEPA, 1990a; 2006 CD; 73 FR 66976, November 12, 2008).

The evidence currently available with regard to the magnitude of blood Pb levels associated with neurocognitive effects in children is generally consistent with that available in the review completed in 2008. Nervous system effects in children, specifically effects on cognitive function, continue to be the effects that are best substantiated as occurring at the lowest blood Pb concentrations (ISA, pp. lxxxvii–lxxxviii). Associations of blood Pb with effects on cognitive function measures in children have been reported in many studies across a range of childhood blood Pb levels, including study group (mean/median) levels ranging down to 2 µg/dL (*e.g.*, ISA, p. lxxxvii and section 4.3.2).[31]

Among the analyses of lowest study group blood Pb levels at the youngest ages are analyses available in the last review of Pb associations with neurocognitive function decrement in study groups with mean levels on the order of 3–4 µg/dL in children aged 24 months or ranging from 5 to 7 years (73 FR 66978–66979, November 12, 2008; ISA, sections 4.3.2.1 and 4.3.2.2; Bellinger and Needleman, 2003; Canfield et al., 2003; Lanphear et al., 2005; Tellez-Rojo et al., 2006; Bellinger, 2008; Canfield, 2008; Tellez-Rojo, 2008; Kirrane and Patel, 2014).[32] Newly available in this review are two studies reporting association of blood Pb levels prior to 3 years of age with academic performance on standardized tests in primary school; mean blood Pb levels in these studies were 4.2 and 4.8 µg/dL (ISA, section 4.3.2.5; Chandramouli et al., 2009; Miranda et al., 2009). One of these two studies, which represented integer blood Pb levels as categorical variables, indicated a small effect on end-of-grade reading score of blood Pb levels as low as 2 µg/dL, after adjustment for age of measurement, race, sex, enrollment in free or reduced lunch program, parental education, and school type (Miranda et al., 2009).

In a newly available study of blood Pb levels at primary school age, a significant association of blood Pb in children aged 8–11 years and concurrently measured FSIQ was reported for a cross-sectional cohort in Korea with a mean blood Pb level of 1.7 µg/dL and range of 0.43–4.91 µg/dL (Kim et al., 2009).[33] In considering the blood Pb levels in this study, we note that blood Pb levels in children aged 8–11 are generally lower than those in pre-school children, for reasons related to behavioral and other factors (ISA, sections 3.3.5, 3.4.1 and 5.2.1.1). It is likely that the blood Pb levels of this study group at earlier ages, *e.g.*, prior to school entry, were higher and the available information does not provide a basis to judge whether the blood Pb levels in this study represent lower exposure levels than those experienced by the younger study groups. In still older children, a large cross-sectional investigation of blood Pb association with effects on memory and learning that was available in the last review was focused on children aged 6–16 years, born during 1972–1988, with a mean blood Pb of 1.9 µg/dL (Lanphear et al., 2000). A study newly available in this review, focused on a subset of the earlier study cohort (ages 12–16, born during 1975–1982), also reports a significant negative association of blood Pb with learning and memory test results with mean blood Pb levels of approximately 2 µg/dL (ISA, section 4.3.2.3; Lanphear et al., 2000; Krieg et al., 2010). In considering these study findings with regard to the question of exposure levels eliciting effects, we recognize, however, that blood Pb levels are, in general, lower among teenagers than young children and also that, for these subjects specifically, the magnitude of blood Pb levels during the earlier childhood (*e.g.*, pre-school ages) was much higher. For example, the mean blood Pb levels for the 1–5 year old age group in the NHANES 1976–80 sample was 15 µg/dL, declining to 3.6 µg/dL in the NHANES 1988–1991 sample (Pirkle et al., 1994; ISA, section 3.4.1). In summary, the available information is for population groups of ages for which the NHANES samples indicate exposure levels were higher earlier in childhood. Thus, in light of the NHANES information, although the blood Pb levels in the studies of cognitive effects in older child population groups are lower (at the time of the study) than the younger child study levels, the studies of older children do not provide a basis for concluding a role for lower Pb exposure levels than those experienced by the younger study groups.

With regard to other nervous system effects in children, the evidence base at lower blood Pb levels is somewhat extended since the last review with regard to the evidence on Pb and effects on externalizing behaviors, such as attention, impulsivity, hyperactivity and conduct disorders (ISA, section 4.3.3 and Table 4–17). Several newly available studies investigating the role of blood Pb levels in older children (primary school age and older) have reported significant associations for these effects with concurrent blood Pb levels, with mean levels generally on the order of 5 µg/dL or higher (ISA, section 4.3.3). One exception is the newly available cross-sectional, categorical analysis of the NHANES 2001–2004 sample of children aged 8–15 years, which found higher prevalence of conduct disorder in the subgroup with concurrent blood Pb levels of 0.8–1.0 µg/dL as compared to the <0.8 µg/dL group (ISA, section 4.3.4 and Table 4–12). As noted above, we recognize that many of these children, born between 1985 and 1996, are likely to have had much higher Pb exposures (and associated blood Pb levels) in their earlier years than those commonly experienced by young children today, thus making this study relatively uninformative with regard to evidence of effects associated with lower exposure levels than provided by evidence previously available.

In summary, our conclusions regarding exposure levels at which Pb health effects occur, particularly with regard to such levels that might be common in the U.S. today, are complicated now, as in the last review, by several factors. These factors include the scarcity of information in epidemiological studies on cohort exposure histories, as well as by the backdrop of higher past exposure levels which frame the history of most, if not all, older study cohorts. Recognizing the complexity, as well as the potential role of higher exposure levels in the past, we continue to focus our consideration of this question on the evidence of effects in young children for which our understanding of exposure history is less uncertain.[34] Within this evidence base, we recognize the lowest study group blood Pb levels to be associated with effects on cognitive function measures, indicating that to be the most sensitive endpoint. As described above, the evidence available in this review is generally consistent with that available in the last review with regard to blood Pb levels at which such effects had been reported (ISA, section 4.3.2; 2006 CD, section 8.4.2.1; 73 FR 66976–66979, November 12, 2008). As blood Pb levels are a reflection of exposure history, particularly in early childhood (ISA, section 3.3.2), we conclude, by extension, that the currently available evidence does not indicate Pb effects at exposure levels appreciably lower than recognized in the last review.

We additionally note that, as in the last review, a threshold blood Pb level with which nervous system effects, and specifically cognitive effects, occur in young children cannot be discerned from the currently available studies (ISA, sections 1.9.3 and 4.3.12). Epidemiological analyses have reported blood Pb associations with cognitive effects (FSIQ or BSID MDI[35]) for young child population subgroups (age 5 years or younger) with individual blood Pb measurements as low as approximately 1 µg/dL and mean concentrations as low as 2.9 to 3.8 µg/dL (ISA, section 4.3.12; Bellinger and Needleman, 2003; Bellinger, 2008; Canfield et al., 2003; Canfield, 2008; Tellez-Rojo et al., 2006; Tellez-Rojo, 2008). As concluded in the ISA, however, "the current evidence does not preclude the possibility of a threshold for neurodevelopmental effects in children existing with lower blood levels than those currently examined" (ISA, section 4.3.13).

Important uncertainties associated with the evidence of effects at low exposure levels are similar to those recognized in the last review, including the shape of the concentration-response relationship for effects on neurocognitive function at low blood Pb levels in today's young children. Also of note is our interpretation of associations between blood Pb levels and effects in epidemiological studies, with which we recognize uncertainty with regard to the specific exposure circumstances (timing, duration, magnitude and frequency) that have elicited the observed effects, as well as uncertainties in relating ambient air concentrations (and associated air-related exposures) to blood Pb levels in early childhood, as discussed in section II.B.2 above. We additionally recognize uncertainties associated with conclusions drawn with regard to the nature of the epidemiological associations with blood Pb (*e.g.*, ISA, section 4.3.13), but note that, based on consideration of the full body of evidence for neurocognitive effects, the EPA has determined a causal relationship to exist between relevant blood Pb levels and neurocognitive impacts in children (ISA, section 4.3.15.1).

Based primarily on studies of FSIQ, the assessment of the currently available studies, as was the case in the last review, continues to recognize a nonlinear relationship between blood Pb and effects on cognitive function, with a greater incremental effect (greater slope) at lower relative to higher blood Pb levels within the range thus far studied, extending from well above 10 µg/dL to below 5 µg/dL (ISA, section 4.3.12). This was supported by the evidence available in the last review, including the analysis of the large pooled international dataset comprised of blood Pb measurements and IQ test results from seven prospective cohorts (Lanphear et al., 2005; Rothenberg and Rothenberg, 2005; ISA, section 4.3.12). The blood Pb measurements in this pooled dataset that were concurrent with the IQ tests ranged from 2.5 µg/dL to 33.2 µg/dL. The study by Lanphear et al. (2005) additionally presented analyses that stratified the dataset based on peak blood Pb levels (*e.g.*, with cutpoints of 7.5 µg/dL and 10 µg/dL peak blood Pb) and found that the coefficients from linear models of the association for IQ with concurrent blood Pb were higher in the lower peak blood Pb level subsets than the higher groups (ISA, section 4.3.12; Lanphear et al., 2005).

We note that since the completion of the ISA, two errors have been identified with the pooled dataset analyzed by Lanphear et al. (2005) (Kirrane and Patel, 2014). A recent publication and the EPA have separately recalculated the statistics and mathematical model parameters of Lanphear et al. (2005) using the corrected pooled dataset (see Kirrane and Patel, 2014). While the magnitude of the loglinear and linear regression coefficients are modified slightly based on the corrections, the conclusions drawn from these coefficients, including the finding of a steeper slope at lower (as compared to

[31] The value of 2 µg/dL refers to the regression analysis of blood Pb and end-of-grade test scores, in which blood Pb was represented by categories for integer values of blood Pb from 1 µg/dL to 9 and >10 µg/dL from large statewide database. A significant effect estimate was reported for test scores with all blood Pb categories in comparison to the reference category (1 µg/dL), which included results at and below the limit of detection. Mean levels are not provided for any of the categories (Miranda et al., 2009).

[32] The tests for cognitive function in these studies include age-appropriate Wechsler intelligence tests (Lanphear et al., 2005; Bellinger and Needleman, 2003), the Stanford-Binet intelligence test (Canfield et al., 2003), and the Bayley Scales of Infant Development (Tellez-Rojo et al., 2006). The Wechsler and Stanford-Binet tests are widely used to assess neurocognitive function in children and adults. These tests, however, are not appropriate for children under age 3. For such children, studies generally use the age-appropriate Bayley Scales of Infant Development as a measure of cognitive development.

[33] Limitations of this study included a lack of consideration of potential confounding by parental caregiving quality or IQ (ISA, Table 4–3).

[34] In focusing on effects associated with blood Pb levels in early childhood, however, we additionally recognize the evidence across categories of effects that relate to blood Pb levels in older child study groups (for which early childhood exposure may have had an influence) which provides additional support to an emphasis on nervous system effects (ISA, sections 4.3, 4.4, 4.5, 4.6, 4.7, 4.8).

[35] The Bayley Scales of Infant Development, Mental Development Index is a well-standardized and widely used assessment measure of infant cognitive development. Scores earlier than 24 months are not necessarily strongly correlated with later FSIQ scores in children with normal development (ISA, section 4.3.15.1).

higher) blood Pb concentrations, are not affected (Kirrane and Patel, 2014).

In other publications, stratified analyses of several individual cohorts also observed higher coefficients for blood Pb relationships with measures of neurocognitive function in lower as compared to higher blood Pb subgroups (ISA, section 4.3.12; Canfield et al., 2003; Bellinger and Needleman, 2003; Kordas et al., 2006; Tellez-Rojo et al., 2006). Of these subgroup analyses, those involving the lowest mean blood Pb levels and closest to the current mean for U.S. preschool children are listed in Table 1 (drawn from Table 3 of the 2008 final rulemaking notice [73 FR 67003, November 12, 2008], and Kirrane and Patel, 2014).[36] These analyses were important inputs for the evidence-based, air-related IQ loss framework which informed decisions on a revised standard in the last review (73 FR 67005, November 12, 2008), discussed in section II.A.1 above. As the framework focused on the median of the four slopes in Table 1, the change to the one from Lanphear et al. (2005) based on the recent recalculation described above has no impact on conclusions drawn from the framework.

TABLE 1—SUMMARY OF QUANTITATIVE RELATIONSHIPS OF IQ AND BLOOD PB FOR ANALYSES WITH BLOOD PB LEVELS CLOSEST TO THOSE OF YOUNG CHILDREN IN THE U.S. TODAY

Blood Pb levels (µg/dL)		Study/analysis	Average linear slope[A] (IQ[B] points per µg/dL)
Geometric mean	Range (min–max)		
2.9	0.8–4.9	Tellez-Rojo et al. (2006)[B], subgroup w. concurrent blood Pb <5 µg/dL.	−1.71
3.3	0.9–7.4	Lanphear et al. (2006)[C], subgroup w. peak blood Pb <7.5 µg/dL.	−2.53
3.32	0.5–8.4	Canfield et al. (2003)[C D], subgroup w. peak blood Pb <10 µg/dL.	−1.79
3.8	1–9.3	Bellinger and Needleman (2003)[C E], subgroup w. peak blood Pb <10 µg/dL.	−1.56
Median value			−1.75

A—Average linear slope estimates here are generally for relationship with IQ assessed concurrently with blood Pb measurement. As exceptions, Bellinger & Needleman (2003) slope is relationship for 10 year old IQ with blood Pb levels at 24 months, and the data for Boston cohort included in Lanphear et al. (2005) slope are relationship for 10 year old IQ with blood Pb levels at 5 years.

B—The slope for Tellez-Rojo et al. (2006) is for BSID (MDI), a measure of cognitive development appropriate to study population age (24-mos). The blood Pb levels for this subgroup are from Tellez-Rojo (2008).

C—The Lanphear et al. (2005) pooled international study also includes blood Pb data from the Rochester and Boston cohorts, although for different ages (8 and 5 years, respectively) than the ages analyzed in Canfield et al. (2003) and Bellinger and Needleman (2003). Thus, the ages at the blood Pb measurements used in derivation of the linear slope for the Lanphear et al. (2005) subgroup shown here are 5 to 7 years. The blood Pb levels and coefficient presented here for Lanphear et al. (2005) study group reflect the recalculation using the corrected pooled dataset (Kirrane and Patel, 2014).

D—Blood Pb levels for this subgroup are from Canfield (2008).

E—Blood Pb levels for this subgroup are from Bellinger (2008).

Several studies newly available in the current review have, in all but one instance, also found a nonlinear blood Pb-cognitive function relationship in nonparametric regression analyses of the cohort blood Pb levels analyzed (ISA, section 4.3.12). These studies, however, used statistical approaches that did not produce quantitative results for each blood Pb group (ISA, section 4.3.12). Thus, newly available studies have not extended the range of observation for quantitative estimates of this relationship to lower blood Pb levels than those of the previous review. The ISA further notes that the potential for nonlinearity has not been examined in detail within a lower, narrower range of blood Pb levels than those of the full cohorts thus far studied in the currently available evidence base (ISA, section 4.3.12). Such an observation in the last review supported the consideration of linear slopes with regard to blood Pb levels at and below those represented in Table 1. In summary, the newly available evidence does not substantively alter our understanding of the C–R relationship (including quantitative aspects) for neurocognitive impact, such as IQ with blood Pb in young children.

4. At-Risk Populations

In this section, we use the term "at-risk populations"[37] to recognize populations that have a greater likelihood of experiencing Pb-related health effects, *i.e.*, groups with characteristics that contribute to an increased risk of Pb-related health effects. These populations are also sometimes referred to as sensitive groups (as in section I.A above). In identifying factors that increase risk of Pb-related health effects, the EPA has considered evidence regarding factors contributing to increased susceptibility, generally including physiological or intrinsic factors contributing to a greater response for the same exposure, and those contributing to increased exposure, including that resulting from behavior leading to increased contact with contaminated media (ISA, Chapter 5). Physiological risk factors include both conditions contributing to a group's increased risk of effects at a given blood Pb level, and those that contribute to blood Pb levels higher than those otherwise associated with a given Pb exposure (*e.g.*, ISA, sections 5.3 and 5.1, respectively).

[36] One of these four is from the analysis of the lowest blood Pb subset of the pooled international study by Lanphear et al. (2005). The nonlinear model developed from the full pooled dataset is the basis of the C–R functions used in the 2007 REA, in which risk was estimated over a large range of blood Pb levels (PA, section 3.4.3.3). Given the narrower focus of the evidence-based framework on IQ response at the end of studied blood Pb levels (closer to U.S. mean level), the C–R functions in Table 1 are from linear analyses (each from separate publications) for the study group subsets with blood Pb levels closest to mean for children in the U.S. today.

[37] In the context of "at-risk populations," the term "population" refers to persons having one or more qualities or characteristics including, for example, a specific pre-existing illness or a specific age or lifestage, with lifestage referring to a distinguishable time frame in an individual's life characterized by unique and relatively stable behavioral and/or physiological characteristics that are associated with development and growth.

The information newly available in this review has not substantially altered our previous understanding of at-risk populations for Pb in ambient air. As in the last review, the factor most prominently recognized to contribute to increased risk of Pb effects is childhood (ISA, section 1.9.6). As noted in section II.B.2 above, although the specific ages or lifestages of greatest susceptibility[38] or risk have not been established (*e.g.*, ISA, section 4.3.11), the at-risk status of young children to the neurodevelopmental effects of Pb is well recognized (*e.g.*, ISA, sections 1.9.6, 4.3, 5.2.1, 5.3.1, and 5.4). The evidence indicates that prenatal blood Pb levels are associated with nervous system effects, including mental development in very young children and can also be associated with cognitive decrements in older children (ISA, section 4.3). Additionally, the coincidence during early childhood of behaviors that increase exposure, such as hand-to-mouth contact by which children transfer Pb in settled particles to their mouths, and the development of the nervous system also contributes increased risk during this time (ISA, sections 3.7.1, 4.3.2.6, 5.2.1.1, 5.3.1.1 and 5.4). Collectively, however, the evidence indicates both the susceptibility of the developing fetus and early postnatal years, as well as the potential for continued susceptibility through childhood as the human central nervous system continues to mature and be vulnerable to neurotoxicants (ISA, sections 1.9.5 and 4.3.15; 2006 CD, section 6.2.12). As discussed in section II.B.2 above, while uncertainties remain with regard to the role of Pb exposures during a particular age of life in eliciting nervous system effects, such as cognitive function decrements, the full evidence base continues to indicate prenatal and early childhood lifestages as periods of increased Pb-related risk (ISA, sections 4.3.11 and 4.3.15).

Several physiological factors increase the risk of Pb-related health effects by contributing to increased blood Pb levels over those otherwise associated with a given Pb exposure (ISA, sections 3.2, 3.3 and 5.1). These include nutritional status, which plays a role in Pb absorption from the gastrointestinal tract (ISA, sections 3.2.1.2, 5.1, 5.3.10 and 5.4). For example, diets deficient in iron, calcium or zinc can contribute to increased Pb absorption and associated higher blood Pb levels (ISA, sections 3.2.1.2, and 5.1). Evidence is suggestive of some genetic characteristics as potential risk factors, such as presence of the δ-aminolevulinic acid dehydratase-2 (ALAD–2) allele which has been indicated to increase blood Pb levels or Pb-related risk of health effects in some studies (ISA, sections 3.3.2 and 5.1).

Risk factors based on increased exposure include spending time in proximity to sources of Pb to ambient air or other environmental media (*e.g.*, large active metals industries or locations of historical Pb contamination) (ISA, sections 1.9.6, 3.7.1, 5.2.5 and 5.4). Residential factors associated with other sources of Pb exposure (*e.g.*, leaded paint or plumbing with Pb pipes or solder) are another exposure-related risk factor (ISA, sections 3.7.1, 5.2.6 and 5.4). Additionally, some races or ethnicities have been associated with higher blood Pb levels, with differential exposure indicated in some cases as the cause (ISA, sections 5.2.3 and 5.4). Lower socioeconomic status (SES) has been associated with higher Pb exposure and higher blood Pb concentration, leading the ISA to conclude the evidence is suggestive for low SES as a risk factor (ISA, sections 5.3.16, 5.2.4 and 5.4). Although the differences in blood Pb levels between children of lower and higher income levels (as well as among some races or ethnicities) have lessened, blood Pb levels continue to be higher among lower-income children indicating higher exposure and/or greater influence of factors independent of exposure, such as nutritional factors (ISA, sections 1.9.6, 5.2.1.1 and 5.4).

In considering risk factors associated with increased Pb exposure or increased blood Pb levels, we note that the currently available evidence continues to support a nonlinear relationship between neurocognitive effects and blood Pb that indicates incrementally greater impacts at lower as compared to higher blood Pb levels (ISA, section 4.3.12), as described in section II.B.3 above. An important implication of this finding is that while children with higher blood Pb levels are at greater risk of Pb-related effects than children with lower blood Pb levels, on an incremental basis (*e.g.*, per µg/dL), the risk is greater for children at lower blood Pb levels. This was given particular attention in the last review of the Pb NAAQS, in which the standard was revised with consideration of the incremental impact of air-related Pb on young children in the U.S. and the recognition of greater impact for those children with lower absolute blood Pb levels (73 FR 67002, November 12, 2008). Such consideration included a focus on those C–R studies involving the lowest blood Pb levels, as described in section II.A.1 above.

In summary, the information newly available in this review has not appreciably altered our understanding of human populations that are particularly sensitive to Pb exposures. In the current review, as at the time of the last review of the Pb NAAQS, we recognize young children as an important at-risk population, with sensitivity extending to prenatal exposures and into childhood development. Additional risk factors for increased blood Pb levels include deficiencies in dietary minerals (iron, calcium and zinc), some racial or ethnic backgrounds,[39] and spending time in proximity to environmental sources of Pb or residing in older houses with Pb exposure related to paint or plumbing.[40] The currently available evidence continues to additionally suggest a potential for increased risk associated with several other factors, including older adulthood,[41] pre-existing disease

[38] As noted in the ISA, "in most instances, 'susceptibility' refers to biological or intrinsic factors (*e.g.*, age and sex) while 'vulnerability' refers to nonbiological or extrinsic factors (*e.g.*, socioeconomic status [SES])" and the terms "at-risk" and "sensitive" populations have in various instances been used to encompass these concepts more generally (ISA, p. 5–1). In providing detail regarding factors contributing to an "at-risk" status in this section, we have used the other terms in particular instances, with our usage consistent with these common definitions.

[39] The ISA concludes that studies of race/ethnicity provide adequate evidence that race/ethnicity is an at-risk factor based on the higher exposure observed among non-white populations and some modification observed in studies of associations between Pb levels and some health effects, such as hypertension (ISA, section 6.4).

[40] The evidence for SES continues to indicate increased blood Pb levels in lower income children, although its role with regard to an increased health risk for the same blood Pb level is unclear and its role generally with regard to Pb-related risk is somewhat complicated. SES often serves as a marker term for one or a combination of unspecified or unknown environmental or behavioral variables. Further, it is independently associated with an adverse impact on neurocognitive development, and a few studies have examined SES as a potential modifier of the association of childhood Pb exposure with cognitive function with inconsistent findings regarding low SES as a potential risk factor. The ISA concludes the evidence for SES as a Pb risk factor is suggestive, based on the greater exposures or blood Pb levels in some low SES groups (ISA, section 5.4).

[41] The ISA identifies older adulthood as a lifestage of potentially greater risk of Pb-related health effects based primarily on the evidence of increases in blood Pb levels during this lifestage (ISA, sections 5.2.1.2, 5.3.1.2, and 5.4), as well as observed associations of some cardiovascular and nervous system effects with bone and blood Pb in older populations, with biological plausibility for the role of Pb provided by experimental animal studies (ISA, sections 4.3.5, 4.3.7 and 4.4). Exposure histories of older adult study populations, which included younger years during the time of leaded gasoline usage and other sources of Pb exposures which were more prevalent in the past than today, are likely contributors to their blood Pb levels (ISA, pp. lx–lxi; Figure 2–1 and sections 2.5.2, 3.3.5 and 5.2.1.2).

(*e.g.*, hypertension), variants for certain genes and increased stress (ISA, section 5.3.4). As discussed above, we recognize the sensitivity of the prenatal period and several lifestages of childhood to an array of neurocognitive and behavioral effects, and we particularly recognize young children as an important at-risk population in light of current environmental exposure levels. Age or lifestage was used to distinguish potential groups on which to focus in the last review in recognition of its role in exposure and susceptibility, and young children were the focus of the REA in consideration of the health effects evidence regarding endpoints of greatest public health concern and in recognition of effects on the developing nervous system as a sentinel endpoint for public health impacts of Pb. This identification continues to be supported by the evidence available in the current review.

5. Potential Impacts on Public Health

There are several potential public health impacts associated with Pb exposure in the current U.S. population. In recognition of effects causally related to blood Pb levels somewhat near those most recently reported for today's population and for which the weight of the evidence is greatest, the potential public health impacts most prominently recognized in the ISA are population IQ impacts associated with childhood Pb exposure and prevalence of cardiovascular effects in adults (ISA, section 1.9.1). With regard to the latter category, as discussed above, the full body of evidence indicates a role of long-term cumulative exposure, with uncertainty regarding the specific exposure circumstances contributing to the effects in the epidemiological studies of adult populations, for whom historical Pb exposures were likely much higher than exposures that commonly occur today (ISA, section 4.4). There is less uncertainty regarding the exposure patterns contributing to the blood Pb levels reported in studies of younger populations (ISA, sections 1.9.4 and 1.10). Accordingly, the discussion of public health implications relevant to this review is focused predominantly on nervous system effects, including IQ decrements, in children.

The magnitude of a public health impact is dependent upon the type or severity of the effect, as well as the size of populations affected. Intelligence quotient is a well-established, widely recognized and rigorously standardized measure of neurocognitive function, as well as a global measure reflecting the integration of numerous processes (ISA, section 4.3.2; 2006 CD, sections 6.2.2 and 8.4.2). Examples of other measures of cognitive function negatively associated with Pb exposure include other measures of intelligence and cognitive development and measures of other cognitive abilities, such as learning, memory, and executive functions, as well as academic performance and achievement (ISA, section 4.3.2). Although some neurocognitive effects of Pb in children may be transient, some may persist into adulthood (ISA, section 1.9.5).[42] We also note that deficits in neurodevelopment early in life may have lifetime consequences as "[n]eurodevelopmental deficits measured in childhood may set affected children on trajectories more prone toward lower educational attainment and financial well-being" (ISA, section 4.3.14). Thus, population groups for which neurodevelopment is affected by Pb exposure in early childhood are at risk of related impacts on their success later in life. Further, in considering population risk, the ISA notes that "[s]mall shifts in the population mean IQ can be highly significant from a public health perspective" (ISA, p. xciii). For example, if Pb-related decrements are manifested uniformly across the range of IQ scores in a population, "a small shift in the population mean IQ may be significant from a public health perspective because such a shift could yield a larger proportion of individuals functioning in the low range of the IQ distribution, which is associated with increased risk of educational, vocational, and social failure" as well as a decrease in the proportion with high IQ scores (ISA, section 1.9.1).

As summarized above, young children are the at-risk population that may be most at risk of health effects associated with exposure to Pb and children at greatest risk from *air-related* Pb are those children with highest air-related Pb exposure which we consider to be those living in areas of higher ambient air Pb concentrations. To inform our understanding of the extent of this population potentially at risk from air-related Pb, the PA includes two analyses. The first analysis is based on consideration of the available air Pb monitoring information. As the air quality data set available for the first analysis may not be inclusive of all of the newly sited monitors (as discussed in section 2.2.1 of the PA) and there may be other areas with elevated Pb concentrations, a second analysis was performed in consideration of emissions estimates from the National Emissions Inventory (NEI), although with recognition of uncertainties associated with inferences drawn from such estimates with regard to ambient air Pb concentrations and exposures (PA, pp. 3–36 to 3–38).[43]

The first PA analysis indicates that approximately one hundredth of one percent of the full population of children aged 5 or under in the U.S. reside within 0.5 km of monitors exceeding or within 10 percent of the level of the current standard (PA, section 2.2.2.2, pp. 3–36 to 3–37, 4–25 and Table 3–4). In the second analysis, the size of young child populations residing in areas near large Pb sources was approximately four hundredths of one percent of the full U.S. population of children aged 5 years or younger (PA, pp. 3–37 to 3–38, 4–25). The PA recognized uncertainties and potential limitations associated with the use of the emissions estimates in the second analysis to make inferences regarding ambient air Pb exposures, uncertainties both with regard to the accuracy of such estimates and also with regard to the role of specific source characteristics and meteorology, not explicitly considered here, in influencing ambient air Pb concentrations and contributing to substantial variation in air Pb concentrations at source locations (*e.g.*, PA, Figure 2–11). Accordingly, while the second analysis is considered informative with regard to the potential prevalence of airborne Pb emissions and potential exposure of human populations, it is limited with regard to its ability to identify populations living in areas of elevated ambient air Pb concentrations. The PA interprets the two analyses together to indicate that well below one tenth of one percent of the full population of children aged 5 years or younger in the U.S. today live in areas with air Pb concentrations near or above the current standard, with the current monitoring data indicating the size of this population to be approximately one hundredth of a percent of the full population of children aged 5 or younger (PA, pp. 3–36 to 3–38, 4–25, 4–32).

[42] The ISA states that the "persistence of effects appears to depend on the duration and window of exposure as well as other factors that may affect an individual's ability to recover from an insult," with some evidence of greater recovery in children reared in households with more optimal caregiving characteristics and low concurrent blood Pb levels (ISA, p. 1–77; Bellinger et al., 1990).

[43] Such uncertainties include those with regard to specific source characteristics and meteorology, not explicitly considered in the analysis. In light of such uncertainties, the PA interprets the emissions-based analysis to provide a bounding estimate below which the true value is expected to fall (PA, p. 3–37).

C. Blood Lead as a Biomarker of Exposure and Relationships With Air Lead

Blood Pb is well established as a biomarker of Pb exposure and of internal dose, with relationships between air Pb concentrations and blood Pb concentrations informing consideration of the NAAQS for Pb since its initial establishment in 1978. Lead associated with inhaled particles may, depending on particle size and Pb solubility, be absorbed into the systemic circulation or transported with particles to the gastrointestinal tract (ISA, section 3.2.1.1), where its absorption is influenced by a range of factors (ISA, section 3.2.1.2). Lead in the blood stream is quickly distributed throughout the body (*e.g.*, within days), available for exchange with the soft and skeletal tissues, the latter of which serves as the largest storage compartment (ISA, section 3.2.2.2). Given the association with exposure and the relative ease of collection, blood Pb levels are extensively used as an index or biomarker of exposure by national and international health agencies, as well as in epidemiological and toxicological studies of Pb health effects and dose-response relationships (ISA, sections 3.3.2, 3.4.1, 4.3, 4.4, 4.5, 4.6, 4.7, and 4.8). While bone Pb measurements are also used in epidemiological studies as an indicator of cumulative Pb exposure, blood Pb measurements remain the predominant, well-established and well-characterized exposure approach.

Since 1976, the CDC has been monitoring blood Pb levels nationally through the NHANES. This survey has documented the dramatic decline in mean blood Pb levels in all ages of the U.S. population that has occurred since the 1970s (PA, Figure 3–1), and that coincides with actions on leaded fuels, leaded paint, Pb in food packaging, and Pb-containing plumbing materials that have reduced Pb exposure in the U.S. (ISA, section 3.4.1; Pirkle et al., 1994; Schwemberger et al., 2005). This decline has continued over the more recent past. For example, the 2009–2010 geometric mean blood Pb level in U.S. children aged 1–5 years is 1.17 μg/dL, as compared to 1.51 μg/dL in 2007–2008 (ISA, section 3.4.1) and 1.8 μg/dL in 2003–2004, the most recent data available at the time of the last review (73 FR 67002, November 12, 2008). Somewhat less dramatic declines have been reported in the upper tails of the distribution and in different groups with higher blood Pb levels than the general child population (ISA, Figures 3–17 and 3–19).

The blood Pb concentration in childhood (particularly early childhood) can more quickly (than in adulthood) reflect changes in total body burden (associated with the shorter exposure history) and can also reflect changes in recent exposures (ISA, section 3.3.5). The relationship of children's blood Pb to recent exposure may reflect their labile bone pool, with their rapid bone turnover in response to rapid childhood growth rates (ISA, section 3.3.5). The relatively smaller skeletal compartment of Pb in children (particularly very young children) compared to adults is subject to more rapid turnover. The distribution of Pb in the body is dynamic throughout life, with Pb in the body being exchanged between blood and bone and between blood and soft tissues (ISA, sections 3.3.5 and 3.2.2; 2006 CD, section 4.3.2). The rates of these exchanges vary with age, exposure and various physiological variables. For example, resorption of bone, which results in the mobilization of Pb from bone into the blood, is a somewhat rapid and ongoing process during childhood and a more gradual process in later adulthood (ISA, sections 3.2.2.2, 3.3.5 and 3.7.2; PA, pp. 3–2 to 3–3).

Lead in ambient air contributes to Pb in blood by multiple exposure pathways by both inhalation and ingestion exposure routes (ISA, section 3.1.1). Multiple studies have demonstrated young children's blood Pb levels to reflect Pb exposures, including exposures to Pb in surface dust (*e.g.*, Lanphear and Roghmann, 1997; Lanphear et al., 1998). These and studies of child populations near sources of air Pb emissions, such as metal smelters, have further demonstrated the effect of airborne Pb on interior dust and on blood Pb (ISA, sections 3.4.1, 3.5.1 and 3.5.3; Hilts, 2003; Gulson et al., 2004).

As blood Pb is an integrated marker of aggregate Pb exposure across all pathways, the blood Pb C–R relationships described in epidemiological studies of Pb-exposed populations do not distinguish among different sources of Pb or pathways of Pb exposure (*e.g.*, inhalation, ingestion of indoor dust, ingestion of dust containing leaded paint). Thus, our interpretation of the health effects evidence for purposes of this review necessitates characterization of the relationships between Pb from those sources and pathways of interest in this review (*i.e.*, those related to Pb emitted into the air) and blood Pb.

The evidence for air-to-blood relationships derives from analyses of datasets for populations residing in areas with differing air Pb concentrations, including datasets for circumstances in which blood Pb levels have changed in response to changes in air Pb. The control for variables other than air Pb that can affect blood Pb varies across these analyses. At the conclusion of the last review in 2008, the EPA interpreted the evidence as providing support for use (in informing the Administrator's decision on standard level) of a range of air-to-blood ratios[44] "inclusive at the upper end of estimates on the order of 1:10 and at the lower end on the order of 1:5" (73 FR 67002, November 12, 2008). This conclusion reflected consideration of the air-to-blood ratios presented in the 1986 CD[45] and associated observations regarding factors contributing to variation in such ratios, ratios reported subsequently and ratios estimated based on modeling performed in the REA, as well as advice from CASAC (73 FR 66973–66975, 67001–67002, November 12, 2008). The information available in this review, which is assessed in the ISA and largely, although not completely, comprises studies that were available in the last review, does not alter the primary scientific conclusions drawn in the last review regarding the relationships between Pb in ambient air and Pb in children's blood. The ratios summarized in the ISA in this review span a range generally consistent with the range concluded in 2008 (ISA, section 3.5.1).

The evidence pertaining to the quantitative relationship between air Pb and children's blood Pb is now, as in the past, limited by the circumstances in which the data are collected. These estimates are generally developed from studies of populations in a variety of Pb exposure circumstances. Accordingly, there is significant variability in air-to-blood ratios among the different study populations exposed to Pb through different air-related exposure pathways and at different exposure levels. This variability in air-to-blood estimates can relate to the representation of air-related pathways and study populations, including, for example, relatively narrow age ranges for the population in order to reduce age-related variability in blood Pb, or including populations with narrowly specified dietary sources. It

[44] The quantitative relationship between ambient air Pb and blood Pb, often termed a slope or ratio, describes the increase in blood Pb (in μg/dL) estimated to be associated with each unit increase of air Pb (in μg/m³). Ratios are presented in the form of 1:x, with the 1 representing air Pb (in μg/m³) and x representing blood Pb (in μg/dL). Description of ratios as higher or lower refers to the values for x (*i.e.*, the change in blood Pb per unit of air Pb). Slopes are presented as simply the value of x.

[45] The 2006 CD did not include an assessment of then-current evidence on air-to-blood ratios.

can relate to the study population exposure and blood Pb levels (ISA, section 3.7.4). It can also relate to the precision of air and blood measurements and of the study circumstances, such as with regard to spatial and temporal aspects. Additionally, in situations where exposure to nonair sources covaries with air-related exposures that are not accounted for in deriving ratio estimates, uncertainties may relate to the potential for confounding by nonair exposure covariance (ISA, section 3.5). Most of the studies assessed in the ISA and PA have reported ratios for which the relationship is linear, while a subset are derived from nonlinear models (PA, Table 3–1; ISA, section 3.7.4).

As was noted in the last review, age is an important influence on the magnitude of air-to-blood ratio estimates derived. Ratios for children are generally higher than those for adults, and higher for young children than older children, perhaps due to behavioral differences between the age groups, as well as their shorter exposure history. Similarly, given the common pattern of higher blood Pb levels in preschool-aged children than during the rest of childhood, related to behaviors that increase environmental exposures (*e.g.*, hand-to-mouth activity), ratios would be expected to be highest in earlier childhood. Additionally, estimates of air-to-blood ratios that include air-related ingestion pathways in addition to the inhalation pathway are "necessarily higher," in terms of blood Pb response, than those estimates based on inhalation alone (1986 CD, p. 11–106). Thus, the extent to which studies account for the full set of air-related inhalation and ingestion exposure pathways affects the magnitude of the resultant air-to-blood estimates, such that including fewer pathways as "air-related" yields lower ratios. Estimates of air-to-blood ratios can also be influenced by population characteristics that may influence blood Pb; accordingly, some analyses include adjustments.

Given the recognition of young children as a key at-risk population in this review, as in the last (as discussed in section II.B.3 above), as well as the influence of age on blood Pb levels, we have considered the available studies in groups based on the extent of their inclusion of children younger than or barely school age (less than or equal to 5 years of age). Among the first group of studies, focused exclusively on young children, only one study dates from the end of or after the phase-out of leaded gasoline usage (Hilts, 2003). This study reports changes in children's blood Pb levels associated with reduced Pb emissions and associated air concentrations near a Pb smelter in Canada (for children through age 5). Given the timing of this study, after the leaded gasoline phase-out, and its setting near a smelter, the ambient air Pb in this study may be somewhat more comparable to that near sources in the U.S. today than other studies discussed herein. The study authors report an air-to-blood ratio of 1:6.[46] An EPA analysis of the air and blood data reported for 1996, 1999 and 2001 results in a ratio of 1:6.5, and an analysis focused only on the 1996 and 1999 data (pre- and post-the new technology) yields a ratio of 1:7 (ISA, section 3.5.1; Hilts, 2003).[47] The two other studies that focused on children of age 5 or younger analyzed variations in air Pb as a result of variations in leaded gasoline usage in Chicago, Illinois and reported somewhat higher ratios of 1:8 and 1:6.6 (Hayes et al., 1994; Schwartz and Pitcher, 1989). We note, however, the blood Pb concentrations in the two leaded gasoline studies are appreciably higher (a factor of two or more) than those in the study near the smelter (Hilts, 2003), and also than those commonly reported in the U.S. today.

The second group of studies includes but is not limited to children less than or equal to 5 years of age. This group includes a complex statistical analysis and associated dataset for a cohort of children born in Mexico City from 1987 through 1992 (Schnaas et al., 2004). Although this study, which was not assessed in the last review, encompasses the period of leaded gasoline usage, it further informs our understanding of factors influencing the quantitative relationship between air Pb and children's blood Pb. Air-to-blood ratios developed from this study are influenced by a number of factors and appear to range from roughly 1:2 to 1:6, in addition to an estimate of 1:9 (ISA, section 3.5.1), although the latter is derived from a data set restricted to the latter years of the study when little change in air Pb concentration occurred, such that the role of air Pb may be more uncertain. Estimates associated with the developmental period of highest exposure (*e.g.*, age 2 years) range up to approximately 1:6, illustrating the influence of age on the ratio (ISA, section 3.5.1). Also in the second group of studies are two much older studies of populations with age ranges extending well beyond 6 years. The first is the review and meta-analysis by Brunekreef (1984) using datasets available at the time for variously aged children as old as 18 years with identified air monitoring methods and reliable blood Pb data for 18 locations in the U.S. and internationally.[48] Two air-to-blood ratio estimates derived from this study based on log-log models both round to 1:5 (for air concentrations corresponding to the geometric means of the two sets of data pairs [1.5 and 0.54 μg/m³]). A ratio on the order of 1:9 was derived based on the study by Schwartz and Pitcher (1989) of the relationship between U.S. NHANES II blood Pb levels for white subjects, aged ≤74 years, and national usage of leaded gasoline, adjusted for age and other covariates (Henderson, 2007a, pp. D–2 to D–3; ISA, Table 3–12).

The last two studies are focused on older children, ages 6–11 in India and Germany (Tripathi et al., 2001; Ranft et al., 2008) and employed methods to characterize media Pb concentrations that differed from the other studies assessed (PA, p. 3–11). The location-specific geometric mean blood Pb levels in the Indian study (8.6–14.4 μg/dL) indicate blood Pb distributions in this age group much higher than those pertinent to similarly aged children in the U.S. today and the air-to-blood ratio estimate reported was 1:3.6 (Tripathi et al., 2001). The more recent German study by Ranft et al. (2008) analyzed data from a nearly 20-year period associated with the leaded gasoline phase-out, during which average blood Pb levels declined from 9 μg/dL in 1983 (345 children, average age of 9 years) to 3 μg/dL in 2000 (162 children, average of 6 years).[49] Average air Pb concentration declined from 0.45 μg/m³ to 0.06 μg/m³ over the same period, with the largest reduction occurring between the first study year (derived from two monitoring sites for full study area) and the second study year, 1991, for which air concentrations were derived from a combination of dispersion modeling and the two monitoring sites.[50] For a mean air Pb concentration of 0.1 μg/m³, the study's multivariate loglinear regression model predicted air-to-blood ratios of 3.2 and 6.4 for "background" blood Pb concentrations of 1.5 and 3 μg/dL, respectively. In this study, background referred to Pb in blood from other sources; the blood Pb distribution over the study period, including levels when air Pb concentrations are lowest, indicates 3 μg/dL may be the better estimate of background for this study population. Inclusion of soil Pb as a variable in the model may have contributed to an underestimation of the blood Pb-air Pb ratios for this study because some of the Pb in soil likely originated in air and the blood Pb-air Pb slope does not include the portion of the soil/dust Pb ingestion pathway that derives from air Pb. Using univariate linear, log-log and loglinear models on the median air and blood Pb concentrations reported for the 5 years included in this study, the ISA also derived air-to-blood ratio estimates for data from this study ranging from 9 to 17 (ISA, p. 3–126; Ranft et al., 2008, Table 2). Uncertainties related to this study's estimates include those related to the bulk of air concentration reduction occurring between the first two time points (1983 and 1991) and the difference among the year's air datasets (*e.g.*, two data sources [air monitors] in 1983 and multiple geographical points from a combination of the monitors and modeling in subsequent years).

In this review, as in the 2008 Pb NAAQS review, in addition to considering the evidence presented in the published literature and that reviewed in the 1986 CD, we also consider air-to-blood ratios derived from the exposure assessment (PA, p. 3–14; 73 FR 66974, November 12, 2008; 2007 REA, section 5.2.5.2). In the exposure assessment (summarized in section II.D below), current modeling tools and information on children's activity patterns, behavior and physiology were used to estimate blood Pb levels associated with multimedia and multipathway Pb exposure. The results from the various case studies assessed, with consideration of the context in which they were derived (*e.g.*, the extent to which the range of air-related pathways was simulated, and the limitations associated with those simulations), and the multiple sources of uncertainty are also informative to our understanding of air-to-blood ratios. Estimates of air-to-blood ratios for the two REA case studies that represent localized population exposures exhibited an increasing trend across air quality scenarios representing decreasing air concentrations. For example, across the alternative standard levels assessed, which ranged from a calendar quarter average of 1.5 μg/m³ down to a monthly average of 0.02 μg/m³, the ratios ranged from 1:2 to 1:9 for the generalized (local) urban case study, with a similar trend, although of generally higher ratio, for the primary smelter case study subarea. This pattern of model-derived ratios is generally consistent with the range of ratios obtained from the literature, briefly discussed above. We continue to recognize a number of sources of uncertainty associated with these model-derived ratios which may contribute to high or low biases (as discussed further in section 3.1 of the PA).

The evidence on the quantitative relationship between air Pb and air-related Pb in blood is now, as in the past, limited by the circumstances (such as those related to Pb exposure) in which the data were collected. Previous reviews have recognized the significant variability in air-to-blood ratios for different populations exposed to Pb through different air-related exposure pathways and at different air and blood levels, with the 1986 CD noting that ratios derived from studies involving the higher blood and air Pb levels pertaining to occupationally exposed workers are generally smaller than ratios from studies involving lower blood and air Pb levels (ISA, p. 3–132; 1986 CD, p. 11–99). Consistent with this observation, slopes in the range of 3 to 5 were estimated for child population datasets assessed in the 1986 CD (ISA, p. 3–132; 1986 CD p. 11–100; Brunekreef, 1984). Additional studies considered in the last review and those assessed in the ISA provide evidence of ratios above this older range (ISA, p. 3–133). For example, a ratio of 1:6.5–1:7 is indicated by the study by Hilts (2003), one of the few studies that evaluate the air Pb-blood Pb relationship in conditions that are closer to the current state in the U.S. (ISA, p. 3–132). We additionally note the variety of factors identified in the ISA that may potentially affect estimates of various ratios (including potentially coincident reductions in nonair Pb sources during the course of the studies), and for which a lack of complete information may preclude any adjustment of estimates to account for their role (ISA, section 3.5).

In summary, as at the time of the last review of the NAAQS for Pb, the currently available evidence includes estimates of air-to-blood ratios, both empirical and model-derived, with associated limitations and related uncertainties. These limitations and uncertainties, which are summarized here and also noted in the ISA, usually include uncertainty associated with reductions in other Pb sources during the study period. The limited amount of new information available in this review has not appreciably altered the scientific conclusions reached in the last review regarding relationships between Pb in ambient air and Pb in children's blood or with regard to the range of ratios. The currently available evidence continues to indicate ratios relevant to the population of young children in the U.S. today, reflecting multiple air-related pathways in addition to inhalation, to be generally consistent with the approximate range of 1:5 to 1:10 given particular attention in the 2008 NAAQS decision, including the "generally central estimate" of 1:7 (73 FR 67002, 67004, November 12, 2008; ISA, pp. 3–132 to 3–133).

D. Summary of Risk and Exposure Assessment Information

The risk information available for this review and summarized here is based primarily on the exposure and risk assessment developed in the last review of the Pb NAAQS, described in the 2007 REA, the 2007 Staff Paper and the 2008 notice of final decision (USEPA, 2007a; USEPA, 2007b; 73 FR 66964, November 12, 2008), as considered in the context of the evidence newly available in this review (PA, section 3.4). As described in

[46] Sources of uncertainty include the role of factors other than ambient air Pb reduction in influencing decreases in blood Pb (ISA, section 3.5.1). The author cited remedial programs (*e.g.*, community and home-based dust control and education) as potentially responsible for some of the blood Pb reduction seen during the study period (1997 to 2001), although the author notes that these programs were in place in 1992, suggesting they are unlikely to have contributed to the sudden drop in blood Pb levels occurring after 1997 (Hilts, 2003). Other aspects with potential implications for ratios include the potential for children with lower blood Pb levels not to return for subsequent testing, and the age range of 6 to 36 months in the 2001 blood screening compared to ages up to 60 months in earlier years of the study (Hilts, 2003).

[47] This study considered changes in ambient air Pb levels and associated blood Pb levels over a 5-year period which included closure of an older Pb smelter and subsequent opening of a newer facility in 1997 and a temporary (3-month) shutdown of all smelting activity in the summer of 2001. The author observed that the air-to-blood ratio for children in the area over the full period was approximately 1:6. The author noted limitations in the dataset associated with exposures in the second time period, after the temporary shutdown of the facility in 2001, including sampling of a different age group at that time and a shorter time period (3 months) at these lower ambient air Pb levels prior to collection of blood Pb levels. Consequently, the EPA calculated an alternate air-to-blood Pb ratio based on ambient air Pb and blood Pb reductions in the first time period, after opening of the new facility in 1997 (ISA, section 3.5.1).

[48] In the dataset reviewed by Brunekreef (1984), air-to-blood ratios from the subset of those studies that used quality control protocols and presented adjusted slopes include values of 3.6, (Zielhuis et al., 1979), 5.2 (Billick et al., 1979, 1980); 2.9 (Billick, 1983), and 8.5 (Brunekreef et al., 1983). The studies cited here adjusted for parental education (Zielhuis et al., 1979), age and race (Billick et al., 1979, 1980) and air Pb monitor height (Billick, 1983); Brunekreef (1984) used multiple regression to control for several confounders (73 FR 66974).

[49] Blood Pb measurements were available on a total of 843 children across five time periods, in the first of which the average child age was 9 years while it was approximately 6 years in each of the latter years: 1983 (n=356), 1991 (n=147), 1994 (n=122), 1997 (n=56), and 2000 (n=162) (Ranft et al., 2008).

[50] The 1983 air Pb concentrations were based on two monitoring stations, while a combination of dispersion modeling and monitoring data was used in the later years. Surface soil Pb measurements were from 2000–2001, but geo-matched to blood Pb measurements across full study period (Ranft et al., 2008).

the REA Planning Document, careful consideration of the information newly available in this review, with regard to designing and implementing a full REA for this review, led to the conclusion that performance of a new REA for this review was not warranted. We did not find the information newly available in this review to provide the means by which to develop an updated or enhanced risk model that would substantially improve the utility of risk estimates in informing the current Pb NAAQS review (REA Planning Document, section 2.3). Based on their consideration of the REA Planning Document analysis, the CASAC Pb Review Panel generally concurred with the conclusion that a new REA was not warranted in this review (Frey, 2011b).[51] Accordingly, the risk/exposure information considered in this review is drawn primarily from the 2007 REA, augmented by a limited new computation for one case study focused on risk associated with the current standard, as described below (PA, section 3.4 and Appendix 3A).

1. Overview

The focus for the risk assessment and associated estimates is on Pb derived from sources emitting Pb to ambient air. As discussed in section I.D above, the multimedia and persistent nature of Pb, the role of multiple exposure patbways, and the contributions of nonair sources of Pb to human exposure media all present challenges and contribute significant additional complexity to the healtb risk assessment that goes far beyond the situation for similar assessments typically performed for other NAAQS pollutants (*e.g.*, that focus only on the inhalation pathway). The conceptual model that informed planning for the 2007 REA identified sources, pethways, routes, exposed populations, and health endpoints, focusing on those aspects of Pb exposure most relevant to the review, while also recognizing the role of Pb exposure pathways unrelated to Pb in ambient air (2007 REA, section 2.1). Limitations in the available data and models affected our characterization of the various complexities associated with exposure to ambient air Pb. As a result, the assessment included a number of simplifying assumptions in a number of areas and the estimates of air-related Pb risk produced are approximate and are characterized by upper and lower bounds.

As recognized in I.D above, sources of human Pb exposure include current and historical air emissions sources, as well as miscellaneous nonair sources, which can contribute to multiple exposure media and associated pathways (*e.g.*, inhalation of ambient air, ingestion of indoor dust, outdoor soil/dust and diet or drinking water). In addition to airborne emissions (recent or those in the past), sources of Pb to these pathways also include old leaded paint, including Pb mobilized indoors during renovation/repair activities, and contaminated soils. Lead in diet and drinking water may have air pathway-related contributions as well as contributions from nonair sources (*e.g.*, Pb solder on water distribution pipes and Pb in materials used in food processing). Limitations in our data and modeling tools handicapped our ability to fully separate the nonair contributions to Pb exposure from estimates of air-related Pb exposure and risk. As a result, we have developed bounds within which we estimate air-related Pb risk to fall. The lower bound is based on a combination of pathway-specific estimates that do not completely represent all air-related pathways, while the upper bound is based on a combination of pathway-specific estimates that includes pathways that are not air-related but the separating out of wbicb is precluded by modeling and data limitations.

Inclusion of exposure populations, exposure/dose metric, health effects endpoint and risk metric in the 2007 REA were based on consideration of the then-currently available evidence as assessed in detail in the 2006 CD. As discussed in the REA Planning Document (USEPA, 2011b), these selections continue to be supported by the evidence now available in this review as described in the ISA. The REA focused on risk to the central nervous system in childhood as the most sensitive effect that could be quantitatively assessed, with decrement in IQ used as the risk metric. Exposure and biokinetic modeling was used to estimate blood Pb concentrations in children exposed to Pb up to age 7 years.[52] This focus reflected the evidence for young children with regard to air-related exposure pathways and susceptibility to Pb health impacts (*e.g.*, ISA, sections 3.1.1, 4.3, 5.2.1.1, 5.3.1.1, and 5.4). For example, the hand-to-mouth activity of young children contributes to their Pb exposure (*i.e.*, incidental soil and indoor dust ingestion) and ambient air-related Pb has been shown to contribute to Pb in outdoor soil and indoor house dust (ISA, sections 3.1.1 and 3.4.1; 2006 CD, section 3.2.3).

The 2007 REA relied on a case study approach to provide estimates that inform our understanding of air-related exposure and risk in different types of air Pb exposure situations. Lead exposure and associated risk were estimated for multiple case studies that generally represent two types of residential population exposures to air-related Pb: (1) Location-specific urban populations of children with a broad range of air-related exposures, reflecting existence of urban concentration gradients; and (2) children residing in localized areas with air-related exposures representing air concentrations specifically reflecting the standard level being evaluated (see PA, Table 3–6). Thus, the two types of case studies differed with regard to the extent to which they represented population variability in air-related Pb exposure.

In drawing on the 2007 REA for our purposes in this review, we focused on two case studies, one from each of these two categories: (1) The location-specific urban case study for Chicago and (2) the generalized (local) urban case study (PA, Table 3–6). Accordingly, our summary of analysis details below focuses on details particular to these two case studies. The generalized (local) urban case study (also referred to as *general urban case study*) was not based on a specific geographic location and reflected several simplifying assumptions in representing exposure including uniform ambient air Pb levels associated with the standard of interest across the hypothetical study area and a uniform study population. Based on the nature of the population exposures represented by the two categories of case study, the generalized (local) urban case study includes populations that are relatively more highly exposed by way of air pathways to air Pb concentrations near the standard level evaluated, compared with the populations in the location-specific urban case. The location-specific urban case studies provided representations of urban populations with a broad range of air-related exposures due to spatial gradients in both ambient air Pb levels and population density. For example, the highest air concentrations in these case studies (*i.e.*, those closest to tbe standard being assessed) were found in very small parts of the study areas, while a large majority of the case study populations resided in areas with much lower air concentrations.

2. Summary of Design Aspects

The approach to assessing exposure and risk for the two categories of case studies was comprised of four main analytical steps: (1) Estimation of ambient air Pb concentrations, (2) estimation of Pb concentrations in other key exposure media, including outdoor soil and indoor dust, (3) use of exposure media Pb concentrations, with other pathway Pb intake rates (*e.g.*, diet), to estimate blood Pb levels in children using biokinetic modeling, and (4) use of C–R functions derived from epidemiological studies to estimate IQ loss associated with the blood Pb levels.

Concentrations of Pb were estimated in ambient media and indoor dust using a combination of empirical data and modeling projections. The use of empirical data brings with it uncertainty related to the potential inclusion of nonair source signals in these measurements (*e.g.*, house paint contributions to indoor dust and outdoor soil Pb). Conversely, the use of modeling tools introduces other uncertainties (*e.g.*, model and parameter uncertainties).

Characterization of Pb in ambient air relied on (1) the use of ambient monitor data for the location-specific urban case studies and (2) an assumption of uniform ambient air Pb levels (matching the standard level being considered) for the generalized (local) urban case study. For the location-specific urban case studies, we used Pb monitors within each study area to characterize spatial gradients. By contrast, the generalized (local) urban case study is designed to assess exposure and risk for a smaller group of residents (*e.g.*, neighborhood) exposed at the level of the standard and, therefore, did not raly on monitor data; rather, ambient air Pb concentration was fixed at the standard being assessed. For the generalized (local) urban case study, which has a single exposure zone in which air Pb concentrations do not vary spatially, we derived a single air Pb concentration estimate to meet the standard assessed. Concentrations in the location-specific urban study areas, which relied on empirical (monitor-based) data to define ambient air Pb concentrations, reflected contributions from all sources affecting the concentrations in those locations, be they currently active stationary or mobile sources, resuspension of previously deposited Pb or other.[53]

The air quality scenarios assessed in the 2007 REA included conditions just meeting the NAAQS that was current at the time of the last review (1.5 μg/m³, as a calendar quarter average), conditions meeting several alternative, lower standards,[54] and current conditions in the three location-specific urban case studies (PA, section 3.4.3.2). The full impact of changes in air Pb conditions associated with attainment of lower standards was not simulated, bowever, due to limitations in the available data and modeling tools that precluded simulation of linkages between some media and air Pb. Specifically, while Pb concentrations in indoor dust were simulated to change with the different air quality scenarios for which thera were differing ambient air Pb concentrations (outdoors and indoors), dietary and drinking water Pb concentrations, as well as soil Pb concentrations, were not varied across the air quality scenarios in any case study (see PA, Table 3–7).[55]

In estimating blood Pb levels using the IEUBK model, Pb concentrations in exposure media (*e.g.*, ambient air, diet, water, indoor dust) were held constant throughout the 7-year simulation period, while behavioral and physiological variables were changed with age of child (2007 REA, sections 3.2.1.1 and 5.2.4). Detail on methods used to characterize media Pb concentrations and all IEUBK inputs for each case study are in the 2007 REA, sections 3.1, 3.2, 5.2.3 and 5.2.4, and appendices C through H. Population variability in Pb intake and uptake was simulated through use of the IEUBK model to first generate a central-tendency estimate of the blood Pb levels for the group of children within a given exposure zone of a study area, coupled with use of a geometric standard deviation (GSD) and for the location-specific case studies, Monte Carlo-based population sampling (PA, section 3.4; 2007 REA, Appendix H). The risk characterization step employed in the 2007 REA generated a distribution of IQ loss estimates for the set of children simulated in the assessment.

Specifically, blood Pb estimates for the concurrent blood Pb metric[56] were combined with four C–R functions for blood Pb concentration with IQ loss based on the analysis by Lanphear et al. (2005) of a pooled international dataset of blood Pb and IQ (see the 2007 REA, section 5.3.1.1). We used the four different C–R functions to provide different characterizations of behavior at low exposures in recognition of uncertainty related to modeling this endpoint, particularly at lower blood Pb levels for which there is limited representation in the Lanphear et al. (2005) pooled dataset.[57] In considering the risk estimates here (as in the last review), we focus on estimates for one of the four functions (referred to as the loglinear with low-exposure linearization C–R function [PA, section 3.4.3.3]). The range of risk estimates reflecting all four C–R functions provide perspective on the impact of uncertainty in this key modeling step. Additional detail on the C–R functions is provided in the PA and the 2007 Pb Staff Paper (PA, section 3.4.3.3; USEPA, 2007b, section 4.2.1).[58] We focus on the median IQ loss estimates, as in the last review, due to increased confidence in these estimates relative to the higher percentile estimates, for which we recognize significant uncertainty (PA,

[51] In their review of the draft PA, the CASAC Pb Review Panel reinforced their concurrence with the EPA's decision not to develop a new REA (Frey, 2013).

[52] The pathways represented in this modeling included childhood inhalation and ingestion pathways, as well as maternal contributions to newborn body burden (2007 REA, Appendix H, Exhibit H–6).

[53] Additional detail on estimation of ambient (outdoor) and indoor air concentrations is presented in section 5.2.2 and Appendices A through D of the 2007 REA.

[54] The alternatives lower than the NAAQS at the time of the last review for which air quality scenarios were assessed were a maximum calendar quarter average of 0.2 μg/m³ and maximum monthly averages of 0.5, 0.2, 0.05 and 0.02 μg/m³ (PA, Table 3–8).

[55] Characterization of Pb concentrations in outdoor surface soil/dust for the generalized (local) and location-specific urban cases studies was based on the use of nationally representative residential soil measurements obtained from the literature (2007 REA, sections 3.1.3 and 5.2.2.2 and Appendix F). Diet and drinking water intake and concentrations, as well as other model inputs, were based on the most current information (2007 REA, Appendix H).

[56] As in the last review, we give primary emphasis to estimates based on the concurrent blood Pb metric, consistent with CASAC advice in the last review (Henderson, 2007b).

[57] The 5th percentile for the concurrent blood Pb measurements in that dataset is 2.5 μg/dL, and the median is 9.7 μg/dL (Lanphear et al., 2005).

[58] As noted in section II.B.3 above, since the completion of the ISA in the current review, two errors have been identified with the pooled dataset analyzed by Lanphear et al., (2005) (Kirrane and Patel, 2014). The EPA and a recent publication have separately recalculated the statistics and mathematical models of Lanphear et al., (2005) using the corrected pooled dataset (Kirrane and Patel, 2014). While the conclusions drawn from these coefficients, including the finding of a steeper slope at lower (as compared to higher) blood Pb concentrations, are unaffected, the magnitude of the loglinear and linear regression coefficients are somewhat lower based on the corrections. For example, the loglinear model coefficient used for the C–R function, on which the EPA focused in the last review and also focuses on here, changed only negligibly from −2.7 to −2.65 when recalculated using the corrected pooled dataset (Kirrane and Patel, 2014). As a result, the risk estimates for this function would be expected to be very similar although slightly lower if derived using the recalculated loglinear model coefficient for the corrected dataset. Since the loglinear model coefficient calculated from the corrected dataset is unchanged at two significant figures from that original reported, any change to the risk estimates would be very small and, particularly in light of other uncertainties in the analysis, does not materially affect staff's consideration of the results.

sections 3.4.5, 3.4.6 and 3.4.7; 2007 Staff Paper, p. 4–20).

As the 2007 REA did not include an air quality scenario simulated to just meet the standard selected by the 2008 decision,[59] we employed two different approaches to estimate risk pertaining to conditions just meeting the current Pb standard (set in 2008) for our purposes in this review. First, given the similarity to the current standard of the then-current conditions scenario for the Chicago case study (among all the 2007 REA scenarios), we consider the risk estimates for that scenario as informative with regard to risk associated with the current standard.[60] To augment the risk information available in this current review and in recognition of the variation among specific locations and urban areas with regard to air quality patterns and exposed population, we have also newly developed estimates for an air quality scenario just meeting the current Pb NAAQS in the context of the generalized (local) urban case study. These estimates were derived based on interpolation from the risk estimates available for scenarios previously assessed for the generalized (local) urban case study. Such interpolated estimates were only developed for the generalized urban case study due to its use of a single exposure zone which greatly simplified the method employed.[61]

The general approach we followed to newly develop estimates for the current standard in the generalized (local) urban case study was to identify the two alternative standard scenarios simulated in the 2007 REA which represented air quality conditions bracketing those for the current standard and then linearly interpolate an estimate of risk for the current standard based on the slope created from the two bracketing estimates (PA, section 3.4.3.3.2 and Appendix 3A). By this method, the air quality scenario for the current standard (0.15 μg/m³, as a not-to-be-exceeded 3-month average) was found to be bracketed by the scenarios for alternative standards of 0.20 μg/m³ (maximum calendar quarter average) and 0.20 μg/m³ (maximum monthly average). Using interpolation between the risk estimates for these two scenarios, we developed median risk estimates for the current standard (PA, Appendix 3A).

3. Key Limitations and Uncertainties

In characterizing risk associated with Pb from air-related exposure pathways, we faced a variety of challenges and employed a number of methods. The challenges related to significant data and modeling limitations which affected our ability to parse out the portion of total (all-pathway) blood Pb and IQ loss attributable to air-related pathways, as well as our representation of key sources of variability and characterization of uncertainty. Although we separated total estimates into risk estimates for diet/drinking water and two air-related categories ("recent air" and "past air"), significant limitations in our modeling tools and data resulted in an inability to parse risk estimates specific to the air-related pathways. For example, we recognize that Pb in diet and drinking water sources may include some Pb derived from Ph in the ambient air, as well as Pb from nonair sources, but limitations precluded explicit modeling of the contribution from air pathways to these exposure pathways, such that the air-related component of these exposures was not estimated. Rather, we focused on estimates from the two air-related categories, which we considered to under- and over-estimate air-related risk, respectively, to create bounds within which we consider air-related risk to fall.

The first air-related category ("recent") included Pb exposure pathways tied most directly to ambient air, which consequently have the potential to respond relatively more quickly to changes in air Pb (*i.e.*, inhalation and ingestion of indoor dust Pb derived from the infiltration of ambient air Pb indoors). Importantly, media concentrations associated with the pathways in this category were simulated to change in response to air concentrations (as noted in section II.D.2 above and described in section 3.4.3.1 of the PA). The air-related Pb exposure pathways in the second air-related category ("past air"), all of which are associated with atmospheric deposition, included ingestion of Pb in outdoor dust/soil and ingestion of the portion of Pb in indoor dust that after deposition from ambient air outdoors is carried indoors with humans. While there is the potential for these other air-related exposures to be affected (over some time frame) by changes in air Pb concentrations (associated with an adjustment to the Pb standard), limitations in our data and tools precluded simulation of that relationship. Consequently, risk estimated for this category reflects media measurements available for the 2007 REA and is identical for all air quality scenarios. Further, although paint is not an air-related source of Pb exposure, it may be reflected somewhat in estimates developed for the "past air" category, due to modeling constraints (2007 Staff Paper, section 4.2.4). Thus, as exposures included in the first air-related category ("recent") do not completely capture all air-related pathways, we consider risk for this category an underestimate of air-related risk. Yet, as exposures included in the second air-related category include pathways that are not air-related, we consider the summed risk across both categories to include a slight over-estimate of air-related risk.

In summary, because of limitations in the assessment design, data and modeling tools, we consider our estimates of risk attributable to air-related exposure pathways to be approximate and to be bounded on the low end by the risk estimated for the "recent air" category and on the upper end by the risk estimated for the "recent air" plus "past air" categories. With regard to the latter, we are additionally cognizant of the modeling and data limitations which reduce the extent to which the upper end of these bounds reflects impacts of alternative air quality conditions simulated. We note that this limitation will tend to contribute to estimates for the "past air" category representing relatively greater overestimates with relatively lower air Pb air quality scenarios.

We recognize several important sources of variability in air-related Pb exposures and associated risk, for which the approaches by which they were addressed in the 2007 REA are summarized here (PA, section 3.4.6).

- Variation in distributions of potential urban residential exposure and risk across U.S. urban residential areas is addressed by the inclusion of location-specific urban study areas that reflect a diverse set of urban areas in the U.S.

[59] The 2008 decision on the level for the revised NAAQS was based primarily on consideration of the evidence-based air-related IQ loss framework; risk estimates available for scenarios simulated in the 2007 REA were concluded to be roughly consistent with and generally supportive of the evidence-based air-related IQ loss estimates (see section II.A.1 above).

[60] In the Chicago urban case study, the maximum monthly average concentration was 0.31 μg/m³, and the maximum calendar quarter average concentration was 0.14 μg/m³ (2003–2005 data; 2007 REA, Appendix O).

[61] We did not interpolate risk estimates for the current standard for the other case studies (*i.e.*, the primary Pb smelter and location-specific urban case studies) because those case studies utilized a more complex, spatially-differentiated and population-based approach (see 2007 REA) which precludes application of the simple linear interpolation approach described, without introduction of substantial added uncertainty (relative to the other estimates for the same case study). The simplicity of the generalized (local) urban study area, however, with its single exposure zone, is amenable to the linear interpolation of risk described here.

- Representation of a more highly exposed subset of urban residents potentially exposed at the level of the standard is addressed by the inclusion of the generalized (local) urban study area.
- Variation in residential exposure to ambient air Pb within an urban area of the location-specific case studies is addressed through the partitioning of these study areas into exposure zones to provide some representation of spatial gradients in ambient air Pb and their interaction with population distribution and demographics.
- Inter-individual variability in blood Pb levels is addressed through the use of empirically derived GSDs to develop blood Pb distribution for the child population in each exposure zone, with GSDs selected particular to each case study population.
- Inter-individual variability in IQ response to blood Pb is addressed through the use of C–R functions for IQ loss based on a pooled analysis reflecting studies of diverse populations.

With regard to uncertainties, we recognize one overarching area concerning the precision of our estimation of the neurocognitive risk (as represented by IQ loss) associated with ambient air Pb. For reasons related to the evidence of nonlinear responses of blood Pb to Pb exposure and of Pb-associated IQ response to blood Pb, the 2007 REA first estimated blood Pb levels and associated risk for total Pb exposure (*i.e.*, including Pb from air-related and nonair exposure pathways) and then separated out estimates for pathways of interest (PA, section 3.4.4). However, as described above, significant limitations in our modeling tools affected our ability to develop precise estimates for air-related exposure pathways. We believe these limitations led to a slight overestimation of the risks for the "past air" category and to an under-representation of air-related pathways for the "recent air" category. Thus, we characterized the risk attributable to air-related exposure pathways to be bounded by the estimates developed for the "past air" category and the sum of estimates for the "recent air" and "past air" categories. For air quality scenarios other than those for the previous NAAQS, this upper bound is recognized as having a potential upward bias with regard to its reflection of the simulated air quality conditions because modeling and data limitations precluded simulation of the influence of lower air Pb concentrations on the outdoor dust and soil exposure pathways (PA, section 3.4.4).

We recognize a range of additional uncertainties, limitations, and assumptions that are reflected in various ways in the 2007 REA and associated results (PA, section 3.4.7), which include the following.

- *Temporal Aspects:* During the 7-year exposure period, media concentrations remain fixed and the simulated child resides at the same residence (although exposure factors, including behavioral and physiological parameters, are adjusted to match the aging of the child). These aspects introduce uncertainty into the risk estimates, although the existence of a directional bias is unclear.
- *Generalized (local) Urban Case Study:* The design for this case study employs assumptions regarding uniformity that are reasonable in the context of a general description of a small neighborhood population but would contribute significant uncertainty to extrapolation of these estimates to a specific urban location, particularly a relatively large one. An additional area of uncertainty concerns the representation of variability in air quality. Given the relatively greater variability common in areas of high Pb concentrations, the approach used to reflect variability may bias the estimates high.
- *Location-specific Urban Case Studies:* Limitations in the spatial density of ambient air monitors in the simulated areas limit our characterization of spatial gradients of ambient air Pb levels in these case studies. This factor introduces uncertainty into the risk estimates for this category of case study; the existence of a directional bias is unclear.
- *Air Quality Simulation:* Focus on only then-current conditions (2003–2005) scenario for the Chicago urban case study in this review precludes uncertainty associated with simulations of alternative air quality scenarios in the 2007 REA.
- *Outdoor Soil/Dust Pb Concentrations:* Limitations in datasets on Pb levels in surface soil/dust Pb in urban areas and in our ability to simulate the impact of reduced air Pb levels related to lowering the NAAQS in the 2007 REA contribute uncertainty to air-related risk estimates for the current standard in the generalized (local) urban case study. The likely impact is a high bias on these risk estimates (related to low bias on estimating risk reduction for lower standard levels in the 2007 REA) given lack of simulated changes in soil Pb related to changes in ambient air Pb.
- *Indoor Dust Pb Concentrations:* Limitations and uncertainty in modeling of indoor dust Pb levels, including the impact of reductions in ambient air Pb levels, contributes uncertainty to air-related risk estimates. Although the indoor dust modeling does link changes in ambient air Pb to changes in indoor dust Pb, it does not include a link between ambient air Pb, outdoor soil Pb and subsequent changes in the level of Pb carried (or "tracked") into the house. This could introduce low bias into the total estimates of air-related Pb exposure and risk.
- *Interindividual Variability in Blood Pb Levels:* Uncertainty related to population variability in blood Pb levels related to interindividual variability in factors other than media concentration and limitations in modeling of this introduces significant uncertainty into blood Pb and IQ loss estimates for the 95th percentile of the population. The extent of any systematic bias from this source of uncertainty is unknown.
- *Pathway Apportionment for Higher Percentile Blood Pb and Risks:* Limitations, primarily in data, prevented us from characterizing the degree of correlation among high-end Pb exposures for the various pathways (*e.g.*, the degree to which an individual experiencing high drinking water Pb exposure would also experience high Pb paint exposure and high ambient air-related Pb exposure). Our inability to characterize potential correlations between exposure pathways (particularly at the higher percentile exposure levels) limited our ability to (1) effectively model high-end Pb risk and (2) apportion that risk between different exposure pathways, including ambient air-related pathways.
- *IQ Loss C–R Functions:* Specification of the quantitative relationship between blood Pb level and IQ loss is subject to greater uncertainty at lower blood Pb levels. The use of four C–R functions models (which each treat the response at low blood Pb levels in a different manner) is considered to provide a reasonable characterization of this source of uncertainty and its impact on risk estimates. Comparison of risk estimates from the four models indicates this source of uncertainty to have a potentially significant impact on risk.

4. Summary of Risk Estimates and Key Observations

In this summary of risk estimates, drawn from the PA, we focus on the estimates of air-related IQ loss derived using the C–R function in which we have greatest confidence (see PA, sections 3.4.3.3.1 and 3.4.7) for the median child in a given case study (exposure modeled through age 7 years), given the substantially greater uncertainty associated with air-related

risk estimates for extremes of the risk distribution, such as the 95th percentile (PA, section 3.4). Estimates for other risk metrics and the full range of case studies and air quality scenarios are described elsewhere in detail (*e.g.*, 2007 REA, sections 4.2 and 5.3.2 and appendices; 2007 Staff Paper, chapter 4; 73 FR 66964, November 12, 2008). Based on results from the 2007 REA for a location-specific urban study area (Chicago case study) and on those newly derived in this review based on interpolation from the 2007 REA results (for the generalized (local) urban case study), median air-related IQ loss for the current standard is estimated, with rounding, to generally fall near or somewhat above a rough lower bound of 1 point IQ loss and below a rough upper bound of 3 points IQ loss. As would be expected by the use of interpolation, the newly derived estimates are consistent with the estimates for similar air quality scenarios that were available in the last review (PA, section 3.4.5). For example, the generalized (local) urban case study current standard scenario estimates for median air-related IQ loss are identical to those for the scenario of just meeting a potential alternative of 0.2 $\mu g/m^3$ maximum calendar quarter average for that case study (PA, Table 3–11). Further, the upper bound below which the median IQ loss is estimated to fall is also approximately 3 IQ points in the generalized (local) urban case study scenarios for just meeting potential alternatives of 0.2 $\mu g/m^3$, 0.05 and 0.02 $\mu g/m^3$ maximum monthly average, providing an indication of the limitations associated with estimating air-related Pb exposures and risk for lower air Pb scenarios (PA, sections 3.4.4 and 3.4.5).

As summarized in section II.D.3 above, a range of limitations and areas of uncertainty were associated with the information available in the last review (PA, sections 3.4.4, 3.4.6 and 3.4.7). In this review, the REA Planning Document concluded that none of the primary sources of uncertainty identified to have the greatest impact on risk estimates would be substantially reduced through the use of newly available information (USEPA, 2011b). Thus, the key observations regarding air-related Pb risk modeled for the set of standard levels assessed in the 2007 REA, as well as the risk estimates interpolated for the current standard, are not significantly affected by the new information. Further, our overall characterization of uncertainty and variability associated with those estimates (as summarized above and in sections 3.4.6 and 3.4.7 of the PA) is not appreciably affected by new information. As recognized at the time of the last review, exposure and risk modeling conducted for this analysis was complex and subject to significant uncertainties due to limitations in the data and models, among other aspects. Of particular note, limitations in the assessment design, data and modeling tools handicapped us from sharply separating Pb linked to ambient air from Pb that is not air related.

In summary, the estimates of risk attributable to air-related exposures, with which we recognize a variety of sources of uncertainty, are considered to be approximate, falling within upper and lower bounds. These bounds for scenarios just meeting the current standard are roughly estimated, with rounding, as 3 and 1 IQ points, which over- and underestimate risk, respectively. In characterizing the magnitude of air-related risk associated with the current standard, we focus on median estimates, for which we have appreciably greater confidence than estimates for outer ends of the risk distribution (see PA, section 3.4.7) and on risks derived using the C–R function in which we have greatest confidence (see PA, sections 3.4.3.3.1 and 3.4.7). These risk results for the current standard, both those estimated in the last review for one of the location-specific urban study area populations and those newly derived in this review using interpolation of the estimates from the last review for the generalized (local) urban case study, which is recognized to reflect a generalized high end of air-related exposure for localized populations, provide approximate bounds for air-related risk, with attendant uncertainties described above. Focusing on the results for the generalized (local) urban case study, the interpolated estimates for the scenario representing the current standard are very similar to estimates for the two 0.2 $\mu g/m^3$ scenarios (maximum monthly and calendar quarter averages) simulated in the 2007 REA [62] and are appreciably lower than those associated with the previous standard. For this case study, across the two 0.2 $\mu g/m^3$ scenarios, the current standard scenario and the more restrictive air quality scenarios, the upper bound below which air-related risk is estimated to fall rounds to the same value, reflecting the significant limitations associated with developing precise estimates of air-related risk, particularly for the lower air Pb scenarios (PA, sections 3.4.4, 3.4.5, and 3.4.7).

[62] There is uncertainty associated with judging differences between the current standard and these potential alternative standards due to the difference in air quality datasets used to estimate air concentration variability of the 2007 REA estimates versus the interpolated risk estimate.

E. Conclusions on Adequacy of the Current Primary Standard

In evaluating whether, in view of the advances in scientific knowledge and additional information now available, it is appropriate to retain or revise the current standard, the Administrator builds upon the last review and reflects upon the body of evidence and information now available. The Administrator has taken into account both evidence-based and quantitative exposure- and risk-based considerations in developing conclusions on the adequacy of the current primary Pb standard. Evidence-based considerations draw upon the EPA's assessment and integrated synthesis of the scientific evidence from epidemiological studies and experimental animal studies evaluating health effects related to exposures to Pb, with a focus on policy-relevant considerations as discussed in the PA. The exposure/risk-based considerations draw from the results of the quantitative analyses presented in the 2007 REA, augmented as described in the PA, and summarized in section II.D above, and consideration of those results in the PA. More specifically, estimates of the magnitude of ambient Pb-related exposures for young children and associated impacts on IQ associated with just meeting the current primary Pb NAAQS have been considered. Together the evidence-based and risk-based considerations have informed the Administrator's proposed conclusions related to the adequacy of the current Pb standard in light of the currently available scientific evidence.

As described in section II.A.2 above, consideration of the evidence and the exposure/risk information in the PA and by the Administrator is framed by consideration of a series of key policy-relevant questions. The following sections describe the consideration of these questions in the PA, the advice received from CASAC, as well as the comments received from various parties, and then present the Administrator's proposed conclusions regarding the adequacy of the current primary standard.

1. Evidence-Based Considerations in the Policy Assessment

In considering the evidence with regard to the issue of adequacy of the current standard, the PA addresses several questions that build on the information summarized in sections II.B and II.C above (and sections 3.1 through 3.3 of the PA) to more broadly address the extent to which the current evidence base supports the adequacy of the public health protection afforded by the current primary standard. The first question addresses the integrated consideration of the health effects evidence, in light of aspects described in sections II.A.1 and II.A.2 above. The second question focuses on consideration of associated areas of uncertainty. The third question then integrates consideration of the prior two questions with a focus on the standard, including each of the four elements. The PA considerations and conclusions with regard to these questions are summarized below.

In considering the extent to which information newly available in this review may have altered scientific support for the occurrence of health effects associated with Pb in ambient air, the PA concludes that the current evidence continues to support the EPA's conclusions from the previous review regarding key aspects of the health effects evidence for Pb and the health effects of multimedia exposure associated with levels of Pb occurring in ambient air in the U.S. (PA, section 4.2.1). The conclusions in this regard are based on consideration of the assessment of the currently available evidence in the ISA, particularly with regard to key aspects summarized in Chapter 3 of the PA, in light of the assessment of the evidence in the last review as described in the 2006 CD and summarized in the notice of final rulemaking (73 FR 66964, November 12, 2008). Key aspects of these conclusions are summarized below.

As at the time of the last review, blood Pb continues to be the predominant biomarker employed to assess exposure and health risk of Pb (ISA, Chapters 3 and 4), as discussed in section II.C above. This widely accepted role of blood Pb in assessing exposure and risk is illustrated by its established use in programs to prevent both occupational Pb poisoning and childhood Pb poisoning, with the latter program, implemented by the CDC, recently issuing updated guidance on blood Pb measurement interpretation (CDC, 2012). As in the past, the current evidence continues to indicate the close linkage of blood Pb levels in young children to their body burden; this linkage is associated with the ongoing bone remodeling during that lifestage (ISA, section 3.3.5). This tight linkage plays a role in the somewhat rapid response of children's blood Pb to changes in exposure (particularly to exposure increases), which contributes to its usefulness as an exposure biomarker (ISA, sections 3.2.2, 3.3.5, and 3.3.5.1). Additionally, the weight of evidence documenting relationships between children's blood Pb and health effects, most particularly those on the nervous and hematological systems (*e.g.*, ISA, sections 4.3 and 4.7), speaks to its usefulness in assessing health risk.

As in the last review, the evidence on air-to-blood relationships available today continues to be composed of studies based on an array of circumstances and population groups (of different age ranges), analyzed by a variety of techniques, which together contribute to appreciable variability in the associated quantitative estimates and uncertainty with regard to the relationships existing in the U.S. today. Accordingly, interpretation of this evidence base, as discussed in section II.C above, also includes consideration of factors that may be influencing various study estimates. We consider the study estimates in light of such factors both with regard to the extent to which the factors affect the usefulness of specific study estimates for the general purpose here of quantitatively characterizing relationships between Pb in ambient air and air-related Pb in children's blood and also with regard to the pertinence of such factors more specifically to conditions and populations in the U.S. today. As noted in the PA, the current evidence, while including two additional studies not available at the time of the last review, is not appreciably changed from that available in the last review (PA, section 3.1). The range of estimates that can be derived from the full dataset is broad and not changed by the inclusion of the newly available estimates. Further, the PA recognizes significant uncertainties regarding the air Pb to air-related blood Pb relationship for the current conditions where concentrations of Pb in both ambient air and children's blood are substantially lower than they have been in the past. In considering the strengths, limitations and uncertainties associated with the full dataset, the currently available evidence appears to continue to support a range of estimates for the purpose at hand that is generally consistent with the range given weight in the last review, 1:5 to 1:10 (ISA, section 3.7.4 and Table 3–12; 73 FR 67001–2, 67004, November 12, 2008). The PA additionally notes that the generally central estimate of 1:7 identified for this range in the last review is consistent with the study involving blood Pb for pre-school children and air Pb conditions near a large source of Pb to ambient air with concentrations near (and/or previously above) the level of the current Pb standard (ISA, section 3.5.1; Hilts, 2003).[63] In so noting, the PA also recognizes the general overlap of such circumstances with those represented by the evidence-based, air-related IQ loss framework,[64] for which air-to-blood ratio is a key input. In characterizing the range of air-to-blood ratio estimates, we recognize uncertainty inherent in such estimates as well as the variation in currently available estimates resulting from a variety of factors, including differences in the populations examined, as well as in the Pb sources or exposure pathways addressed in those study analyses (ISA, section 3.7.4).

The scientific evidence continues to recognize a broad array of health effects on multiple organ systems or biological processes related to blood Pb, including Pb in blood prenatally (ISA, section 1.6). The currently available evidence continues to support identification of neurocognitive effects in young children as the most sensitive endpoint associated with blood Pb concentrations (ISA, section 1.6.1), which as an integrated index of exposure reflects the aggregate exposure to all sources of Pb through multiple pathways (inhalation and ingestion). Evidence continues to indicate that some neurocognitive effects in young children may not be reversible and may have effects that persist into adulthood (ISA, section 1.9.5). Thus, as discussed in section II.B. above, the evidence of Pb effects at the low end of the studied blood Pb levels (closest to those common in the U.S. today) continues to be strongest and of greatest concern for effects on the nervous system, most particularly those on cognitive function in children.

As in the last review, evidence on risk factors continues to support the identification of young children as an important at-risk population for Pb health effects (ISA, section 5.4). The current evidence also continues to indicate important roles as factors that increase risk of Pb-related health effects for the following: Nutritional factors, such as iron and calcium intake; elevated blood Pb levels; and proximity to sources of Pb exposure, such as industrial releases or buildings with old,

[63] The older study by Hayes et al. (1994) during time of leaded gasoline indicated a generally similar ratio of 1:8, although the blood Pb levels in that study were much higher than those in the study by Hilts (2003). Among the studies focused on this age group, the latter study includes blood Pb levels closest to those in U.S. today.

[64] Concentrations near air sources are higher than those at more distant sites (as described in PA, section 2.2.2); it is near-source locations where there is the potential for concentrations at or near the current standard.

deteriorating, leaded paint. Further, some races or ethnic groups continue to demonstrate increased blood Pb levels relative to others, which may be related to these and other factors (ISA, sections 5.1, 5.2 and 5.4).

With regard to our understanding of the relationship between exposure or blood Pb levels in young children and neurocognitive effects, the PA notes that the evidence in this review, as in the last, does not establish a threshold blood Pb level for neurocognitive effects in young children (ISA, sections 1.9.4 and 4.3.12). The lowest blood Pb levels at which associations with neurocognitive impacts have been observed in pre-school and school age children continue to range down below 5 μg/dL, with the lowest group levels that have been associated with such effects ranging down to 2 μg/dL (ISA, sections 1.6.1 and 4.3.15.1). Additionally, as in the last review, there is evidence that the relationship of young children's blood Pb with neurocognitive impacts, such as IQ, is nonlinear across a wide range of blood Pb, with greater incremental impacts at lower versus higher blood Pb levels (ISA, sections 1.9.4 and 4.3.12). Accordingly, as in the last review, the PA focuses on C–R relationships from study groups with blood Pb levels closest to those in children in the U.S. today, which are generally lower than epidemiological study groups. The currently available evidence does not identify additional C–R slopes for study groups of young children (*e.g.*, ≤7 years) with mean blood Pb levels below that of groups identified in the last review, 2.9 − 3.8 μg/dL, as discussed in section II.B.3 above (ISA, section 4.3.12). Thus, the blood Pb concentration—IQ response functions or slopes identified in this review for epidemiological study groups of young children with mean blood Pb levels closest to that of children in the U.S. today include the same set recognized at the time of the last review (see Table 1 above), the median of which is 1.75 IQ points decrement per μg/dL blood Pb (73 FR 67003, November 12, 2008).

In considering the evidence with regard to the extent to which important uncertainties identified in the last review have been reduced or to which new uncertainties have emerged, as summarized in discussing the previous question and in section II.B above, the PA concludes that no new uncertainties were identified as emerging since the last review. However, the PA recognizes important uncertainties identified in the last review that remain today. Importantly, given our focus in this review, as in the last review, on neurocognitive impacts associated with Pb exposure in early childhood, the PA recognizes remaining uncertainties in our understanding of the C–R relationship of neurocognitive impacts, such as IQ decrements, with blood Pb level in young children, particularly across the range of blood Pb levels common in the U.S. today. With regard to C–R relationships for IQ, the evidence available in this review does not include studies that appreciably extend the range of blood Pb levels studied beyond those available in the last review. As in the last review, the early childhood (*e.g.*, 2 to 7 years of age) blood Pb levels for which associations with IQ response have been reported continue to extend at the low end of the range to study group mean blood Pb levels of 2.9 to 3.8 μg/dL (*e.g.*, 73 FR 67003, November 12, 2008, Table 3). The studies examining C–R relationships down to these blood Pb levels, as summarized in section II.B.3 above, continue to indicate higher C–R slopes in those groups with lower blood Pb levels than in study groups with higher blood Pb levels (ISA, section 4.3.12). The lack of studies considering C–R relationships for Pb effects on IQ at still lower blood Pb levels contributes to uncertainty regarding the quantitative relationship between blood Pb and IQ response in populations with mean blood Pb levels closer to the most recently available mean for children aged 1 to 5 years of age (*e.g.*, 1.17 μg/dL in 2009–2010 [ISA, p. 3–85]).

Further, the PA recognizes important uncertainties in our understanding of the relationship between ambient air Pb concentrations and air-related Pb in children's blood. The evidence newly available in this review has not reduced such key uncertainties. As in the last review, air-to-blood ratios based on the available evidence continue to vary, with our conclusions based on the current evidence generally consistent with the range of 1:5 to 1:10 given emphasis in the last review (73 FR 67002, November 12, 2008; ISA, section 3.7.4). There continues to be uncertainty regarding the extent to which this range represents the relationship between ambient air Pb and Pb in children's blood (derived from the full set of air-related exposure pathways) and with regard to its reflection of exposures associated with ambient air Pb levels common in the U.S. today and to circumstances reflecting just meeting the current Pb standard (ISA, section 3.7.4). The PA additionally notes the significant uncertainty remaining with regard to the temporal relationships of ambient Pb levels and associated exposure with occurrence of a health effect (73 FR 67005, November 12, 2008).

In integrating consideration of the prior two questions with a focus on the standard, the PA then addresses the question regarding the extent to which newly available information supports or calls into question any of the basic elements of the current Pb standard. The PA addresses this question for each of the elements of the standard in light of the health effects evidence and other relevant information available in this review (and summarized in sections II.B and II.C above). As an initial matter, the PA recognizes the weight of the scientific evidence available in this review that continues to support our focus on effects on the nervous system of young children, specifically neurocognitive decrements, as the most sensitive endpoint. Consistent with the evidence available in the last review, the currently available evidence continues to indicate that a standard that provides requisite public health protection against the occurrence of such effects in at-risk populations would also provide the requisite public health protection against the full array of health effects of Pb. Accordingly, the discussion of the elements below is framed by that background.

Indicator

The indicator for the current Pb standard is Pb-TSP. Key considerations in retaining this indicator in the last review are summarized in section II.A.1. Exposure to Pb in all sizes of particles passing through ambient air can contribute to Pb in blood and associated health effects by a wide array of exposure pathways (ISA, section 3.1). These pathways include the ingestion route, as well as inhalation (ISA, section 3.1), and a wide array of particle sizes play a role in these pathways (ISA, section 3.1.1.1). As at the time of the last review, the PA recognizes the variability of the Pb-TSP FRM in its capture of airborne Pb particles (as discussed in section 2.2.1.3.1 of the PA). As in the last review, the PA also notes that an alternative approach for collection of a conceptually comparable range of particle sizes, including ultra-coarse particles, is not yet available. Additionally, the limited available information regarding relationships between Pb-TSP and Pb in other size fractions indicates appreciable variation in this relationship, particularly near sources of Pb emissions where concentrations and potential exposures are greatest. Thus, the PA concludes that the information available in this review does not address previously

identified limitations and uncertainties for the current indicator. Nor does the newly available information identify additional limitations or uncertainties.

The PA notes that the evidence available in this review continues to indicate the role of a range of air Pb particle sizes in contributing to Pb exposure (*e.g.*, ISA, section 3.1.1.1) that contributes to Pb in blood and associated health effects. For example, the evidence indicates larger particle sizes for Pb that occurs in soil and house dust and may be ingested as compared to Pb particles commonly occurring in the atmosphere and the size fraction of the latter that may be inhaled (ISA, section 3.1.1.1). Taken together, the PA concludes that the evidence currently available reinforces the appropriateness of an indicator for the Pb standard that reflects a wide range of airborne Pb particles.

Averaging Time and Form

The averaging time and form of the standard were revised in the last Pb NAAQS review, based on considerations summarized in section II.A.1 above. The current standard is a not-to-be-exceeded rolling 3-month average (40 CFR 50.16), derived from three monthly averages calculated in accordance with the current data handling procedures (40 CFR part 50, Appendix R). The form is a maximum, evaluated within a 3-year period (40 CFR 50.16). As at the time of the last review, the PA notes that evidence continues to support the importance of periods on the order of 3 months and the prominent role of deposition-related exposure pathways, with uncertainty associated with characterization of precise time periods associating ambient air Pb with air-related health effects. The PA concludes that relevant factors continue to be those pertaining to the human physiological response to changes in Pb exposures and those pertaining to the response of air-related Pb exposure pathways to changes in airborne Pb. The PA concludes that the newly available evidence in this review does not appreciably improve our understanding of the period of time in which air Pb concentrations would lead to the health effects most at issue in this review (PA, section 4.2.1). Newly available evidence accordingly also does not appreciably improve our understanding of the period of time for which control of air Pb concentrations would protect against exposures most pertinent to the health effects most at issue in this review. Thus, while there continue to be limitations in the evidence to inform our consideration of these elements of the standard and associated uncertainty, the available evidence continues to provide support for the decisions made in the last review regarding these elements of the current Pb standard.

Level

The level of the current standard is 0.15 μg/m^3 (40 CFR 50.16). As described in section II.A.1 above, this level was selected in 2008 with consideration of, among other factors, an evidence-based air-related IQ loss framework, for which there are two primary inputs: Air-to-blood ratios and C–R functions for blood Pb–IQ response in young children. Additionally taken into consideration were the uncertainties inherent in these inputs.[65] Application of the framework also entailed consideration of a magnitude of air-related IQ loss, which as further described in section II.A.1 above, is used in conjunction with this specific framework in light of the framework context, limitations and uncertainties. Additionally, selection of a level for the standard in 2008 was made in conjunction with decisions on indicator, averaging time and form.

As an initial matter, the PA considers the extent to which the evidence-based, air-related IQ loss framework which informed the Administrator's decision in the last review is supported by the currently available evidence and information. In so doing, the PA recognizes the support provided by the currently available evidence for the key conclusions drawn in the last review with regard to health effects of greatest concern, at-risk populations, the influence of Pb in ambient air on Pb in children's blood and the association between children's blood Pb and decrements in neurocognitive function (*e.g.*, IQ). The PA additionally notes the complexity associated with interpreting the scientific evidence with regard to specific levels of Pb in ambient air, given the focus of the evidence on blood Pb as the key biomarker of children's aggregate exposure. The need to make such interpretations in the face of the associated complexity supported use of the evidence-based framework in the last review. In considering the currently available evidence for the same purposes in this review, the PA concludes that the evidence-based framework continues to provide a useful tool for consideration of the evidence with regard to the level of the standard.

The PA next turned to consideration of the primary inputs to the framework: Air-to-blood ratios and C–R functions for blood Pb–IQ response in young children. With regard to the former, the PA concludes the limited newly available information assessed in the ISA, and discussed in section II.C above, to be generally consistent with the information in this area that was available at the time of the last review. The PA additionally recognizes the variability and uncertainty associated with quantitative air-to-blood ratios based on this information, as also existed in the last review. As in the last review, factors contributing to the variability and uncertainty of these estimates are varied and include aspects of the study populations (*e.g.*, age and Pb exposure pathways) and the study circumstances (*e.g.*, length of study period and variations in sources of Pb exposure during the study period). The PA notes that the full range of estimates associated with the available evidence is wide and considers it appropriate to give emphasis to estimates pertaining to circumstances closest to those in the U.S. today with regard to ambient air Pb and children's blood Pb concentrations, while recognizing the limitations associated with the available information. With that in mind, the PA considers the currently available evidence to continue to support the range of estimates for air-to-blood ratios concluded in the last review to be most appropriate for the current population of young children in the U.S., in light of the multiple air-related exposure pathways by which children are exposed and of the levels of air and blood Pb common today. Identification of this range also included consideration of the limitations associated with the available information and inherent uncertainties. This range of air-to-blood ratios included 1:10 at the upper end and 1:5 at the lower end. The PA further recognizes that the limited evidence for air Pb and children's blood Pb concentrations closest to those in U.S. today continues to provide support for the Administrator's emphasis in the 2008 decision on the relatively central estimate of 1:7.

With regard to the second input to the evidence-based framework, C–R functions for the relationship of young children's blood Pb with neurocognitive impacts (*e.g.*, IQ decrements), the PA considers several aspects of the evidence. First, as discussed in section II.B.3 above, the currently available information continues to provide evidence that this C–R relationship is nonlinear across the range of blood Pb levels from the higher concentrations

[65] As discussed further below, the Administrator also considered the exposure/risk-based information, which he found to be roughly consistent and generally supportive of the framework estimates (73 FR 67004).

more prevalent in the past to lower concentrations more common today. Thus, the PA continues to consider it particularly appropriate to focus on the evidence from studies with blood Pb levels closest to those of today's population which, as in the last review, includes studies with study group mean blood Pb levels ranging roughly from 3 to 4 μg/dL in children aged 24 months to 7 years (PA, Table 3–3). As discussed in section II.B.3 above, this is also consistent with the evidence currently available for this age group of young children, which does not include additional C–R slopes for incremental neurocognitive decrement with blood Pb levels at or below this range. In considering whether this set of functions continues to be well supported by the evidence, as assessed in the ISA (ISA, section 4.3.2), the PA notes the somewhat wide range in slopes encompassed by these study groups, while also noting the stability of the median. For example, omission of any of the four slopes considered in the last review does not appreciably change the median (*e.g.*, the median would change from −1.75 IQ points per μg/dL blood Pb to −1.71 or −1.79). Thus, while differing judgments might be made with regard to inclusion of each of the four study groups, these estimates are generally supported by the current review of the evidence in the ISA. Further, the stability of the median to modifications to this limited dataset lead the PA to conclude that the currently available evidence continues to support consideration of −1.75 IQ points per μg/dL blood Pb as a well-founded and stable estimate for purposes of describing the neurocognitive impact quantitatively on this age group of U.S. children.

In summary, in considering the evidence and information available in this review pertaining to the level of the current Pb standard, the PA notes that the evidence available in this review, as summarized in the ISA, continues to support the air-related IQ loss evidence-based framework, with the inputs that were used in the last review. These include estimates of air-to-blood ratios ranging from 1:5 to 1:10, with a generally central estimate of 1:7. Additionally, the C–R functions most relevant to blood Pb levels in U.S. children today continue to be provided by the set of four analyses considered in the last review for which the median estimate is −1.75 IQ points per μg/dL Pb in young children's blood. Thus, the PA observed that the evidence available in this review has changed little if at all with regard to the aspects given weight in the conclusion on level for the new standard in the last review and would not appear to call into question any of the basic elements of the standard. In so doing, the PA additionally recognizes that the overall decision on adequacy of the current standard is a public health policy judgment by the Administrator.

2. Exposure/Risk-Based Considerations in the Policy Assessment

In consideretion of the issue of adequacy of public health protection provided by the current standard, the PA also considered the quantitative exposure/risk assessment completed in the last review, augmented as described in section II.C above. The PA recognizes substantial uncertainty inherent in the REA estimates of air-related risk associated with localized conditions just meeting the current standard, which we have characterized as approximate and falling within rough bounds.[66] This approximate estimate of risk for children living in such areas is generally overlapping with and consistent with the evidence-based air-related IQ loss estimates described in section II.A.1 above. The PA discussion with regard to interpretation of the exposure/risk information for air quality conditions associated with just meeting the current standard is organized around two questions, as summarized here (PA, section 4.2.2).

In considering the level of confidence associated with estimates of air-related risk generated for simulations just meeting the current Pb standard, the PA recognizes, as an initial matter, the significant limitations and complexity associated with the risk and exposure assessments for Pb that are far beyond those associated with similar assessments typically performed for other criteria pollutants. In completing the assessment, we were constrained by significant limitations with regard to data and tools particular to the problem at hand. Further, the multimedia and persistent nature of Pb and the role of multiple exposure pathways contribute significant additional complexity to the assessment as compared to other assessments that focus only on the inhalation pathway. As a result, the estimates of air-related exposure and risk are approximate, presented as upper and lower bounds within which we consider air-related risk likely to fall. The description of overall confidence in this characterization of air-related risk is based on consideration of the overall design of the analysis (summarized in section II.D), the degree to which key sources of variability are reflected in the design of the analysis (summarized in section II.D.3), and our characterization of key sources of uncertainty (summarized in section II.D.3).

With regard to key sources of uncertainty, the PA notes particularly those affecting the precision of the air-related risk estimates. Associated sources of uncertainty include the inability to simulate changes in air-related Pb as a function of changes in ambient air Pb in exposure pathways other than those involving inhalation of ambient air and ingestion of indoor dust. This contributes to the positive bias of the upper bound for the air-related risk estimates. The PA additionally recognizes the significant uncertainty associated with estimating upper percentiles of the distribution of *air-related* blood Pb concentration estimates (and associated IQ loss estimates) due to limitations in available information. Lastly, the PA recognizes the uncertainty associated with application of the C–R function at the lower blood Pb levels in the distribution; this relates to the limited representation of blood Pb levels of this magnitude in the dataset from which the C–R function is derived (PA, section 4.2.2).

In the quantitative risk information available in this review, we have air-related risk estimates for simulations just meeting the current standard from one of the location-specific urban case studies (Chicago) and from the generalized (local) urban case study. With regard to the latter, the PA notes its simplified design that does not include multiple exposure zones; thus reducing the dimensions simulated. The PA concludes a reasonable degree of confidence in aspects of the generelized (local) urban case study for the specific situation we consider it to represent (*i.e.*, a temporal pattern of air Pb concentrations that just meets the level of the standard), and when the associated estimates are characterized as approximate, within upper and lower bounds (as described above), while also recognizing considerable associated uncertainty.

In considering the extent to which the estimated air-related risks remaining upon just meeting the current Pb standard are important from a public health perspective, the PA considers the nature and magnitude of such estimated risks (and attendant uncertainties), including such impacts on the affected

[66] We note that the value of the upper bound is influenced by risk associated with exposure pathways that were not varied with alternative standard levels, a modeling limitation with the potential to contribute to overestimation of the upper bound with air quality scenarios involving air Pb levels below current conditions for the study area (see sections 3.4.4 and 3.4.7 above).

population, and additionally considers the size of the affected population. In considering the quantitative risk estimates for decrements in IQ, we recognize that although some neurocognitive effects may be transient, some effects may persist into adulthood, affecting success later in life (ISA, sections 1.9.5 and 4.3.14). The PA additionally recognizes the potential population impacts of small changes in population mean values of metrics such as IQ, presuming a uniform manifestation of Pb-related decrement across the range of population IQ (ISA, section 1.9.1; PA, section 3.3).

As summarized in sections II.D above, limitations in modeling tools and data affected our ability to develop precise risk estimates for air-related Pb exposure pathways and contributed uncertainties to the risk estimates. The results are approximate estimates which we describe through the use of rough upper and lower bounds within which we estimate air-related risk to fall. We have recognized a number of uncertainties in the underlying risk estimates from the 2007 REA and in the interpolation approach employed in the new analyses for this review. We have characterized the magnitude of air-related risk associated with the current standard with a focus on median estimates, for which we have appreciably greater confidence than estimates for outer ends of risk distribution (see section 3.4.7 of the PA) and on risks derived using the C–R function in which we have greatest confidence (see sections 3.4.3.3.1 and 3.4.7 of the PA). These risk estimates include estimates from the last review for one of the location-specific urban study area populations as well as estimates newly derived in this review based on interpolation from 2007 REA results for the generelized (local) urban case study, which is recognized to reflect a generalized high end of air-related exposure for localized populations. Taken together, these results for just meeting the current standard include a high-end localized risk estimate for air-related Pb of a magnitude falling within generel rough bounds of 1 and 3 points IQ loss, with attendant uncertainties, and with appreciably lower risks with increasing distance from the highest exposure locations.

In considering the importance of such risk from a public health perspective, the PA also considers the size of at-risk populations represented by the REA case studies. As summarized in section II.D.1 above (and described more fully in the PA, section 3.4), the generelized (local) urban case study is considered to represent a localized urban population exposed near the level of the standard, such as a very small, compact neighborhood near a source contributing to air Pb concentretions just meeting the standard. This case study provides representation in the risk assessment for such small populations at the upper end of the gradient in ambient air concentrations expected to occur near sources; thus estimates for this case study reflect exposures nearest the standard being evaluated. While we do not have precise estimates of the number of young children living in such areas of the U.S. today, we have information that informs our understanding of their magnitude. For example, as summarized in section II.B.5 above, the PA estimates some 2,700 children, aged 5 years and younger, to be living in localized areas with elevated air Pb concentrations that are above or near the current standard. Based on the 2010 census estimates of approximately 24.3 million children in the U.S. aged 5 years or younger, this indicates the size of the population of young children of this age living in areas in close proximity to areas where air Pb concentrations may be above or near the current standard to be generally on the order of a hundredth of a percent of the full population of correspondingly aged children.[67] [68] While these estimates pertain to the age group of children aged 5 years and younger, the PA additionally notes that a focus on an alternative age range (*e.g.*, through age 7), while increasing the number for children living in such locations, would not be expected to appreciably change the percentage of the full U.S. age group that the subset represents.

3. CASAC Advice

In the current review of the primary standard for Pb, the CASAC has provided advice and recommendations in their review of drafts of the ISA, of the REA Planning Document, and of the draft PA. We have additionally received comments from the public on drafts of these documents.[69]

In their comments on the draft PA, the CASAC concurred with staff's overall preliminary conclusions that it is appropriate to consider retaining the current primary standard without revision, stating that "the current scientific literature does not support a revision to the Primary Lead (Pb) National Ambient Air Quality Standard [NAAQS]" (Frey, 2013b). They further noted that "[a]lthough the current review incorporates a substantial body of new scientific literature, the new literature does not justify a revision to the standards because it does not significantly reduce substantial data gaps and uncertainties (*e.g.*, air-blood Pb relationship at low levels; sources contributing to current population blood Pb levels, especially in children; the relationship between Pb and childhood neurocognitive function at current population exposure levels; the relationship between ambient air Pb and outdoor dust and surface soil Pb concentrations)." In recognition of these limitations in the available information, the CASAC provided recommendations on research to address these data gaps and uncertainties so as to inform future Pb NAAQS reviews (Frey, 2013b).

The CASAC comments indicated agreements with key aspects of staff's consideretion of the exposure/risk information and currently available evidence in this review (Frey, 2013b, Consensus Response to Charge Questions, p. 7).

The use of exposure/risk information from the previous Pb NAAQS review appears appropriate given the absence of significant new information that could fundamentally change the interpretation of the exposure/risk information. This interpretation is reasonable given that information supporting the current standard is largely unchanged since the current standard was issued.

The CASAC agrees that the adverse impact of low levels of Pb exposure on neurocognitive function and development in children remains the most sensitive health endpoint, and that a primary Pb NAAQS designed to protect against that effect will offer satisfactory protection against the many other health impacts associated with Pb exposure.

The CASAC concurs with the draft PA that the scientific findings pertaining to air-to-blood Pb ratios and the C–R relationships between blood Pb and childhood IQ decrements that formed the basis of the current Pb NAAQS remain valid and are consistent with current data.

[67] The areas included in this estimate where the standard is currently exceeded are treated, for present purposes, as areas with air Pb concentrations just meeting the current standard and are included for purposes of this analysis (PA, pp. 3–36 to 3–38). This is in light of the requirement for areas not in attainment with the standard to attain the standard as expeditiously as practicable, but no later than 5 years after designation.

[68] A second PA analysis, performed in recognition of the potential for the first analysis to under-represent sites with elevated Pb concentrations, but with its own attendant uncertainties, indicates the potential for the population group in such areas to be only slightly larger, in terms of hundredths of a percent of the full population of children in this age group (PA, pp. 3–36 to 3–38, 4–25, 4–32).

[69] As noted in section II.E.3 above, written comments submitted to the agency, as well as transcripts and minutes of the public meetings held in conjunction with CASAC's reviews of documents for the review will be available in the docket for this rulemaking.

The CASAC concurred with the appropriateness of the application of the evidence-based framework from the last Pb NAAQS review. With regard to the key inputs to that framework, CASAC concluded that "[t]he new literature published since the previous review provides further support for the health effect conclusions presented in that review" and that the studies newly available in this review "do not fundamentally alter the uncertainties for air-to-blood ratios or C–R functions for IQ decrements in young children" (Frey, 2013b, Consensus Response to Charge Questions, p. 6).

The comments from CASAC also took note of the uncertainties that remain in this review, which contribute to the uncertainties associated with drawing conclusions regarding air-related exposures and associated health risk at or below the level of the current standard, stating their agreement with "the EPA conclusion that 'there is appreciable uncertainty associated with drawing conclusions regarding whether there would be reductions in blood Pb levels from alternative lower levels as compared to the level of the current standard' " (Frey, 2013b, Consensus Response to Charge Questions, p. 6).

Of the limited public comments received on this review to date that have addressed adequacy of the current primary Pb standard, all but one state support for retaining the current standard without revision, citing uncertainties in the available evidence and risk information. The other commenter expressed the view that the standard should be revised to be more restrictive given the evidence of Pb effects in populations with mean blood Pb levels below 10 μg/dL.

4. Administrator's Proposed Conclusions on the Adequacy of the Current Primary Standard

Based on the large body of evidence concerning the health effects and potential public health impacts of exposure to Pb emitted into ambient air, and taking into consideration the attendant uncertainties and limitations of the evidence, the Administrator proposes to conclude that the current primary standard provides the requisite protection of public health, with an adequate margin of safety and should be retained.

In considering the adequacy of the current standard, the Administrator has carefully considered the assessment of the available evidence and conclusions contained in the ISA; the technical information, including exposure/risk information, staff conclusions, and associated rationale, presented in the PA; the advice and recommendations from CASAC; and public comments to date in this review. In the discussion below, the Administrator gives weight to the PA conclusions, with which CASAC has concurred, and takes note of key aspects of the rationale presented for those conclusions which contribute to her proposed decision.

As an initial matter, the Administrator takes note of the PA discussion with regard to the complexity involved in considering the adequacy of protection in the case of the primary Pb standard, which differs substantially from that involved in consideration of the primary NAAQS for other pollutants, for which the limited focus on the inhalation pathway is a relatively simpler context. Additionally, while an important component of the evidence base for most other NAAQS pollutants is the availability of studies that have investigated an association between current concentrations of the pollutant in ambient air and the occurrence of health effects plausibly related to ambient air exposure to that pollutant, the evidence base that supports conclusions in this review of the Pb NAAQS includes most prominently epidemiological studies focused on associations of blood Pb levels in U.S. populations with health effects plausibly related to Pb exposures. Support for conclusions regarding the plausibility for ambient air Pb to play a role in such findings derives, in part, from studies linking Pb in ambient air with the occurrence of health effects. However, such studies (dating from the past or from other countries) involve ambient air Pb concentrations many times greater than those that would meet the current standard. Thus, in considering the adequacy of the current Pb standard, rather than considering studies that have directly investigated current concentrations of Pb in ambient air (including in locations where the current standard is met) and the occurrence of health effects, we primarily consider the evidence for, and risk estimated from, models, based upon key relationships, such as those among ambient air Pb, Pb exposure, blood Pb and health effects. This evidence, with its associated limitations and uncertainties, contributes to the EPA's conclusions regarding a relationship between ambient air Pb conditions under the current standard and health effects.

With regard to the current evidence, the Administrator first takes note of the well-established body of evidence on the health effects of Pb, augmented in some aspects since the last review, which continues to support identification of neurocognitive effects in young children as the most sensitive endpoint associated with Pb exposure. The evidence, as summarized in the PA and discussed in detail in the ISA, continues to indicate that a standard that provides protection from neurocognitive effects in young children additionally provides protection for other health effects of Pb, such as those reported in adult populations. The Administrator takes note of the PA finding that application of the evidence-based, air-related IQ loss framework, developed in the last review, continues to provide a useful approach for considering and integrating the evidence on relationships between Pb in ambient air and Pb in children's blood and risks of neurocognitive effects (for which IQ loss is used as an indicator). She additionally takes note of the PA finding (described in section II.E.1 above) that the currently available evidence base, while somewhat expanded since the last review, is not appreciably expanded or supportive of appreciably different conclusions with regard to air-to-blood ratios or C–R functions for neurocognitive decrements in young children. She concurs with the PA findings, summarized in section II.E.1 above, that application of this framework, in light of the current evidence and exposure/risk information, continues to support a standard as protective as the current standard.

In considering the nature and magnitude of the array of uncertainties that are inherent in the scientific evidence and analyses, the Administrator recognizes that our understanding of the relationships between the presence of a pollutant in ambient air and associated health effects is based on a broad body of information encompassing not only more established aspects of the evidence, but also aspects in which there may be substantial uncertainty. In the case of the Pb NAAQS review, she takes note of the recognition in the PA of increased uncertainty in characterizing the relationship of effects on IQ with blood Pb levels below those represented in the evidence base and in projecting the magnitude of blood Pb response to ambient air Pb concentrations at and below the level of the current standard. The PA recognizes this increased uncertainty, particularly in light of the multiple factors that play a role in such a projection (*e.g.*, meteorology, atmospheric dispersion and deposition, human physiology and behavior), each of which carry attendant uncertainties. The Administrator recognizes that collectively, these aspects of the evidence and associated uncertainties contribute to a recognition that for Pb, as for other pollutants, the available health effects evidence generally reflects a continuum, consisting of levels at which scientists generally agree that health effects are likely to occur, through lower levels at which the likelihood and magnitude of the response become increasingly uncertain.

In making a judgment on the point at which health effects associated with Pb become important from a public health perspective, the Administrator has considered the public health significance of a decrement of a very small number of IQ points in the at-risk population of young children, in light of associated uncertainties. She notes that her judgment on this matter relates to her consideration of the IQ loss estimates yielded by the air-related IQ loss evidence-based framework for specific combinations of standard level, air-to-blood ratio and C–R function. In considering the public health significance of IQ loss estimates in young children, the Administrator gives weight to the comments of CASAC and some public commenters in the last review which recognized a population mean IQ loss of 1 to 2 points to be of public health significance and recommended that a very high percentage of the population be protected from such a magnitude of IQ loss (73 FR 67000, November 12, 2008). In so doing, the Administrator additionally notes that the EPA is aware of no new information or new commonly accepted guidelines or criteria within the public health community for interpreting public health significance of neurocognitive effects in the context of a decision on adequacy of the current Pb standard (PA, pp. 4–33 to 4–34).

With the objective identified by CASAC in the 2008 review in mind, the Administrator considers the role of the air-related IQ loss evidence-based framework in informing consideration of standards that might be concluded to provide such a level of protection. In so doing, she first recognizes, like the Administrator at the time of the last review, that the IQ loss estimates produced with the evidence-based framework do not correspond to a specific quantitative public health policy goal for air-related IQ loss that would be acceptable or unacceptable for the entire population of children in the U.S. Rather, the conceptual context for the evidence-based framework is that it provides estimates for the mean air-related IQ loss of a subset of the population of U.S. children (*i.e.*, the subset living in close proximity to air Pb sources that contributed to elevated air Pb concentrations that equal the current level of the standard). This is the subset expected to experience air-related Pb exposures at the high end of the national distribution of such exposures. The associated mean IQ loss estimate is the average for this highly exposed subset and is not the average air-related IQ loss projected for the entire U.S. population of children. Further, the Administrator recognizes uncertainties associated with those estimates, and notes the PA conclusion that the uncertainties increase with estimates associated with successively lower standard levels. The Administrator additionally takes note of the PA estimates for the size of such a population, drawn from information on numbers of young children (aged 5 years or younger) living near monitors registering ambient Pb concentrations above or within 10 percent of the NAAQS, which indicate it to be on the order of one hundredth of one percent of the U.S. population of children of this age, with an upper bound of approximately four hundredths of one percent, drawn from similar demographic information based on proximity to large Pb sources, as identified using the NEI (PA, pp. 3–36 to 3–38). In summary, the current evidence, as considered within the conceptual and quantitative context of the evidence-based framework, and current air monitoring information indicates that the current standard would be expected to satisfy the public health policy goal recommended by CASAC in the last Pb NAAQS review, and CASAC did not provide a different goal in the present review. Thus, the evidence indicates that the current standard provides protection for young children from neurocognitive impacts, including IQ loss, consistent with advice from CASAC regarding IQ loss of public health significance.

In drawing conclusions from application of the evidence-based framework with regard to adequacy of the current standard, the Administrator further recognizes the degree to which IQ loss estimates drawn from the air-related IQ loss evidence-based framework reflect mean blood Pb levels that are below those represented in the currently available evidence for young children. For example, in the case of the current standard level of 0.15 μg/m^3, multiplication by the air-to-blood ratio of 1:7, the value that was the focus of the last review and which the evidence continues to support in this review, yields a mean air-related blood Pb level of 1.05 μg/dL. This blood Pb level is half the level of the lowest blood Pb subgroup of pre-school children in which neurocognitive effects have been observed (PA, Table 3–2; Miranda et al., 2009) and well below the means of subgroups for which continuous C–R functions have been estimated (Table 1 above). The Administrator views such an extension below the lowest studied levels to be reasonable given the lack of identified blood Pb level threshold in the current evidence base for neurocognitive effects and the need for the NAAQS to provide a margin of safety. She takes note, however, of the PA finding that the framework IQ loss estimates for standard levels lower than the current standard level represent still greater extrapolations from the current evidence base with corresponding increased uncertainty (PA, section 3.2, pp. 4–32 to 4–33).

In considering application of the evidence-based framework in this review with regard to the extent there is support within the evidence for a standard with greater protection, the Administrator additionally takes note of the uncertainties that remain in our understanding of important aspects of ambient air Pb exposure and associated health effects, as discussed in the PA (PA, Chapter 3) and summarized in sections II.B and II.C above. With regard to the air-to-blood ratios that reflect the relationship between concentrations of Pb in ambient air and air-related Pb in children's blood, she particularly notes the limitations and uncertainties identified in the ISA and PA with regard to the available studies and the gaps and uncertainties in the evidence base. These include gaps and uncertainties with regard to studies that have investigated such quantitative relationships under conditions pertaining to the current standard (*e.g.*, in localized areas near air Pb sources where the standard is just met in the U.S. today), as well as with regard to evidence to inform our understanding of the quantitative aspects of relationships between ambient air Pb and outdoor soil/dust Pb and indoor dust Pb. These critical exposure pathways are also represented in the evidence-based air-related IQ loss framework within the estimates of air-to-blood ratios. In light of these uncertainties and limitations in the evidence base, the Administrator gives weight to the PA conclusion of greater uncertainty with regard to relationships between concentrations of Pb in ambient air and air-related Pb in children's blood, and with regard to estimates of the slope of the C–R function of neurocognitive impacts (IQ loss) for application of the framework to

levels below the current standard, given the weaker linkage with existing evidence as discussed in the PA (PA, sections 3.1, 3.2 and 4.2.1).

With respect to exposure/risk-based considerations, as in the last review, the Administrator notes the complexity of the REA modeling analyses and the associated limitations and uncertainties. Based on consideration of the risk-related information for conditions just meeting the current standard, the Administrator takes note of the attendant uncertainties, discussed in detail in the PA (PA, sections 3.4 and 4.2.2), while finding that the quantitative risk estimates, with a focus on those for the generalized (local) urban case study, are "roughly consistent with and generally supportive" of estimates from the evidence-based air-related IQ loss framework. She further takes note of the PA finding of increasing uncertainty for air quality scenarios involving air Pb concentrations increasingly below the current conditions for each case study, due in part to modeling limitations that derive from uncertainty regarding relationships between ambient air Pb and outdoor soil/dust Pb and indoor dust Pb (PA, sections 3.4.3.1 and 3.4.7).

Based on the above considerations and with consideration of advice from CASAC, the Administrator reaches the conclusion that the current body of evidence, in combination with the exposure/risk information, supports a primary standard as protective as the current standard. Based on consideration of the evidence and exposure/risk information available in this review with its attendant uncertainties and limitations and information that might inform public health policy judgments, as well as advice from CASAC, including their concurrence with the PA conclusions that revision of the primary Pb standard is not warranted at this time, the Administrator further concludes that it is appropriate to consider retaining the current standard without revision.

The Administrator bases these proposed conclusions on consideration of the health effects evidence, including consideration of this evidence in the context of the evidence-based, air-related IQ loss framework, and with support from the exposure/risk information, recognizing the uncertainties attendant with both. In so doing, she takes note of the PA description of the complexities and limitations in the evidence base associated with reaching conclusions regarding the magnitude of risk associated with the current standard, as well as the increasing uncertainty of risk estimates for lower air Pb concentrations. Inherent in the Administrator's conclusions are public health policy judgments on the public health implications of the blood Pb levels and risk estimated for air-related Pb under the current standard, including the public health significance of the Pb effects being considered, as well as aspects of the use of the evidence-based framework that may be considered to contribute to the margin of safety. These public health policy judgments include judgments related to the appropriate degree of public health protection that should be afforded to protect against risk of neurocognitive effects in at-risk populations, such as IQ loss in young children, as well as with regard to the appropriate weight to be given to differing aspects of the evidence and exposure/risk information, and how to consider their associated uncertainties. Based on these considerations and the judgments identified here, the Administrator concludes that the current standard provides the requisite protection of public health with an adequate margin of safety, including protection of at-risk populations, such as young children living near Pb emissions sources where ambient concentrations just meet the standard.

In reaching this conclusion with regard to the adequacy of public health protection afforded by the existing primary standard, the Administrator recognizes that in establishing primary standards under the Act that are requisite to protect public health with an adequate margin of safety, she is seeking to establish standards that are neither more nor less stringent than necessary for this purpose. The Act does not require that primary standards be set at a zero-risk level, but rather at a level that avoids unacceptable risks to public health, even if the risk is not precisely identified as to nature or degree. The CAA requirement that primary standards provide an adequate margin of safety was intended to address uncertainties associated with inconclusive scientific and technical information available at the time of standard setting, as described in section I.A above. This requirement was also intended to provide a reasonable degree of protection from hazards that research has not yet identified.

In this context, the Administrator's proposed conclusion that the current standard provides the requisite protection and that a more restrictive standard would not be requisite additionally recognizes that the uncertainties and limitations associated with the many aspects of the estimated relationships between air Pb concentrations and blood Pb levels and associated health effects are amplified with consideration of increasingly lower air concentrations. In so doing, she takes note of the PA conclusion, with which CASAC has agreed, that based on the current evidence, there is appreciable uncertainty associated with drawing conclusions regarding whether there would be reductions in blood Pb levels and risk to public health from alternative lower levels of the standard as compared to the level of the current standard (PA, pp. 4–35 to 4–36; Frey, 2013b, p. 6). The Administrator judges this uncertainty to be too great for the current evidence and exposure/risk information to provide a basis for revising the current standard. Thus, based on the public health policy judgments described above, including the weight given to uncertainties in the evidence, the Administrator proposes to conclude that the current standard should be retained, without revision. The Administrator solicits comment on this conclusion.

III. Rationale for Proposed Decision on the Secondary Standard

This section presents information relevant to the rationale for the Administrator's proposed decision to retain the existing secondary Pb standard, which as discussed more fully below, is based on a thorough review in the ISA of the latest scientific information, generally published through September 2011,[70] on ecological or welfare effects associated with Pb and pertaining to the presence of Pb in the ambient air. This proposal also takes into account: (1) The PA's staff assessments of the most policy-relevant information in the ISA and staff analyses of potential ecological exposures and risk, upon which staff conclusions regarding appropriate considerations in this review are based; (2) CASAC advice and recommendations, as reflected in discussions of drafts of the ISA and PA at public meetings, in separate written comments, and in CASAC's letters to the Administrator; and (3) public comments received during the development of these documents, either in connection with CASAC meetings or separately.

[70] In addition to the review's opening "call for information" (75 FR 8934), "literature searches were conducted routinely to identify studies published since the last review, focusing on studies published from 2006 (close of the previous scientific assessment) through September 2011" and references "that were considered for inclusion or actually cited in this ISA can be found at *http://hero.epa.gov/lead*" (ISA, p. 1–2).

Section III.A provides background on the general approach for review of the secondary NAAQS for Pb, including a summary of the approach used in the last review (section III.A.1) and the general approach for the current review (section III.A.2). Section III.B summarizes the body of evidence on ecological or welfare effects associated with Pb exposures, focusing on consideration of key policy-relevant questions, and section III.C summarizes the exposure/risk information in this review. Section III.D presents the Administrator's proposed conclusions on adequacy of the current standard, drawing on both evidence-based and exposure/risk-based considerations (sections III.D.1), and advice from CASAC (section III.D.2).

A. General Approach

The past and current approaches described below are all based most fundamentally on using the EPA's assessment of the current scientific evidence and previous quantitative analyses to inform the Administrator's judgment with regard to the secondary standard for Pb. In drawing conclusions for the Administrator's consideration with regard to the secondary standard, we note that the final decision on the adequacy of the current secondary Pb standard is largely a public welfare policy judgment to be made by the Administrator. The Administrator's final decision must draw upon scientific information and analyses about welfare effects, exposure and risks, as well as judgments about the appropriate response to the range of uncertainties that are inherent in the scientific evidence and analyses. This approach is consistent with the requirements of the NAAQS provisions of the Act. These provisions require the Administrator to establish a secondary standard that, in the judgment of the Administrator, is "requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of the pollutant in the ambient air." In so doing, the Administrator seeks to establish standards that are neither more nor less stringent than necessary for this purpose.

1. Approach in the Last Review

In the last review, completed in 2008, the current secondary standard for Pb was set equal to the primary standard (73 FR 66964, November 12, 2008). As summarized in sections I.C and II.A.1 above, the primary standard was substantially revised in the last review. The 2008 decision considered the body of evidence as assessed in the 2006 CD (USEPA, 2006a) as well as the 2007 Staff Paper assessment of the policy-relevant information contained in the 2006 CD and the screening-level ecological risk assessment (2006 REA; USEPA, 2007b), the advice and recommendations of CASAC (Henderson 2007a, 2007b, 2008a, 2008b), and public comment.

In the previous review, the Staff Paper concluded, based on laboratory studies and current media concentrations in a wide range of locations, that it seemed likely that adverse effects were occurring from ambient air-related Pb, particularly near point sources, under the then-current standard (73 FR 67010, November 12, 2008). Given the limited data on Pb effects in ecosystems, and associated uncertainties, such as those with regard to factors such as the presence of multiple metals and historic environmental burdens, it was at the time, as it is now, necessary to look at evidence of Pb effects on organisms and extrapolate to ecosystem effects. Taking into account the available evidence and current media concentrations in a wide range of locations, the Administrator concluded that there was potential for adverse effects occurring under the then-current standard; however there were insufficient data to provide a quantitative basis for setting a secondary standard different from the primary (73 FR 67011, November 12, 2008). Therefore, citing a general lack of data that would indicate the appropriate level of Pb in environmental media that may be associated with adverse effects, as well as the comments of the CASAC Pb panel that a significant change to current air concentrations (*e.g.*, via a significant change to the standard) was likely to have significant beneficial effects on the magnitude of Pb exposures in the environment, the secondary standard was revised to be consistent with the revised primary standard (73 FR 67011, November 12, 2008).

2. Approach for the Current Review

Our approach for reviewing the current secondary standard takes into consideration the approaches used in the last Pb NAAQS review and involves addressing key policy-relevant questions in light of currently available scientific and technical information. In evaluating whether it is appropriate to consider retaining the current secondary Pb standard, or whether consideration of revision is appropriate, we have adopted an approach in this review that builds on the general approach from the last review and reflects the body of evidence and information now available. As summarized above, the Administrator's decisions in the previous review were based on the conclusion that there was the potential for adverse ecological effects under the previous standard.

In our approach here, we focus on consideration of the extent to which a broader body of scientific evidence is now available that would inform decisions on either the potential for adverse effects to ecosystems under the current standard or the ability to set a more ecologically relevant secondary standard than was feasible in the previous review. In considering the scientific and technical information in sections II.B and II.C below, as in the PA, we draw on the ecological effects evidence presented in detail in the ISA and aspects summarized in the PA, along with the information associated with the screening-level risk assessment also in the PA. In section III.D below, we have taken into account both evidence-based and risk-based considerations framed by a series of policy-relevant questions presented in the PA. These questions generally discuss the extent to which we are able to better characterize effects and the likelihood of adverse effects in the environment under the current standard. Our approach to considering these issues recognizes that the available welfare effects evidence generally reflects laboratory-based evidence of toxicological effects on specific organisms exposed to concentrations of Pb. It is widely recognized, however, that environmental exposures from atmospherically derived Pb are likely to be lower than those commonly assessed in laboratory studies and that studies of exposures similar to those in the environment are often accompanied by significant confounding and modifying factors (*e.g.*, other metals, acidification), increasing our uncertainty about the likelihood and magnitude of organism and ecosystem responses.

B. Welfare Effects Information

Welfare effects addressed by the secondary NAAQS include, but are not limited to, effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and wellbeing. This discussion presents key aspects of the current evidence of Pb-related welfare effects that are assessed in the ISA and the 2006 CD, drawing from the summary of policy-relevant aspects in the PA (PA, section 5.1).

Lead has been demonstrated to have harmful effects on reproduction and development, growth, and survival in

many species as described in the assessment of the evidence available in this review and consistent with the conclusions drawn in the last review (ISA, section 1.7; 2006 CD, sections 7.1.5 and 7.2.5). A number of studies on ecological effects of Pb are newly available in this review and are critically assessed in the ISA as part of the full body of evidence. The full body of currently available evidence reaffirms conclusions on the array of effects recognized for Pb in the last review (ISA, section 1.7). In so doing, in the context of pollutant exposures considered relevant the ISA determines [71] that causal [72] or likely causal [73] relationships exist in both freshwater and terrestrial ecosystems for Pb with effects on reproduction and development in vertebrates and invertebrates; growth in plants and invertebrates; and survival in vertebrates and invertebrates (ISA, Table 1–3). In drawing judgments regarding causality for the criteria air pollutants, the ISA places emphasis on "evidence of effects at doses (*e.g.*, blood Pb concentration) or exposures (*e.g.*, air concentrations) that are relevant to, or somewhat above, those currently experienced by the population." The ISA notes that the "extent to which studies of higher concentrations are considered varies . . . but generally includes those with doses or exposures in the range of one to two orders of magnitude above current or ambient conditions." Studies "that use higher doses or exposures may also be considered . . . [t]hus, a causality determination is based on weight of evidence evaluation for health, ecological or welfare effects, focusing on the evidence from exposures or doses generally ranging from current levels to one or two orders of magnitude above current levels" (ISA, pp. lx to lxi).

Although considerable uncertainties are recognized in generalizing effects observed under particular, small-scale conditions, up to the ecosystem level of biological organization, the ISA determines that the cumulative evidence reported for Pb effects at such higher levels of biological organization and for endpoints in single species with direct relevance to population and ecosystem level effects (*i.e.*, development and reproduction, growth, survival) is sufficient to conclude that a causal relationship is likely to exist between Pb exposures and community and ecosystem-level effects in freshwater and terrestrial systems (ISA, section 1.7.3.7).

The ISA also presents evidence for saltwater ecosystems, concluding that current evidence is inadequate to make causality determinations for most population-level responses, as well as community and ecosystem effects, while finding the evidence to be suggestive linking Pb and effects on reproduction and development in marine invertebrates (ISA, Table 1–3, sections 6.3.12 and 6.4.21).

As in prior reviews of the Pb NAAQS, this review is focused on those effects most pertinent to ambient air Pb exposures. Given the reductions in ambient air Pb concentrations over the past decades, these effects are generally those associated with the lowest levels of Pb exposure that have been evaluated. Additionally, we recognize the limitations on our ability to draw conclusions about environmental exposures from ecological studies of organism-level effects, as most studies were conducted in laboratory settings which may not accurately represent field conditions or the multiple variables that govern exposure.

The relationship between ambient air Pb and ecosystem response is important in making the connection between current emissions of Pb and the potential for adverse ecological effects. The limitations in the data available on this subject for the last review were significant. There is no new evidence since the last review that substantially improves our understanding of the relationship between ambient air Pb and measurable ecological effects. As stated in the last review, the role of ambient air Pb in contributing to ecosystem Pb has been declining over the past several decades. It remains difficult to apportion exposure between air and other sources to inform our understanding of the potential for ecosystem effects that might be associated with air emissions. As noted in the ISA, *"[t]he amount of Pb in ecosystems is a result of a number of inputs and it is not currently possible to determine the contribution of atmospherically-derived Pb from total Pb in terrestrial, freshwater or saltwater systems"* (ISA, section 6.5). Further, considerable uncertainties also remain in drawing conclusions from effects evidence observed under laboratory conditions with regard to effects expected at the ecosystem level in the environment. In many cases it is difficult to characterize the nature and magnitude of effects and to quantify relationships between ambient concentrations of Pb and ecosystem response due to the existence of multiple stressors, variability in field conditions, and differences in Pb bioavailability at that level of organization (ISA, section 6.5). In summary, the ISA concludes that "[r]ecent information available since the 2006 Pb AQCD, includes additional field studies in both terrestrial and aquatic ecosystems, but the connection between air concentration and ecosystem exposure continues to be poorly characterized for Pb and the contribution of atmospheric Pb to specific sites is not clear" (ISA, section 6.5).

It is also important to consider the fate and transport of both current Pb and Pb emitted in the past. It is this past legacy of Pb that was cited as a significant source of uncertainty in the last review. The extensive history of Pb uses in developed countries coupled with atmospheric transport processes has left a legacy of Pb in ecosystems globally (*e.g.*, 2006 CD, sections 2.3.1 and 7.1; 1977 CD, section 6.3.1). Records of U.S. atmospheric emissions of Pb in the twentieth and late nineteenth centuries have been documented in sediment cores (PA, section 2.3; ISA, section 2.6.2; Landers et al., 2010). Once deposited, Pb can be transported by stormwater runoff or resuspension to catchments and nearby water bodies or stored in soil layers in forested areas, its further movement influenced by soil or sediment composition and chemistry and physical processes. Some new studies are available that provide additional information, briefly summarized below, on Pb cycling, flux and retention within terrestrial and aquatic systems. This new information does not fundamentally change our understanding from the last review of Pb movement through or accumulation in ecosystems over time but rather improves our understanding of some of the underlying processes and mechanisms in soil, water and sediment. There is little new information, however, on fate and transport in ecosystems specifically related to air-derived Pb (ISA, section 2.3). There is limited newly available information with regard to the timing of ecosystem recovery from historic atmospheric deposition of Pb (ISA, sections 2.3.2.4 and 2.3.3.3).

Overall, recent studies in terrestrial ecosystems provide deposition data consistent with deposition fluxes reported in the 2006 CD and demonstrate consistently that atmospheric deposition of Pb has decreased since the phase-out of leaded on-road gasoline (PA, section 2.3.2.2; ISA, section 2.3.3). Follow-up studies in several locations at high elevation sites indicate little change in soil Pb concentrations since the phase-out of leaded onroad gasoline in surface soils, consistent with the high retention reportedly associated with reduced microbial activity at lower temperatures associated with high elevation sites. However, amounts of Pb in the surface soils at some lower altitude sites were reduced over the same time period in the same study (ISA, section 2.3.3). New studies in the ISA also enhance our understanding of Pb sequestration in forest soils by providing additional information on the role of leaf litter as a Pb reservoir in some situations and the effect of litter decomposition on Pb distribution (ISA, section 2.3.3).

Recent research on Pb transport in aquatic systems has provided a large body of observations confirming that such transport is dominated by colloids rich in iron and organic material (ISA, section 2.3.2). Recent research on Pb flux in sediments provides greater detail on resuspension processes than was available in the 2006 CD, including research on resuspended Pb largely associated with organic material or iron and manganese particles and research on the important role played by anoxic or depleted oxygen environments in Pb cycling in aquatic systems. This newer research is consistent with prior evidence in indicating that appreciable resuspension and release from sediments largely occurs during discrete events related to storms. It has also confirmed that resuspension is an important process that strongly influences the lifetime of Pb in bodies of water. Finally, there have been advances in understanding and modeling of Pb partitioning between organic material and sediment in aquatic environments (ISA, section 2.7.2).

The bioavailability of Pb is also an important component of understanding the effects Pb is likely to have on organisms and ecosystems (ISA, section 6.3.3). It is the amount of Pb that can interact within the organism that leads to toxicity, and there are many factors which govern this interaction (ISA, sections 6.2.1 and 6.3.3). The bioavailability of metals varies widely depending on the physical, chemical, and biological conditions under which an organism is exposed (ISA, section 6.3.3). Studies newly available since the last Pb NAAQS review provide additional insight into factors that influence the bioavailability of Pb to specific organisms (ISA, section 6.3.3). In general, this evidence is supportive of previous conclusions and does not identify significant new variables from those identified previously. Section 6.3.3 of the ISA provides a detailed discussion of bioavailability in terrestrial systems. With regard to aquatic systems, a detailed discussion of bioavailability in freshwater systems is provided in sections 6.4.3 and 6.4.4 of the ISA, and section 6.4.14 of the ISA discusses bioavailability in saltwater systems.

In terrestrial systems, the amount of bioavailable Pb present determines the impact of soil Pb to a much greater extent than does the total amount present (ISA, section 6.3.11). In such ecosystems, Pb is deposited either directly onto plant surfaces or onto soil where it can bind with organic matter or dissolve in pore water. The Pb dissolved in pore water is particularly bioavailable to organisms in the soil and, therefore, the impact of this Pb on the ecosystem is potentially greater than soil Pb that is not in pore water (ISA, section 6.3.11).

In aquatic systems as in terrestrial systems, the amount of Pb bioavailable to organisms is a better predictor of effect on organisms than the overall amount of Pb in the system. Once atmospherically derived Pb enters surface water bodies through deposition or runoff, its fate and bioavailability are influenced by many water quality characteristics, such as pH, suspended solids levels and organic content (ISA, section 6.4.2). In sediments, bioavailability of Pb to sediment-dwelling organisms may be influenced by the presence of other metals, sulfides, iron oxides and manganese oxides and also by physical disturbance (ISA, section 2.6.2). For many aquatic organisms, Pb dissolved in the water column can be the primary exposure route, while for others sediment ingestion is significant (ISA, section 2.6.2). As recognized in the 2006 CD and further supported in the ISA, there is a body of evidence showing that uptake and elimination of Pb vary widely among aquatic species.

There is a substantial amount of new evidence in this review regarding the ecological effects of Pb on individual terrestrial and aquatic species with less new information available on marine species and ecosystems. On the whole, this evidence supports previous conclusions that Pb has effects on growth, reproduction and survival, and that under some conditions these effects can be adverse to organisms and ecosystems. The ISA provides evidence of effects in additional species and in a few cases at lower exposures than reported in the previous review, but does not substantially alter our understanding of the ecological endpoints affected by Pb from the previous review. Looking beyond organism-level evidence, the evidence of adversity in natural systems remains sparse due to the difficulty in determining the effects of confounding factors such as co-occurring metals or system characteristics that influence bioavailability of Pb in field studies. The following paragraphs summarize the information presented in this review for terrestrial, aquatic and marine systems.

With regard to terrestrial ecosystems, recent studies cited in this review support previous conclusions about the effects of Pb, namely that increasing soil Pb concentrations in areas of Pb contamination (*e.g.*, mining sites and industrial sites) can cause decreases in microorganism abundance, diversity, and function. Previous reviews have also reported on effects on bird and plant communities (2006 CD, section AX7.1.3). The shifts in bacterial species and fungal diversity have been observed near long-established sources of Pb contamination (ISA, section 6.3.12.7). Most recent evidence for Pb toxicity to terrestrial plants, invertebrates and vertebrates is from single-species assays in laboratory studies which do not capture the complexity of bioavailability and other modifiers of effect in natural systems (ISA, section 6.3.12.7). Further, models that might account for modifiers of bioavailability have proven difficult to develop (ISA, p. 6–16).

Evidence presented in the ISA and prior CDs demonstrates the toxicity of Pb in aquatic ecosystems and the role of many factors, including Ph speciation and various water chemistry properties, in modifying toxicity (ISA, section 1.7.2). Since the 2006 CD, additional evidence for community and ecosystem level effects of Pb is available, primarily in microcosm studies or field studies with other metals present (ISA, section 6.4.11). Such evidence described in

[71] Since the last Pb NAAQS review, the ISAs, which have replaced CDs in documenting each review of the scientific evidence (or air quality criteria), employ a systematic framework for weighing the evidence and describing associated conclusions with regard to causality, using established descriptors: "causal" relationship with relevant exposure, "likely" to be a causal relationship, evidence is "suggestive" of a causal relationship, "inadequate" evidence to infer a causal relationship, and "not likely" to be a causal relationship (ISA, Preamble).

[72] In determining that a causal relationship exists for Pb with specific ecological or welfare effects, the EPA has concluded that "[e]vidence is sufficient to conclude that there is a causal relationship with relevant pollutant exposures (*i.e.*, doses or exposures generally within one to two orders of magnitude of current levels)" (ISA, p. lxii).

[73] In determining a likely causal relationship exists for Pb with specific ecological or welfare effects, the EPA has concluded that "[e]vidence is sufficient to conclude that there is a likely causal association with relevant pollutant exposures . . . but uncertainties remain" (ISA, p. lxii).

previous CDs includes alteration of predator-prey dynamics, species richness, species composition, and biodiversity. New studies available in this review provide evidence in additional habitats for these community and ecological-scale effects, specifically in aquatic plant communities and sediment-associated communities at both acute and chronic exposures involving concentrations similar to those previously reported (ISA, section 6.4.7). In many cases, it is difficult to characterize the nature and magnitude of effects and to quantify relationships between ambient concentrations of Pb and ecosystem response due to existence of multiple ecosystem-level stressors, variability in field conditions, and differences in Pb bioavailability (ISA, sections 1.7.3.7 and 6.4.7). Additionally, the degree to which air concentrations have contributed to such effects in freshwater ecosystems is largely unknown.

With regard to evidence in marine ecosystems, recently available evidence on the toxicity of Pb to marine algae augments the 2006 CD findings of variation in sensitivity across marine species. Recent studies on Pb exposure include reports of growth inhibition and oxidative stress in a few additional species of marine algae (ISA, section 6.4.15). Recent literature provides little new evidence of endpoints or effects in marine invertebrates beyond those reported in the 2006 CD. For example, some recent studies strengthen the evidence presented in the 2006 CD regarding negative effects of Pb exposure on marine invertebrates (ISA, section 6.4.15.2). Recent studies also identify several species exhibiting particularly low sensitivity to high acute exposures (ISA, section 6.4.15.2). Little new evidence is available of Pb effects on marine fish and mammals for reproductive, growth and survival endpoints that are particularly relevant to the population level of biological organization and bigher (ISA, section 6.4.15). New studies on organism-level effects from Pb in saltwater ecosystems (ISA, section 6.4.15) provide little evidence to inform our understanding of linkages among atmospheric concentrations, ambient exposures in saltwater systems and such effects or to inform our conclusions regarding tbe likelihood of adverse effects under conditions associated with the current NAAQS for Pb. Nor does the currently available evidence indicate significantly different exposure levels from the previous review at which ecological systems or receptors are expected to experience effects.

During the last review, the 2006 CD assessed the available information on critical loads for Pb (2006 CD, section 7.3). This information included publications on methods and example applications, primarily in Europe, specific to the bedrock geology, soil types, vegetation, and historical deposition trends in each European country (2006 CD, p. E–24), with no analyses available for U.S. locations (2006 CD, sections 7.3.4–7.3.6). As a result, the 2006 CD concluded that "[c]onsiderable research is necessary before critical load estimates can be formulated for ecosystems extant in the United States" (2006 CD, p. E–24).

For this current review, newly available evidence pertaining to critical loads analysis includes limited recent research on consideration of bioavailability in characterizing Pb effect concentrations or indices and on modeling approaches to incorporate cbemistry effects on Pb speciation and bioavailability (ISA, sections 6.3.7 and 6.4.8). With consideration of this information and the four critical load analysis studies newly available in this review (none of which are for U.S. ecosystems), the ISA does not modify the conclusions noted above from the 2006 CD (ISA, sections 6.1.3, 6.3.7 and 6.4.8). In summary, the new information in this review does not appreciably change our evidence base or further inform our understanding of critical loads of Pb, including critical loads in sensitive U.S. ecosystems.

There is no new evidence since the last review that substantially improves our understanding of tbe relationship between ambient air Pb and measurable ecological effects. As stated in the last review, the role of ambient air Pb in contributing to ecosystem Pb has been declining over the past several decades. It remains difficult to apportion exposure between air and other sources to better inform our understanding of the potential for ecosystem effects that might be associated with air emissions. As noted in the ISA, "[t]he amount of Pb in ecosystems is a result of a number of inputs and it is not currently possible to determine the contribution of atmospherically-derived Pb from total Pb in terrestrial, freshwater or saltwater systems" (ISA, section 6.5). Further, considerable uncertainties also remain in drawing conclusions from evidence of effects observed under laboratory conditions with regard to effects expected at the ecosystem level in the environment. In many cases it is difficult to characterize the nature and magnitude of effects and to quantify relationships between ambient concentrations of Pb and ecosystem response due to the existence of multiple stressors, variability in field conditions, and differences in Pb bioavailability at that level of organization (ISA, section 6.5). In summary, the ISA concludes that "[r]ecent information available since the 2006 Pb AQCD, includes additional field studies in both terrestrial and aquatic ecosystems, but the connection between air concentration and ecosystem exposure continues to be poorly characterized for Pb and the contribution of atmospheric Pb to specific sites is not clear" (ISA, section 6.5).

C. Summary of Risk Assessment Information

The risk assessment information available in this review and summarized here is based on the screaning-level risk assessment performed for the last review, described in the 2006 REA, 2007 Staff Paper and 2008 notice of final decision (73 FR 66964, November 12, 2008), as considered in the context of the evidence newly available in this review (PA, section 5.2). As described in the REA Planning Document, careful consideration of the information newly available in this review, with regard to designing and implementing a full REA for this review, led us to conclude that performance of a new REA for this review was not warranted (REA Planning Document, section 3.3). Based on their consideration of the REA Planning Document analysis, the CASAC Pb Review Panel generally concurred with the conclusion that a new REA was not warranted in this review (Frey, 2011b). Accordingly, the risk/exposure information considered in this review is drawn primarily from the 2006 REA as summarized below (PA, section 5.2 and Appendix 5A; REA Planning Document, section 3.1).

The 2006 screening-level assessment focused on estimating the potential for ecological risks associated with ecosystem exposures to Pb emitted into ambient air (PA, section 5.2; 2006 REA, section 7). A national-scale screen was used to evaluate surface water and sediment monitoring locations across the U.S. for the potential for ecological impacts that might be associated with atmospheric deposition of Pb (2006 REA, section 7.1.2). In addition to the national-scale screen (2006 REA, section 3.6), the assessment involved a case study approacb, with case studies for areas surrounding a primary Pb smelter (2006 REA, section 3.1) and a secondary Pb smelter (2006 REA, section 3.2), as well as a location near a non-urban roadway (2006 REA, section 3.4). An additional case study, focused on consideration of atmospherically derived Pb effects on an ecologically vulnerable ecosystem (Hubbard Brook Experimental Forest), was identified (2006 REA, section 3.5). The Hubbard Brook Experimental Forest (HBEF), in the White Mountain National Forest, near North Woodstock, New Hampshire, was selected as a fourth case study because of its location and its long record of available data on concentration trends of Pb in three media (air or deposition from air, soil, and surface water). The HBEF case study was a qualitative analysis focusing on a summary review of the literature, without new quantitative analyses (2006 REA, Appendix E). For the other three case studies, exposure concentrations of Pb in soil, surface water, and/or sediment concentrations were estimated from available monitoring data or modeling analysis and then compared to ecological screening benchmarks (2006 REA, section 7.1).

In interpreting the results from the 2006 REA, the PA considers newly available evidence that may inform interpretation of risk under the now current standard (PA, section 5.2). Factors that could alter our interpretation of risk would include new evidence of harm at lower concentrations of Pb, new linkages that enable us to draw more explicit conclusions as to the air contribution of environmental exposures, and new methods of interpreting confounding factors that were largely uncontrolled in the previous risk assessment. In general, however, the key uncertainties identified in the last review remain today.

The results for the ecological screening assessment for the three case studies and the national-scale screen for surface water and for sediment in the last review indicated a potential for adverse effects from ambient Pb to multiple ecological receptor groups in terrestrial and aquatic locations. Detailed descriptions of the location-specific case studies and the national screening assessment, key findings of the risk assessment for each, and an interpretation of the results with regard to past air conditions can be found in the 2006 REA. In considering the potential for adverse welfare effects to result from levels of air-related Pb that would meet the current standard, the findings of the 2006 REA, as summarized in the PA, are discussed below.

While the contribution to Pb concentrations from air as compared to nonair sources is not quantified, air emissions from the primary Pb smelter case study facility were substantial (2006 REA, Appendix B). In addition, this facility, which closed in 2013, had been emitting Pb for many decades, including some seven decades prior to establishment of any Pb NAAQS, such that it is likely air concentrations associated with the facility were substantial relative to the 1978 NAAQS, which it exceeded at the time of the last review. At the time of the last review and also since the adoption of the current standard, concentrations monitored near this facility have exceeded the level of the applicable NAAQS (2007 Staff Paper, Appendix 2B–1; PA, Appendices 2D and 5A). Accordingly, this case study is not informative for considering the likelihood of adverse welfare effects related to Pb from air sources under air quality conditions associated with meeting the current Pb standard.

The secondary Pb smelter case study location continues to emit Pb, and the county where this facility is located does not meet the current Pb standard (PA, Appendices 2D and 5A). Given the exceedances of the current standard, which likely extend back over 4 to 5 decades, this case study also is not informative for considering the likelibood of adverse welfare effects related to Pb from air sources under air quality conditions associated with meeting the current Pb standard.

The locations for the near-roadway non-urban case study are highly impacted by past deposition of gasoline Pb. It is unknown whether current conditions at these sites exceed the current Pb standard, but, given evidence from the past of Pb concentrations near highways that ranged above the previous (1978) Pb standard (1986 CD, section 7.2.1), conditions at these locations during the time of leaded gasoline very likely exceeded the current standard. Similarly, those conditions likely resulted in Pb deposition associated with leaded gasoline that exceeds that being deposited under air quality conditions that would meet the current Pb standard. Given this legacy, consideration of the potential for environmental risks from levels of air-related Pb associated with meeting the current Pb standard in these locations is highly uncertain.

The extent to which past air emissions of Pb have contributed to surface water or sediment Pb concentrations at the locations identified in the national scale surface water and sediment screen is unclear. For some of the surface water locations, nonair sources likely contributed significantly to the surface water Pb concentrations. For other locations, a lack of nearby nonair sources indicated a potential role for air sources to contribute to observed surface water Pb concentrations. Additionally, these concentrations may have been influenced by Pb in resuspended sediments and may reflect contribution of Pb from erosion of soils with Pb derived from historic as well as current air emissions.

The most useful case study to the current review is that of the Vulnerable Ecosystem Case Study located in the HBEF. This case study was focused on consideration of information which included a long record (from 1976 through 2000) of available data on concentration trends of Pb in three media (air or deposition from air, soil, and surface water). While no quantitative analyses were performed, a summary review of literature published on HBEF was developed. This review indicated: (1) Atmospheric Pb inputs do not directly affect stream Pb levels at HBEF because deposited Pb is almost entirely retained in the soil profile; and (2) soil horizon analysis results showed Pb to have become more concentrated at lower soil depths over time, with the soil serving as a Pb sink, appreciably reducing Pb in pore water as it moves through the soil layers to streams (dissolved Pb concentrations were reduced from 5 μg/L to about 5 ng/L from surface soil to streams). As a result, the HBEF studies concluded that the contribution of dissolved Pb from soils to streams was insignificant (2006 REA, Appendix E). Further, atmospheric input of Pb, based on bulk precipitation data, was estimated to decline substantially from the mid-1970s to 1989; forest floor soil Pb concentrations between 1976 and 2000 were also estimated to decline appreciably (2006 REA, sections E.1 and E.2). In considering HBEF and other terrestrial sites with Pb burdens derived primarily from long-range atmospheric transport, the 2006 CD found that "[d]espite years of elevated atmospheric Pb inputs and elevated concentrations in soils, there is little evidence that sites affected primarily by long-range Pb transport have experienced significant effects on ecosystem structure or function" (2006 CD, p. AX7–98). The explanation suggested by the 2006 CD for this finding is "[l]ow concentrations of Pb in soil solutions, the result of strong complexation of Pb by soil organic matter" (2006 CD, p. AZX7–98). While more recent soil or stream data on Pb concentrations are not available, we find it unlikely, given the general evidence for air Pb emissions and concentration

declines over the past several decades (*e.g.*, PA, Figures 2–1, 2–7 and 2–8), that conditions would have worsened from those on which these conclusions were drawn (*e.g.*, soil data through 2000). Therefore, this information suggests that the now-lower ambient air concentrations associated with meeting the current standard would not be expected to directly impact stream Pb levels.

With regard to new evidence of Pb effects at lower concentrations, it is necessary to consider that the evidence of adversity due specifically to Pb in natural systems is limited, in no small part because of the difficulty in determining the effects of confounding factors such as multiple metals and modifying factors influencing bioavailability in field studies. Modeling of Pb-related exposure and risk to ecological receptors is subject to a wide array of sources of both variability and uncertainty. Variability is associated with geographic location, habitat types, physical and chemical characteristics of soils and water that influence Pb bioavailability and terrestrial and aquatic community composition. Lead uptake rates by invertebrates, fish, and plants may vary by species and season. For wildlife, variability also is associated with food ingestion rates by species and season, prey selection, and locations of home ranges for foraging relative to the Pb contamination levels (USEPA, 2005b).

There are significant difficulties in quantifying the role of air emissions under the current standard, which is significantly lower than the previous standard. As recognized in the PA, Pb deposited before the standard was enacted remains in soils and sediments, complicating interpretations regarding the impact of the current standard; historic Pb emitted from leaded gasoline usage continues to move slowly through systems along with more recently deposited Pb and Pb derived from nonair sources (PA, section 1.3.2). The results from the location-specific case studies and the surface and sediment screen performed in the last review are difficult to interpret in light of the current standard and are largely not useful in informing judgments of the potential for adverse effects at levels of deposition meeting the current standard.

D. Conclusions on Adequacy of the Current Secondary Standard

1. Evidence- and Risk-Based Considerations in the Policy Assessment

The current evidence, as discussed more fully in the PA, continues to support the conclusions from the previous review regarding key aspects of the ecological effects evidence for Pb and the effects of exposure associated with levels of Pb occurring in ecological media in the U.S. The EPA's conclusions in this regard are based on consideration of the assessment of the currently available evidence in the ISA, particularly with regard to key aspects summarized in the PA.

In considering the welfare effects evidence with respect to the adequacy of the current standard, the PA considers the array of evidence newly assessed in the ISA with regard to the degree to which this evidence supports conclusions about the effects of Pb in the environment that were drawn in the last review and the extent to which it reduces previously recognized areas of uncertainty. Further, the PA considers the current evidence and associated conclusions about the potential for effects to occur as a result of the much lower ambient Pb concentrations allowed by the current secondary standard (set in 2008) than those allowed by the prior standard, which was the focus of the last review. These considerations, as discussed below, inform the Administrator's conclusions regarding the extent to which the evidence supports or calls into question the adequacy of protection afforded by the current standard.

The range of effects that Pb can exert on terrestrial and aquatic organisms indicated by information available in the current review is summarized in the ISA (ISA, sections 1.7, 6.3 and 6.4) and largely mirrors the findings of the previous review (PA, section 5.1). The integrated synthesis contained in the ISA conveys how effects of Pb can vary with species and life stage, duration of exposure, form of Pb, and media characteristics such as soil and water chemistry. A wide range of organism effects are recognized, including effects on growth, development (particularly of the nervous system) and reproductive success (ISA, sections 6.3 and 6.4). Lead is recognized to distribute from the air into multiple environmental media, as summarized in section I.D above, contributing to multiple exposure pathways for ecological receptors. As discussed in section 5.1 of the PA, many factors affect the bioavailability of Pb to receptors in terrestrial and aquatic ecosystems, contributing to differences between laboratory-assessed toxicity and Pb toxicity in these ecosystems, and challenging our consideration of environmental impacts of Pb emitted to ambient air.

In studies in a variety of ecosystems, adverse ecosystem-level effects (including decreases in species diversity, loss of vegetation, changes to community composition, primarily in soil microbes and plants, decreased growth of vegetation, and increased number of invasive species) have been demonstrated near smelters, mines and other industries that have released substantial amounts of Pb, among other materials, to the environment (ISA, sections 6.3.12 and 6.4.12). As noted in the PA, however, our ability to characterize the role of air emissions of Pb in contributing to these effects is complicated because of coincident releases to other media and of other pollutants. Co-released pollutants include a variety of other heavy metals, in addition to sulfur dioxide, which may cause toxic effects in themselves and may interact with Pb in the environment, contributing uncertainty to characterization of the role of Pb from ambient air with regard to the reported effects (PA, section 5.1). These uncertainties limit our ability to draw conclusions regarding the extent to which Pb-related effects may be associated with ambient air conditions that would meet the current standard.

The role of historically emitted Pb poses additional complications in addressing this question, as discussed in the PA (PA, section 1.3.2). The vast majority of Pb in the U.S. environment today, particularly in terrestrial ecosystems, was deposited in the past during the use of Pb additives in gasoline (2006 CD, pp. 2–82, AX7–36 to AX7–38, AX7–98; Johnson et al., 2004), although contributions from industrial activities, including metals industries, have also been documented (ISA, section 2.2.2.3, Jackson et al., 2004). The gasoline-derived Pb was emitted in very large quantities (2006 CD, p. AX7–96 and ISA, Figure 2–8) and predominantly in small sized particles which were widely dispersed and transported across large distances, within and beyond the U.S. (ISA, section 2.2). As recognized in the PA, historical records provided by sediment cores in various environments document the substantially reduced Pb deposition (associated with reduced Pb emissions) in many locations (PA, sections 2.3.1 and 2.3.3.2; ISA, section 2.2.1). As Pb is persistent in the environment, these substantial past environmental releases are expected to generally dominate current nonair media concentrations.

There is very limited evidence to relate specific ecosystem effects with current ambient air concentrations of Pb through deposition to terrestrial and aquatic ecosystems and subsequent movement of deposited Pb through the environment (*e.g.*, soil, sediment, water,

organisms). The potential for ecosystem effects of Pb from atmospheric sources under conditions meeting the current standard is difficult to assess due to limitations on the availability of information to fully characterize the distribution of Pb from the atmosphere into ecosystems over the long term, as well as limitations on information on the bioavailability of atmospherically deposited Pb (as affected by the specific characteristics of the receiving ecosystem). Therefore, while information available since the 2006 CD includes additional terrestrial and aquatic field studies, "the connection between air concentration and ecosystem exposure and associated potential for welfare effects continues to be poorly characterized for Pb" (ISA, section 6.5). Such a connection is even harder to characterize with respect to the current standard than it was in the last review with respect to the previous, much higher, standard.

The current evidence also continues to support conclusions from the last review with regard to interpreting the risk and exposure results. These conclusions are based on consideration of the screening-level ecological risk assessment results from the last review as described in the 2006 REA and summarized in the notice of final rulemaking (73 FR 67009, November 12, 2008) and in light of the currently available evidence in the ISA (PA, section 5.2). As noted in section III.C above, the results from three of the four case studies and from the national screens are largely not useful in informing judgments of the potential for adverse effects at levels of deposition associated with conditions that meet the current standard. The Vulnerable Ecosystem Case Study at the HBEF is more illustrative with regard to the current review and, accordingly, is given primary consideration. The EPA concluded that atmospheric Pb inputs of the past did not directly affect stream Pb levels at HBEF because deposited Pb is almost entirely retained in the soil profile and that there was "little evidence that sites affected primarily by long-range Pb transport [such as this one] have experienced significant effects on ecosystem structure or function" (2006 CD, p. AX–98). We further note here that, as conditions are unlikely to have worsened since those on which those conclusions were based, we find it likely that current ambient air concentrations do not directly impact stream Pb levels under air quality conditions associated with meeting the now-current standard.

The available risk and exposure information continues to be sufficient to conclude that the 1978 standard was not providing adequate protection to ecosystems and, when considered with regard to air-related ecosystem exposures likely to occur with air Pb levels that just meet the now-current standard, additionally does not provide evidence of adverse effects under the current standard.

2. CASAC Advice

In the current review of the secondary standard for Pb, the CASAC has provided advice and recommendations in their review of drafts of the ISA, of the REA Planning Document, and of the draft PA. We have additionally received comments from the public on drafts of these documents.[74]

In their advice and comments conveyed in the context of their review of the draft PA, the CASAC agreed with staff's preliminary conclusions that the available information since the last review is not sufficient to warrant revision to the secondary standard (Frey, 2013b). On this subject, the CASAC letter said that "[o]verall, the CASAC concurs with the EPA that the current scientific literature does not support a revision to the Primary Lead (Pb) National Ambient Air quality Standard (NAAQS) nor the Secondary Pb NAAQS" (Frey, 2013b, p. 1). The CASAC also recognized the many uncertainties and data gaps in the new scientific literature and recommended that research be performed in the future to address these limitations (Frey, 2013b, p. 2).

Given the existing scientific data, the CASAC concurs with retaining the current secondary standard without revision. However, the CASAC also notes that important research gaps remain. For example questions remain regarding the relevance of the primary standard's indicator, level, averaging time, and form for the secondary standard. Other areas for additional research to address data gaps and uncertainty include developing a critical loads approach for U.S. conditions and a multi-media approach to account for legacy Pb and contributions from different sources. Addressing these gaps may require reconsideration of the secondary standard in future assessments.

The very few public comments received on this review to date that have addressed adequacy of the current secondary Pb standard indicate support for retaining the current standard without revision, generally grouping the secondary standard with their similar view on the primary standard.

[74] All written comments submitted to the agency will be available in the docket for this rulemaking, as will be transcripts and minutes of the public meetings held in conjunction with CASAC's review of drafts of the PA, the REA Planning Document and the ISA.

3. Administrator's Proposed Conclusions on the Adequacy of the Current Standard

Based on the evidence and risk assessment information that is available in this review concerning the ecological effects and potential public welfare impacts of Pb emitted into ambient air, the Administrator proposes to conclude that the current secondary standard provides the requisite protection of public welfare from adverse effects and should be retained.

In considering the adequacy of the current standard, the Administrator has considered the assessment of the available evidence and conclusions contained in the ISA; the staff assessment of and conclusions regarding the policy-relevant technical information, including screening-level risk information, presented in the PA; the advice and recommendations from CASAC; and public comments to date in this review. In the discussion below, the Administrator gives weight to the PA conclusions, with which CASAC has concurred, and takes note of key aspects of the rationale presented for those conclusions which contribute to her proposed decision.

The Administrator notes the conclusion in the PA that the body of evidence on the ecological effects of Pb, expanded in some aspects since the last review, continues to support identification of ecological effects in organisms relating to growth, reproduction, and survival as the most relevant endpoints associated with Pb exposure. In consideration of the appreciable influence of site-specific environmental characteristics on the bioavailability and toxicity of environmental Pb in our assessment here, the PA noted the lack of studies conducted under conditions closely reflecting the natural environment. The currently available evidence, while somewhat expanded since the last review, does not include evidence of significant effects at lower concentrations or evidence of higher level ecosystem effects beyond those reported in the last review. There continue to be significant difficulties in interpreting effects evidence from laboratory studies to the natural environment and linking those effects to ambient air Pb concentrations. Further, the PA notes that the EPA is aware of no new critical loads information that would inform our interpretation of the public welfare significance of the effects of Pb in various U.S. ecosystems (PA, section 5.1). In summary, while new research has added to the understanding of Pb biogeochemistry and expanded the

list of organisms for which Pb effects have been described, the PA notes there remains a significant lack of knowledge about the potential for adverse effects on public welfare from ambient air Pb in the environment and the exposures that occur from such air-derived Pb, particularly under conditions meeting the current standard (PA, section 6.2.1). Thus, the scientific evidence presented in detail in the ISA, inclusive of that newly available in this review, is not substantively changed, most particularly with regard to the adequacy of the now current standard, from the information that was available in and supported the decision for revision in the last review (PA, section 6.2.1).

With respect to exposure/risk-based considerations, the PA recognizes the complexity of interpreting the previous risk assessment with regard to the ecological risk of ambient air Pb associated with conditions meeting the current standard and the associated limitations and uncertainties of such assessments. For example, the location-specific case studies as well as the national screen conducted in the last review reflect both current air Pb deposition as well as past air and nonair source contributions (PA, section 6.3). The Administrator takes note of the PA conclusion that the previous assessment is consistent with and generally supportive of the evidence-based conclusions about Pb in the environment, yet the limitations on our ability to apportion Pb between past and present air contributions and between air and nonair sources remain significant.

In the Administrator's consideration of the information available in this review of the Pb secondary standard, she gives weight to the PA conclusion that the currently available evidence and exposure/risk information do not call into question the adequacy of the current standard to provide the requisite protection for public welfare (PA, section 6.3). In so doing, she also notes the advice from CASAC in this review, including that "[g]iven the existing scientific data, the CASAC concurs with retaining the current secondary standard without revision." In light of these and the above considerations, the Administrator finds that the currently available information does not call into question the adequacy of the current standard to provide the requisite protection for public welfare and, accordingly, reaches the conclusion that it is appropriate to retain the current secondary standard without revision. The Administrator solicits comment on this conclusion.

IV. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *http://www2.epa.gov/laws-regulations/laws-and-executive-orders.*

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was, therefore, not submitted to the Office of Management and Budget for review.

B. Paperwork Reduction Act

This action does not impose an information collection burden under the Paperwork Reduction Act. There are no information collection requirements directly associated with revisions to a NAAQS under section 109 of the CAA and this action does not propose any revisions to the NAAQS.

C. Regulatory Flexibility Act

I certify that this action will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act. This action will not impose any requirements on small entities. Rather, this action proposes to retain, without revision, existing national standards for allowable concentrations of lead in ambient air as required by section 109 of the CAA. *See also* American Trucking Associations v. EPA. 175 F.3d at 1044–45 (NAAQS do not have significant impacts upon small entities because NAAQS themselves impose no regulations upon small entities).

D. Unfunded Mandates Reform Act

This action does not contain any unfunded mandate as described in the Unfunded Mandates Reform Act, 2 U.S.C. 1531–1538 and does not significantly or uniquely affect small governments. This action imposes no enforceable duty on any state, local or tribal governments or the private sector.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications, as specified in Executive Order 13175. This action does not change existing regulations. It does not have a substantial direct effect on one or more Indian Tribes, since Tribes are not obligated to adopt or implement any NAAQS. The Tribal Authority Rule gives Tribes the opportunity to develop and implement CAA programs such as the Pb NAAQS, but it leaves to the discretion of the Tribe whether to develop these programs and which programs, or appropriate elements of a program, they will adopt. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866. The health effects evidence and risk assessment information for this action, which focuses on children in addressing the at-risk population, is summarized in sections II.B, II.C and II.D, and described in the ISA and PA, copies of which are in the public docket for this action.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

This rulemaking does not involve technical standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes that this action will not have disproportionately high and adverse human health or environmental effects on minority, low-income or indigenous populations. The action proposed in this notice is to retain without revision the existing NAAQS for Pb based on the Administrator's conclusion that the existing standards protect public health, including the health of sensitive groups, with an adequate margin of safety. As discussed earlier in this preamble (see section II), the EPA expressly considered the available information regarding health effects among at-risk populations in reaching the proposed decision that the existing standards are requisite.

K. Determination Under Section 307(d)

Section 307(d)(1)(V) of the CAA provides that the provisions of section 307(d) apply to "such other actions as the Administrator may determine." Pursuant to section 307(d)(1)(V), the Administrator determines that this action is subject to the provisions of section 307(d).

References

Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP). (2012). Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention. Report of the Advisory Committee on Childhood Lead Poisoning Prevention of the Centers for Disease Control and Prevention. January 4, 2012. Available at: *http://www.cdc.gov/nceh/lead/ACCLPP/blood_lead_levels.htm.*

Alliance to End Childhood Lead Poisoning. (1991). The First Comprehensive National Conference: Final Report. October 6,7,8, 1991.

Bellinger, D.C. and Needleman, H.L. (2003). Intellectual impairment and blood lead levels [letter]. N. Engl. J. Med. 349: 500.

Bellinger, D. (2008). Email message to Jee-Young Kim, U.S. EPA. February 13, 2008. Docket document number EPA–HQ–OAR–2006–0735–5156.

Billick, I.H.; Curran, A.S.; Shier, D.R. (1979). Analysis of pediatric blood lead levels in New York City for 1970–1976. Environ. Health Perspect. 31: 183–190.

Billick, I.H.; Curran, A.S.; Shier, D.R. (1980). Relation of pediatric blood lead levels to lead in gasoline. Environ. Health Perspect. 34: 213–217.

Billick, I.H. (1983). Sources of lead in the environment. In: Rutter, M.; Russell Jones, R., eds. Lead versus health: Sources and effects of low level lead exposure. New York, NY: John Wiley and Sons, Ltd; pp. 59–77.

Brunekreef, B.; Noy, D.; Biersteker, K.; Boleij, J. (1983). Blood lead levels of Dutch city children and their relationship to lead in the environment. J. Air Pollut. Control Assoc. 33: 872–875.

Brunekreef, B. (1984). The relationship between air lead and blood lead in children: A critical review. Science of the total environment, 38: 79–123.

Canfield, R.L.; Henderson, C.R., Jr.; Cory-Slechta, D.A.; Cox, C.; Jusko, T.A.; Lanphear, B.P. (2003). Intellectual impairment in children with blood lead concentrations below 10 μg per deciliter. N. Engl. J. Med. 348: 1517–1526.

Canfield, R.L. (2008). Email messages to Jee-Young Kim, U.S. EPA. February 7 through August 12, 2008. Docket document number EPA–HQ–OAR–2006–0735–5811.

Centers for Disease Control and Prevention. (2012) CDC Response to Advisory Committee on Childhood Lead Poisoning Prevention Recommendations in "Low Level Lead Exposure Harms Children: A Renewed Call of Primary Prevention." Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service. June 7, 2012.

Chandramouli, K; Steer, C.D.; Ellis, M; Emond, A.M. (2009). Effects of early childhood lead exposure on academic performance and behaviour of school age children. Arch Dis Child 94: 844–848.

Frey, H.C. (2011a). Letter from Dr. H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee Lead Review Panel, to Administrator Lisa P. Jackson. Re: Consultation on EPA's Draft Integrated Review Plan for the National Ambient Air Quality Standards for Lead. May 25, 2011.

Frey, H.C. (2011b). Letter from Dr. H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee Lead Review Panel, to Administrator Lisa P. Jackson. Re: Consultation on EPA's Review of the National Ambient Air Quality Standards for Lead: Risk and Exposure Assessment Planning Document. October 14, 2011.

Frey, H.C. and Samet, J.M. (2011). Letter from Drs. H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee Lead Review Panel, and Jonathan M. Samet, Chair, Clean Air Scientific Advisory Committee, to Administrator Lisa P. Jackson. Re: CASAC Review of the EPA's Integrated Science Assessment for Lead (First External Review Draft—May 2011). December 9, 2011.

Frey, H.C. (2013a). Letter from Dr. H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee and Clean Air Scientific Advisory Committee Lead Review Panel, to Acting Administrator Bob Perciasepe. Re: CASAC Review of the EPA's Integrated Science Assessment for Lead (Third External Review Draft—November 2012). June 4, 2013.

Frey, H.C. (2013b). Letter from Dr. H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee and Clean Air Scientific Advisory Committee Lead Review Panel, to Acting Administrator Bob Perciasepe. Re: CASAC Review of the EPA's Policy Assessment for Lead (External Review Draft—January 2013). June 4, 2013.

Gulson, B.L.; Mizon, K.J.; Davis, J.D.; Palmer, J.M.; Vimpani, G. (2004). Identification of sources of lead in children in a primary zinc-lead smelter environment. Environ Health Perspect 112: 52–60.

Hayes, E.B.; McElvaine, M.D.; Orbach, H.G.; Fernandez, A.M.; Lyne, S.; Matte, T.D. (1994). Long-term trends in blood lead levels among children in Chicago: Relationship to air lead levels. Pediatrica 93:195–200.

Henderson, R. (2007a). Letter from Dr. Rogene Henderson, Chair, Clean Air Scientific Advisory Committee, to Administrator Stephen L. Johnson. Re: Clean Air Scientific Advisory Committee's (CASAC) Review of the 1st Draft Lead Staff Paper and Draft Lead Exposure and Risk Assessments. March 27, 2007.

Henderson, R. (2007b). Letter from Dr. Rogene Henderson, Chair, Clean Air Scientific Advisory Committee, to Administrator Stephen L. Johnson. Re: Clean Air Scientific Advisory Committee's (CASAC) Review of the 2nd Draft Lead Human Exposure and Health Risk Assessments Document. September 27, 2007.

Henderson, R. (2008a). Letter from Dr. Rogene Henderson, Chair, Clean Air Scientific Advisory Committee, to Administrator Stephen L. Johnson. Re: Clean Air Scientific Advisory Committee's (CASAC) Review of the Advance Notice of Proposed Rulemaking (ANPR) for the NAAQS for lead. January 22, 2008.

Henderson, R. (2008b). Letter from Dr. Rogene Henderson, Chair, Clean Air Scientific Advisory Committee, to Administrator Stephen L. Johnson. Re: Clean Air Scientific Advisory Committee's (CASAC) Review of the Notice of Proposed Rulemaking for the NAAQS for lead. July 18, 2008.

Hilts, S.R. (2003). Effect of smelter emission reductions on children's blood lead levels. Sci. Total Environ. 303: 51–58.

ICF International. (2006). Lead Human Exposure and Health Risk Assessments and Ecological Risk Assessment for Selected Areas. Pilot Phase. Draft Technical Report with Appendices. Prepared for the U.S. EPA's Office of Air Quality Planning and Standards, Research Triangle Park, NC. December 2006.

Jackson, B.P., Winger P.V., Lasier P.J. (2004). Atmospheric lead deposition to Okefenokee Swamp, Georgia, USA. Environ Poll. 130: 445–451.

Jackson, L. (2009) Memorandum from Administrator Lisa Jackson, Subject: Process for Reviewing National Ambient Air Quality Standards. May 21, 2009. Available at: *http://www.epa.gov/ttn/naaqs/pdfs/NAAQSReviewProcessMemo52109.pdf.*

Jones, R.L.; Homa, D.M.; Meyer, P.A.; Brody, D.J.; Caldwell, K.L.; Pirkle, J.L.; Brown, M.J. (2009). Trends in blood lead levels and blood lead testing among US children aged 1 to 5 Years, 1988–2004. Pediatrics 123: e376–e385.

Kim, Y.; Kim, B.N.; Hong, Y.C.; Shin, M.S.; Yoo, H.J.; Kim, J.W.; Bhang, S.Y.; Cho, S.C. (2009). Co-exposure to environmental lead and manganese affects the intelligence of school-aged children. Neurotoxicology 30: 564–571.

Kirrane, E; Patel, M. (2014). Memorandum to Integrated Science Assessment for Lead Docket (EPA–HQ–ORD–2011–0051). Docket document number EPA–HQ–ORD–2011–0051–0050. May 9, 2014.

Kordas, K; Canfield, R.L.; Lopez, P; Rosado, J.L.; Vargas, G.G.; Cebrian, M.E.; Rico, J.A.; Ronquillo, D.; Stoltzfus, R.J. (2006). Deficits in cognitive function and achievement in Mexican first-graders with low blood lead concentrations. Environ Res 100: 371–386.

Krieg, E.F., Jr; Butler, M. A.; Chang, M.; Liu, T; Yesupriya, A.; Dowling, N.; Lindegren, M.L. (2010). Lead and cognitive function in VDR genotypes in the Third National Health and Nutrition Examination Survey. Neurotoxicol Teratol 32: 262–272.

Lanphear, B.P.; Roghmann, K.J. (1997). Pathways of lead exposure in urban children. Environ Res 74: 67–73.

Lanphear, B.P.; Matte, T.D.; Rogers, J.; Clickner, R.P.; Dietz, B.; Bornschein, R.L.; Succop, P.; Mahaffey, K.R.; Dixon, S.;

Galke, W.; Rabinowitz, M.; Farfel, M.; Rohde, C.; Schwartz, J.; Ashley, P.; Jacobs, D.E. (1998). The contribution of lead-contaminated house dust and residential soil to children's blood lead levels: A pooled analysis of 12 epidemiologic studies. Environ Res 79: 51–68.

Lanphear, B.P.; Dietrich, K.; Auinger, P.; Cox, C. (2000). Cognitive deficits associated with blood lead concentrations <10 microg/dL in U.S. children and adolescents. Public Health Rep 115: 521–529.

Lanphear, B. P.; Hornung, R.; Khoury, J.; Yolton, K.; Baghurst, P.; Bellinger, D.C.; Canfield, R.L.; Dietrich, K. N.; Bornschein, R.; Greene, T.; Rothenberg, S.J.; Needleman, H.L.; Schnaas, L.; Wasserman, G.; Graziano, J.; Roberts, R. (2005). Low-level environmental lead exposure and children's intellectual function: an international pooled analysis. Environ. Health Perspect. 113: 894–899.

Miranda, M.L.; Kim, D.; Reiter, J.; Overstreet Galeano, M. A.; Maxson, P. (2009). Environmental contributors to the achievement gap. Neurotoxicology 30: 1019–1024.

Pirkle, J.L.; Brody, D.J.; Guntar, E.W.; Kramer, R.A.; Paschal, D.C.; Flegal, K.M.; Matte, T. D. (1994). The decline in blood lead levels in the United States: The National Health and Nutrition Examination Surveys (NHANES). JAMA 272: 284–291.

Ranft, U.; Delschen, T.; Machtolf, M.; Sugiri, D.; Wilhelm, M. (2008). Lead concentration in the blood of children and its association with lead in soil and ambient air: Trends between 1983 and 2000 in Duisburg. J Toxicol Environ Health A 71: 710–715.

Rothenberg, S.J.; Rothenberg, J.C. (2005). Testing the dose-response specification in epidemiology: Public health and policy consequences for lead. Environ. Health Perspect. 113: 1190–1195.

Samet, J.M. and Frey, H.C. (2012). Letter from Drs. Jonathan M. Samet, Chair, Clean Air Scientific Advisory Committee and H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee Lead Review Panel, to Administrator Lisa P. Jackson. Re: CASAC Review of the EPA's Integrated Science Assessment for Lead (Second External Review Draft—February 2012). July 20, 2012.

Schnaas, L; Rothenberg, S.J.; Flores, M.F.; Martinez, S.; Hernandez, C.; Osorio, E.; Perroni, E. (2004). Blood lead secular trend in a cohort of children in Mexico City (1987–2002). Environ Health Perspect 112: 1110–1115.

Schwartz, J., and Pitcher, H. (1989). The relationship between gasoline lead and blood lead in the United States. J Official Statistics 5(4):421–431.

Schwemberger, M.S., J.E. Mosby, M.J. Doa, D. E. Jacobs, P.J. Ashley, D.J. Brody, M. J. Brown, R.L. Jones, D. Homa. (2005). Blood lead levels—United States, 1999–2002. Mortal Morb Weekly Rept 54(20):513–516. May 27, 2005.

Téllez-Rojo, M.M.; Bellinger, D.C.; Arroyo-Quiroz, C.; Lamadrid-Figueroa, H.; Mercado-García, A.; Schnaas-Arrieta, L.; Wright, R. O.; Hernández-Avila, M.; Hu, H. (2006). Longitudinal associations between blood lead concentretions < 10 μg/dL and neurobehavioral development in environmentally-exposed children in Mexico City. Pediatrics 118: e323–e330.

Téllez-Rojo, M. (2008). Email message to Jee-Young Kim, U.S. EPA. February 11, 2008. Docket document number EPA–HQ–OAR–2006–0735–5123.

Tripathi, R.M.; Raghunath, R.; Kumar, A.V.; Sastry, V.N.; Sadasivan, S. (2001). Atmospheric and children's blood lead as indicators of vehicular traffic and other emission sources in Mumbai, India. Sci Total Enviro 267: 101–108.

UNEP Governing Council. (2011). Proceedings of the Governing Council/ Global Ministerial Environment Forum at its twenty-sixth session. Decision number 26/3. UNEP/GC.26/19. 24 February 2011. Available at: *http://www.unep.org/gc/gc26/docs/Proceedings/K1170817_E-GC26-19_Proceedings.pdf.*

UNEP Governing Council. (2013). Decisions adopted by the Governing Council at its twenty-seventh session and first universal session. Decision 27/12: Chemicals and waste management. February 2013. Available at: *http://www.unep.org/GC/GC27/Docs/decisions/GC_27_decisions-English.pdf.*

U.S. Environmental Protection Agency. (1977). Air quality criteria for lead. Research Triangle Park, NC: Health Effects Research Laboratory, Criteria and Special Studies Office; EPA report no. EPA–600/8–77–017. Available from: NTIS, Springfield, VA; PB–280411.

U.S. Environmental Protection Agency. (1986a). Air quality criteria for lead. Research Triangle Park, NC: Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office; EPA report no. EPA–600/8–83/028aF–dF. 4v. Available from: NTIS, Springfield, VA; PB87–142378.

U.S. Environmental Protection Agency. (1986b). Lead effects on cardiovascular function, early development, and stature: an addendum to U.S. EPA Air Quality Criteria for Lead (1986). In: Air quality criteria for lead, v. 1. Research Triangle Park, NC: Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office; pp. A1–A67; EPA report no. EPA–600/8–83/028aF. Available from: NTIS, Springfield, VA; PB87–142378.

U.S. Environmental Protection Agency. (1989). Review of the national ambient air quality standards for lead: Exposure analysis methodology and validation: OAQPS staff report. Research Triangle Park, NC: Office of Air Quality Planning and Standards; report no. EPA–450/2–89/011. Available on the web: *http://www.epa.gov/ttn/naaqs/standards/pb/data/rnaaqsl_eamv.pdf.*

U.S. Environmental Protection Agency. (1990a). Air quality criteria for lead: supplement to the 1986 addendum. Research Triangle Park, NC: Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office; report no. EPA/600/8–89/049F. Available from: NTIS, Springfield, VA; PB91–138420.

U.S. Environmental Protection Agency. (1990b). Review of the national ambient air quality standards for lead: assessment of scientific and technical information: OAQPS staff paper. Research Triangle Park, NC: Office of Air Quality Planning and Standards; report no. EPA–450/2–89/022. Available from: NTIS, Springfield, VA; PB91–206185. Available on the web: *http://www.epa.gov/ttn/naaqs/standards/pb/data/rnaaqsl_astl.pdf.*

U.S. Environmental Protection Agency. (1991). U.S. EPA Strategy for Reducing Lead Exposure. Available from U.S. EPA Headquarters Library/Washington, DC (Library Code EJBD; Item Call Number: EAP 100/1991.6; OCLC Number 2346675). *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_pr.html.*

U.S. Environmental Protection Agency. (2005a). Project Work Plan for Revised Air Quality Criteria for Lead. CASAC Review Draft. National Center for Environmental Assessment, Research Triangle Park, NC. NCEA–R–1465. Available at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_cr_pd.html.*

U.S. Environmental Protection Agency. (2005b). Ecological Soil Screening Levels for Lead, Interim Final. Washington, DC: Office of Solid Waste and Emergency Response. OSWER Directive 9285.7–70. Available at *http://www.epa.gov/ecotox/ecossl/pdf/eco-ssl_lead.pdf.*

U.S. Environmental Protection Agency. (2006a). Air Quality Criteria for Lead. Washington, DC, EPA/600/R–5/144aF. Available online at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_cr.html.*

U.S. Environmental Protection Agency. (2006b). Plan for Review of the National Ambient Air Quality Standards for Lead. Office of Air Quality Planning and Standards, Research Triangle Park, NC. Available at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_cr_pd.html.*

U.S. Environmental Protection Agency. (2006c). Analysis Plan for Human Health and Ecological Risk Assessment for the Review of the Lead National Ambient Air Quality Standards. Office of Air Quality Planning and Standards, Research Triangle Park, NC. Available at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_cr_pd.html.*

U.S. Environmental Protection Agency. (2007a). Lead: Human Exposure and Health Risk Assessments for Selected Case Studies, Volume I. Human Exposure and Health Risk Assessments—Full-Scale and Volume II. Appendices. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA–452/R–07–014a and EPA–452/R–07–014b.

U.S. Environmental Protection Agency. (2007b). Review of the National Ambient Air Quality Standards for Lead: Policy Assessment of Scientific and Technical Information, OAQPS Staff Paper. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA–452/R–07–013. Available at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_cr_sp.html.*

U.S. Environmental Protection Agency. (2011a). Integrated Review Plan for the National Ambient Air Quality Standards for Lead. Research Triangle, NC. EPA–452/R–11–008. Available online at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html.*

U.S. Environmental Protection Agency. (2011b). Review of the National Ambient Air Quality Standards for Lead: Risk and Exposure Assessment Planning Document. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA/452/P–11–003. Available at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_2010_pd.html.*

U.S. Environmental Protection Agency. (2011c). Partnership for Clean Fuels and Vehicles: Evaluation of the Design and Implementstion of the Lead Campaign. Final Report. Document number EPA–100–R–11–008. Office of Policy, Washington, DC, December 2011.

U.S. Environmental Protection Agency. (2011d). Integrated Review Plan for the National Ambient Air Quality Standards for Lead. External Review Draft. Research Triangle, NC. EPA–452/D–11–001. Available online at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html.*

U.S. Environmental Protection Agency. (2011e). Integrated Science Assessment for Lead (First External Review Draft). Washington, DC, EPA/600/R–10/075A. Available online at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html.*

U.S. Environmental Protection Agency. (2012a). Integrated Science Assessment for Lead (Second External Review Draft). Washington, DC, EPA/600/R–10/075B. Available online at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html.*

U.S. Environmental Protection Agency. (2012b). Integrated Science Assessment for Lead (Third External Review Draft). Washington, DC, EPA/600/R–10/075C. Available online at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_2010_isa.html.*

U.S. Environmental Protection Agency. (2013a). Integrated Science Assessment for Lead. Washington, DC, EPA/600/R–10/075F. Available online at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_2010_isa.html.*

U.S. Environmental Protection Agency. (2013b). Policy Assessment for the National Ambient Air Quality Standards for Lead. External Review Draft. Research Triangle, NC. EPA–452/P–13–001. Available online at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_2010_pa.html.*

U.S. Environmental Protection Agency. (2014). Policy Assessment for the National Ambient Air Quality Standards for Lead. Research Triangle, NC. EPA–452/R–14–001. Available online at: *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_2010_pa.html.*

Zielhuis, R.L.; del Castilho, P.; Herber, R.F.M.; Wibowo, A.A.E.; Salle, H.J.A. (1979). Concentretions of lead and other metals in blood of two and three year-old children living near a secondary smelter. Int. Arch. Occup. Environ. Health 42: 231–239.

List of Subjects in 40 CFR Part 50

Environmental protection, Air pollution control, Carbon monoxide, Lead, Nitrogen dioxide, Ozone, Particulate matter, Sulfur oxides.

Dated: December 19, 2014.

Gina McCarthy,

Administrator.

[FR Doc. 2014–30681 Filed 1–2–15; 8:45 am]

BILLING CODE 6560–50–P

acknowledges that further refinements to the listed species assessment will be completed in future revisions and requests public comment on specific areas that will reduce the uncertainties associated with the characterization of risk to listed species identified in the current assessment. The human health risk assessment includes all uses of sulfur, including gas cartridges. The most recent ecological risk assessment includes all uses except gas cartridges. A separate ecological risk assessment for gas cartridge uses was conducted in 2010 and can be found in the sulfur registration review docket.

• *Triflumizole.* The registration review docket for triflumizole (EPA–HQ–OPP–2006–0115) opened in the **Federal Register** issue of March 28, 2007 (72 FR 14548) (FRL–8118–3). Triflumizole is a broad spectrum, imidazole fungicide (group 3) that inhibits ergosterol biosynthesis in fungi. It is registered for use on a variety of agricultural crops, ornamentals in greenhouses/shade houses, interior scapes, and Christmas trees/conifers on nurseries and plantations. It is also registered for use as a pre-plant pineapple seed treatment. The Agency has conducted a human health risk assessment for dietary (food and drinking water), residential and occupetional exposure pethways. The Agency has also conducted a quantitative ecological risk assessment, which includes a screening-level listed species assessment. EPA acknowledges that further refinements to the listed species assessment will be completed in future revisions and requests public comment on specific areas that will reduce the uncertainties associated with the characterization of risk to listed species identified in the current assessment.

1. *Other related information.* Additional information on these pesticides is available on the chemical pages for these pesticides in Chemical Search, *http://www.epa.gov/pesticides/chemicalsearch,* and in each chemical's individual docket listed in Table 1. in Unit III. Information on the Agency's registration review program and its implementing regulation is available at *http://www.epa.gov/oppsrrd1/registration_review.*

2. *Information submission requirements.* Anyone may submit data or information in response to this document. To be considered during a pesticide's registration review, the submitted data or information must meet the following requirements:

• To ensure that EPA will consider data or information submitted, interested persons must submit the data or information during the comment period. The Agency may, at its discretion, consider data or information submitted at a later date.

• The data or information submitted must be presented in a legible and useable form. For example, an English translation must accompany any material that is not in English and a written transcript must accompany any information submitted as an audiographic or videographic record. Written material may be submitted in paper or electronic form.

• Submitters must clearly identify the source of any submitted data or information.

• Submitters may request the Agency to reconsider data or information that the Agency rejected in a previous review. However, submitters must explain why they believe the Agency should reconsider the data or information in the pesticide's registration review.

As provided in 40 CFR 155.58, the registration review docket for each pesticide case will remain publicly accessible through the duration of the registration review process; that is, until all actions required in the final decision on the registration review case have been completed.

List of Subjects

Environmental protection, Acetaminophen, Clofentezine, Fluazinam, Hexythiazox, Pesticides and pests, Quinclorac, Sulfur, Triflumizole.

Dated: June 19, 2013.

Michael Goodis,

Acting Director, Pesticide Re-Evaluation Division, Office of Pesticide Programs.

[FR Doc. 2013–15304 Filed 6–25–13; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL–9827–4]

Integrated Science Assessment for Lead

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of availability.

SUMMARY: EPA is announcing the availability of a final document titled, "Integrated Science Assessment for Lead" (EPA/600/R–10/075F). The document was prepared by the National Center for Environmental Assessment (NCEA) within EPA's Office of Research and Development as part of the review of the national ambient air quality standards (NAAQS) for lead (Pb).

DATES: The document will be available on or around June 26, 2013.

ADDRESSES: The "Integrated Science Assessment for Lead" will be made available primarily through the Internet on the NCEA home page under the Recent Additions and Publications menus at *http://www.epa.gov/ncea.* A limited number of CD–ROM or paper copies will be available. Contact Ms. Marieka Boyd by phone: 919–541–0031; fax: 919–541–5078; or email: *boyd.marieka@epa.gov* to request either of these, and please provide your name, your mailing address, and the document title, "Integrated Science Assessment for Lead" (EPA/600/R–10/075F) to facilitate processing of your request.

FOR FURTHER INFORMATION CONTACT: For technical information, contact Dr. Ellen Kirrane, NCEA; telephone: 919–541–1340; facsimile: 919–541–2985; or email: *Kirrane.ellen@epa.gov.*

SUPPLEMENTARY INFORMATION:

Background

Section 108 (a) of the Clean Air Act directs the Administrator to identify certain pollutants, wbich among other things, "cause or contribute to air pollution which may reasonably be anticipated to endanger public bealth or welfare" and to issue air quality criteria for them. These air quality criteria are to "accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of [a] pollutant in the ambient air. . . ." Under section 109 of the Act, EPA is then to establish NAAQS for each pollutant for which EPA has issued criteria. Section 109 (d) of the Act subsequently requires periodic review and, if appropriate, revision of existing air quality criteria to reflect advances in scientific knowledge on the effects of the pollutant on public health or welfare. EPA is also to periodically review and, if appropriate, revise the NAAQS, based on the revised air quality criteria.

Pb is one of six "criteria" pollutants for which EPA has established NAAQS. Periodically, EPA reviews the scientific basis for these standards by preparing an Integrated Science Assessment (ISA) (formerly called an Air Quality Criteria Document). The ISA provides a concise review, synthesis, and evaluation of the most policy-relevant science to serve as a scientific foundation for the review of the NAAQS. The Clean Air Scientific Advisory Committee (CASAC), an independent science advisory committee whose review and advisory functions are mandated by Section 109 (d) (2) of the Clean Air Act, is charged (among other things) with independent scientific review of EPA's air quality criteria.

On February 26, 2010 (75 FR 8934), EPA formally initiated its current review of the air quality criteria for Pb, requesting the submission of recent scientific information on specified topics. Soon after, a science policy workshop was held to identify key policy issues and questions to frame the review of the Pb NAAQS (75 FR 20843). Drawing from the workshop discussions, a draft of EPA's "Integrated Review Plan for the National Ambient Air Quality Standards for Lead" (EPA/452/D–11/001) was developed and made available in March 2011 for public comment and was discussed by the CASAC Pb Review Panel (CASAC panel) via a publicly accessible teleconference consultation on May 5, 2011 (76 FR 20347, 76 FR 21346). The final Integrated Review Plan was released in December 2011 (76 FR 76972) and is available at *http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_2010_pd.html.*

As part of the science assessment phase of the review, EPA beld a workshop in December 2010 to discuss, with invited scientific experts, initial draft materials prepared in the development of the ISA (75 FR 69078). The first external review draft ISA for Pb was released on May 6, 2011 (*http://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=226323*). The CASAC panel met at a public meeting on July 20, 2011, to review the draft ISA (76 FR 36120). Subsequently, on December 9, 2011, tbe CASAC provided a consensus letter for their review to the Administrator of the EPA (*http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activites/D3E2E6488025344D852579610068A8A1/$File/EPA-CASAC-12-002-unsigned.pdf*). The second external review draft ISA for Pb was released on February 2, 2012 (*http://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=235331*). The CASAC panel met at a public meeting on April 10, 2012, to review the draft ISA (77 FR 14783). Subsequently, on July 20, 2012, the CASAC provided a consensus letter for their review to the Administrator of the EPA (*http://yosemite.epa.gov/sab/sabproduct.nsf/13B1FD83815FA11885257A410064E0DC/$File/EPA-CASAC-12-005-unsigned.pdf*). The third external review draft ISA for Pb was released on November 27, 2012 (*http://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=242655*). The CASAC panel met at a public meeting on February 5, 2013, to review the draft ISA (78 FR 938). Subsequently, on June 4, 2013, the CASAC provided a consensus letter for their review to the Administrator of the EPA (*http://yosemite.epa.gov/sab/sabproduct.nsf/0/39A3C8177D869EA085257B80006C7684/$File/EPA-CASAC-13-004+unsigned.pdf*). The letters from CASAC, as well as public comments received on the ISA drafts can be found in Docket ID No. EPA–HQ–ORD–2011–0051.

EPA has considered comments by the CASAC panel and by the public in prepering this final ISA.

Dated: June 18, 2013.

Abdel M. Kadry,

Acting Director, National Center for Environmental Assessment.

[FR Doc. 2013–15144 Filed 6–25–13; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[EPA–HQ–OPP–2013–0380; FRL–9388–4]

Pesticide Maintenance Fee: Notice of Receipt of Requests to Voluntarily Cancel Certain Pesticide Registrations

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: In accordance with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), EPA is issuing a notice of receipt of requests by registrants to voluntarily cancel certain pesticide registrations. EPA intends to grant these requests at the close of the comment period for this announcement unless the Agency receives substantive comments within the comment period that would merit its further review of the requests, or unless the registrants withdraw its requests. If tbese requests are granted, any sale, distribution, or use of products listed in this notice will be permitted after the registration has been cancelled only if such sale, distribution, or use is consistent with the terms as described in the final order.

DATES: Comments must be received on or before December 23, 2013.

ADDRESSES: Submit your comments, identified by docket identification (ID) number EPA–HQ–OPP–2013–0380, by one of the following methods:

• *Federal eRulemaking Portal: http://www.regulations.gov.* Follow the online instructions for submitting comments. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute.

• *Mail:* OPP Docket, Environmental Protection Agency Docket Center (EPA/DC), (28221T), 1200 Pennsylvania Ave. NW., Washington, DC 20460–0001.

Submit written withdrawal request by mail to: Information Technology and Resources Management Division (7502P), Office of Pesticide Programs, Environmental Protection Agency, 1200 Pennsylvania Ave. NW., Washington, DC 20460–0001. ATTN: Michael Yanchulis.

• *Hand Delivery:* To make special arrangements for hand delivery or delivery of boxed information, please follow the instructions at *http://www.epa.gov/dockets/contacts.htm.*

Additional instructions on commenting or visiting the docket, along with more information about dockets generally, is available at *http://www.epa.gov/dockets.*

FOR FURTHER INFORMATION CONTACT: Michael Yanchulis, Information Technology and Resources Management Division (7502P), Office of Pesticide Programs, Environmental Protection Agency, 1200 Pennsylvania Ave. NW., Washington, DC 20460–0001; telephone number: (703) 347–0237; email address: *yanchulis.michael@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. General Information

A. Does this action apply to me?

This action is directed to the public in general, and may be of interest to a wide range of stakeholders including environmental, human healtb, and agricultural advocates; the chemical industry; pesticide users; and members of the public interested in the sale, distribution, or use of pesticides.

B. What should I consider as I prepare my comments for EPA?

1. *Submitting CBI.* Do not submit this information to EPA through regulations.gov or email. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD–ROM that you mail to EPA, mark the outside of the disk or CD–ROM as CBI and then identify electronically within the disk or CD–ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

Comment 1-1

Our Rancho Cucamonga facility is one of only thirteen facilities that will be regulated by Proposed Rule 1420.2. As such, we have first-hand knowledge regarding the regulated equipment and activities, insight into the challenges of compliance, and potential environmental and economic impacts. We appreciate the opportunity to comment on the Draft Environmental Assessment prepared by the SCAQMD for Rule 1420.2. Our complete comments are attached.

Response to Comment 1-1

No response is necessary.

Comment 1-2

Our greatest concern during the rule development process has been that the rule would contain technologically or economically infeasible provisions that would not produce meaningful emissions reductions in the community. We appreciate the time that District staff has taken to better understand our equipment, emissions, and business. We believe that the August 5, 2015 version of the rule is better for the community as well as for Gerdau. However, the Draft EA evaluates an earlier version of the proposed rule. If provisions of earlier versions of the rule were to be restored, or new requirements added prior to rule adoption, the rule would very likely cause the closure of the Rancho Cucamonga facility. In such case, the Draft EA would be deficient under CEQA, because it fails to evaluate the substantial environmental effects of facility closure.

Again, we appreciate the opportunity to provide comments on the draft EA. If you have any questions regarding our comments, please do not hesitate to contact me.

Response to Comment 1-2

The Draft EA analyzed the June 12, 2015 version of PR 1420.2, which was the current version of the rule when the Draft EA was prepared. Through the public consultation process, the commenter provided comments to SCAQMD staff that some provisions such as the need to enclose slag handling and storage areas, the high in-draft velocity requirement for total enclosures, and the requirement to pave unpaved areas of the facility might lead to the closure of the commenter's facility. Since the June version of PR1420.2, SCAQMD staff has been working with stakeholders and has revised some of the provisions. The approach and core provisions requiring ambient monitoring of lead, the ambient lead concentration limits, lead point source requirements, requirements for operating within an enclosure, housekeeping and maintenance, and requirements for a compliance plan if certain thresholds are exceeded have not changed. In general, the revisions provided clarifications, provided other compliance options, or reduced the frequency of implementing specific provisions. As discussed in Chapter 2 of the Final EA, modifications to the proposed rule will not increase or create any new environmental impacts and in areas where the frequency of implementing certain housekeeping measures is reduced, will lessen certain environmental impacts; therefore the Draft EA provides a conservative analysis of the impacts of PR 1420.2. As proposed, PR 1420.2 does not include requirements which were in previous versions of the rule which would result in the foreseeable closure of the commenter's facility. As noted above, the revisions to the rule since the June 12, 2015 have lessened the facilities' requirements and as such any new rule language will not cause the commenter's facility to close.

Comment 1-3

1. Version of the Rule Reviewed

As originally proposed, Rule 1420.2 would have had a substantial negative effect on our plant in Rancho Cucamonga. Many of the requirements in the early versions of the rule would have been technologically infeasible. Other early provisions would have imposed extraordinary costs of compliance while having no or negligible benefit in reducing ambient lead concentrations in the community. As a result, the early versions of the rule would have caused the closure of the Rancho Cucamonga plant.

We realize that the staff continues to fine tune details regarding the proposed rule. Some of the issues described in our comments may be moot, with the release of the August 5, 2015 version of the rule, and others may become moot with additional rule revisions prior to adoption. However, to comment on the Draft EA, it is necessary to comment in the context of the version of the rule reviewed in that document. If the adopted version of the rule excludes provisions in the June 12, 2015 version of the proposed rule for which the Draft EA is deficient, then the CEQA deficiency may be addressed (provided the change does not implicate other potentially significant impacts). Conversely, if the adopted rule includes provisions that were present in the earlier drafts of the rule but not in the June 12, 205 version evaluated in the Draft EA, or if new requirements are added, then CEQA Guidelines Section 15073.5 would require at a minimum that the Draft EA be revised and recirculated for public comment prior to adoption of the rule in order to evaluate additional adverse environmental impacts, including direct and indirect environmental impacts associated with closure of the Ranch Cucamonga facility.

Response to Comment 1-3

The Draft EA analyzed the June 12, 2015 version of PR 1420.2, which was the current version of the rule when the Draft EA was prepared. Through the public consultation process, the commenter provided comments to SCAQMD staff that some provisions such as the need to enclose slag handling and storage areas, the high in-draft velocity requirement for total enclosures, and the requirement to pave unpaved areas of the facility might lead to the closure of the commenter's facility. Since the June version of PR1420.2, SCAQMD staff has been working with stakeholders and has revised some of the provisions. The approach and core provisions requiring ambient monitoring of lead, the ambient lead concentration limits, lead point source requirements, requirements for operating within an enclosure, housekeeping and maintenance, and requirements for a compliance plan if certain thresholds are exceeded have not changed. In general, the revisions provided clarifications, provided other compliance options, or reduced the frequency of implementing specific provisions. As discussed in Chapter 2 of the Final EA, modifications to the proposed rule will not increase or create any new environmental impacts and in areas where the frequency of implementing certain housekeeping measures is reduced, will lessen certain environmental impacts; therefore the Draft EA provides a conservative analysis of the impacts of PR 1420.2. As proposed, PR 1420.2 does not include requirements which were in previous versions of the rule which would result in the foreseeable closure of the commenter's facility. As noted above, the revisions to the rule since the June 12, 2015 have lessened the facilities' requirements and as such any new rule language will not cause the commenter's facility to close. SCAQMD staff has reviewed the modifications to PR 1420.2 and concluded that none of the modifications alter any conclusions reached in the Draft EA, nor provide new information of

substantial importance relative to the draft document. As a result, these minor revisions do not require recirculation of the document pursuant to CEQA Guidelines §15073.5.

Comment 1-4

2. The EA Should Be Revised to Evaluate the Current Proposed Rule.

As noted, the Draft EA analyzes the impacts of the June 12, 2015 version of the proposed rule. The proposed rule has been changed in important ways since that time. In order for the EA to achieve CEQA's objective of informing the public and the decision-makers about the environmental consequences of the proposed decision, the EA should be revised to include analysis of the latest version of the draft PR 1420.2. All edits made in the August 5, 2015 draft PR 1420.2 need to be reflected in an updated Project Description section of the EA. In addition, the environmental analysis needs to be updated to account for additional project components as listed in the August 5, 2015 draft proposed rule. EA revision should occur before either the EA or the rule is presented to the Governing Board for adoption. In addition, it is expected that changes in response to these and other public comments will disclose for the first time that the rule may result in significant adverse environmental impacts. Therefore, a revised draft EA should be recirculated for public comment before adoption of the EA or the rule.

Response to Comment 1-4

The Draft EA analyzed the June 12, 2015 version of PR 1420.2, which was the current version of the rule when the Draft EA was prepared. Since the June version of PR1420.2, SCAQMD staff has been working with stakeholders and has revised some of the provisions. The approach and core provisions requiring ambient monitoring of lead, the ambient lead concentration limits, lead point source requirements, requirements for operating within an enclosure, housekeeping and maintenance, and requirements for a compliance plan if certain thresholds are exceeded have not changed. In general, the revisions provided clarifications, provided other compliance options, or reduced the frequency of implementing specific provisions. As discussed in Chapter 2 of the Final EA, modifications to the proposed rule will not increase or create any new environmental impacts and in areas where the frequency of implementing certain housekeeping measures is reduced, will lessen certain environmental impacts; therefore the Draft EA provides a conservative analysis of the impacts of PR 1420.2. SCAQMD staff has reviewed the modifications to PR 1420.2 and concluded that none of the modifications alter any conclusions reached in the Draft EA, nor provide new information of substantial importance relative to the draft document. As a result, these minor revisions do not require recirculation of the document pursuant to CEQA Guidelines §15073.5.

Comment 1-5

3. The EA Omits Impacts from the Most Significant Undertaking Required by the Rule: Construction of Gerdau's Meltshop/Baghouse.

The District acknowledges that Gerdau's Rancho Cucamonga facility will not be able to meet many of the requirements of the rule without completion of its meltshop/baghouse project. Yet the EA omits all discussion of the impacts of constructing and operating this project. Page 2-7 of the EA explains that the environmental analysis for the rule includes only impacts from installation of a negative air pressure system and increased housekeeping.

Response to Comment 1-5

As described on Page 2-7 of the Draft EA, the commenter's meltshop/baghouse project was previously analyzed under CEQA by the City of Rancho Cucamonga as the lead agency (Project File No.: Environmental Assessment and Conditional Use Permit DRC2008-00512) and, as a CEQA responsible agency, the SCAQMD issued air permits to construct on July 24, 2014, which was prior to the PR 1420.2 rulemaking process. Since the construction of the meltshop/baghouse was previously analyzed under a separate CEQA document and the permits to construct have been issued, SCAQMD staff found the construction of the meltshop/baghouse to be reasonably certain with or without PR 1420.2; therefore, SCAQMD staff considered the meltshop/baghouse as part of the CEQA baseline and did not include the impacts associated with the construction of the meltshop/baghouse in the Draft EA. The Draft EA focused on the additional measures that the facility would have to implement in order to comply with PR 1420.2, which included the installation of a negative air pressure system and increased housekeeping.

Comment 1-6

The Draft EA dismisses impacts from the meltshop/baghouse project because the project was initially proposed and permits to construct issued before Rule 1420.2 was proposed. Even so, Rule 1420.2 will fundamentally change the regulatory landscape for the company. Completion of the project will essentially be mandated by the rule, as the only other means of compliance would be to cease operations. CEQA precedents confirm that the change in legal status of even an ongoing activity can cause environmental impacts that must be reviewed in an EIR. See, e.g., *Lighthouse Field Beach Rescue v. City of Santa Cruz* (2005) 131 Cal. App. 4th 1170. Adoption or amendment of a regulation in recognition of the status quo can nonetheless require CEQA review because a change in enforceability can result in changes in the physical environment. The environmental impacts of a change in regulatory status are even more closely tied to the proposed rule here, where the meltshop/baghouse project has not yet been constructed, and progress on the project has been suspended since the District announced its intention to adopt proposed Rule 1420.2.

Response to Comment 1-6

The District has not "dismissed" impacts from the meltshop/baghouse project. As stated in the Draft EA, those impacts were analyzed under CEQA during the permitting process for that project. (See EA, p. 2-7.) The *Lighthouse Field Beach* case referenced by the commenter is distinguishable because that case involved a City's failure to conduct any analysis whatsoever of the referenced project – future permission for off-leash dog use at a beach. A future change of legal status associated with off-leash use was important only because it had the potential to trigger environmental impacts that had never been considered. In particular, the Court found that the

granting of express permission for off-leash dog use might result in an increase of that use over and above any off-leash use already accounted for in the baseline. In contrast, any changes prompted by the adoption of Proposed Rule 1420.2 have been fully considered. More specifically, the meltshop/baghouse project and the associated construction impacts were expressly considered in an Initial Study and the Mitigated Negative Declaration (MND) prepared by the lead permitting agency, the City of Rancho Cucamonga. Further, SCAQMD already relied on this MND as a responsible agency when it approved the permits for the meltshop/baghouse project. Lastly, while Gerdau may have suspended the meltshop/baghouse project, it is SCAQMD staff's understanding that this suspension is temporary and that Gerdau intends to complete that project as originally planned provided PR 1420.2 is approved with the latest revisions.

Comment 1-7

Omission of the impacts of the meltshop/baghouse project also creates deficiencies in detailed analyses in the Draft EA. For example, the discussion of construction impacts (starting on pg.2-15 of the Draft EA) implies that construction of air pollution control devices for the compliance plan were assessed in the EA, but Gerdau's construction was omitted. Also, the EA states that construction impacts will not overlap between facilities: "Given the short duration of construction and the amount of time for facilities to comply with PR 1420.2, staff assumed that the construction phases at these different facilities would not overlap (pg. 2-17)." However, this assumption does not take into account the lengthy construction schedule for the Gerdau's meltshop/baghouse project. In Appendix B of the Draft EA, the construction phase of the air pollution control devices is listed as only 21 days. Thus, it is quite possible that, on a peak-day, construction of the meltshop/baghouse project will overlap with construction by other facilities subject to proposed Rule 1420.2. The schedule that Gerdau has previously submitted to the District shows that construction of the meltshop/baghouse project will take approximately two years, not a few days.

Similarly, the EA analyzes only 54 days of construction of a total enclosure, while Gerdau's construction will require additional months following completion of the new baghouse. The EA also severely underestimates the size of the assumed enclosure, analyzing only 31,250 square feet of enclosure compared to the 285,000 feet proposed for Gerdau's project.

Response to Comment 1-7

As described on Page 2-7 of the Draft EA, the commenter's meltshop/baghouse project was previously analyzed under CEQA by the City of Rancho Cucamonga as the lead agency (Project File No.: Environmental Assessment and Conditional Use Permit DRC2008-00512) and, as a CEQA responsible agency, the SCAQMD issued air permits to construct on July 24, 2014, which was prior to the PR 1420.2 rulemaking process. Since the construction of the meltshop/baghouse was previously analyzed under a separate CEQA document and the permits to construct have been issued, SCAQMD staff found the construction of the meltshop/baghouse to be reasonably certain with or without PR 1420.2; therefore, SCAQMD staff considered the meltshop/baghouse as part of the CEQA baseline and did not include the impacts associated with the construction of the meltshop/baghouse in the Draft EA.

As discussed in Section III.c) on Page 2-21 of the Draft EA, "criteria pollutant project-specific air quality impacts from implementing PR 1420.2 would not exceed air quality significance thresholds (Error! Reference source not found.), cumulative impacts are not expected to be significant for air quality. SCAQMD cumulative significance thresholds are the same as project-specific significance

thresholds. Therefore, potential adverse impacts from implementing the proposed rule would not be "cumulatively considerable" as defined by CEQA Guidelines §15064(h)(1) for air quality impacts. Per CEQA Guidelines §15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulative considerable." Therefore, it is not necessary to evaluate the overlapping emissions from the construction of Gerdau's meltshop/baghouse with the construction emissions for rule compliance.

The enclosures to be built were assumed to be for two other facilities (Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix B of the Draft EA) and Liberty Manufacturing (referred to as Facility L in Table B-10 in Appendix B of the Draft EA) and the size of the total enclosure was estimated based on a review of satellite photographs and locations of the processes to be enclosed. At the time of analysis, SCAQMD staff analyzed the rule requirements and found that these would be the only two facilities which would need to build a total enclosure solely to comply with PR 1420.2. Based on facility site visits performed by SCAQMD staff and the current rule requirements, SCAQMD staff now finds that only one facility (Atlas Pacific Corp) will require the construction of a total enclosure; therefore the construction analysis contained in the Draft EA is conservative.

Comment 1-8

If the District continues to exclude Gerdau's meltshop/baghouse project from the proposed Rule 1420.2 impact analysis, at a minimum the project must be included in the cumulative impacts analysis for both air quality and greenhouse gas impacts. Gerdau's meltshop/baghouse project will overlap with implementation of other construction required to comply with Rule 1420.2. As noted above, the cumulative impacts would be significant for air quality and require preparation of Environmental Impact Report (EIR).

Response to Comment 1-8

As discussed in Section III.c) on Page 2-21 of the Draft EA, "criteria pollutant project-specific air quality impacts from implementing PR 1420.2 would not exceed air quality significance thresholds (Error! Reference source not found.), cumulative impacts are not expected to be significant for air quality. SCAQMD cumulative significance thresholds are the same as project-specific significance thresholds. Therefore, potential adverse impacts from implementing the proposed rule would not be "cumulatively considerable" as defined by CEQA Guidelines §15064(h)(1) for air quality impacts. Per CEQA Guidelines §15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulative considerable." Because PR 1420.2 will not have any significant environmental impacts, cumulative or otherwise, an EIR is not necessary pursuant to CEQA Guidelines §15070.

Comment 1-9

4. The EA Must Evaluate Environmental Impacts Resulting from Economic Impacts.

CEQA Guidelines Section 15131 provides:

> Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes.

As explained above, the pre-June 12, 2015 versions of the rule contained provisions that would have been technologically or economically infeasible, and would have resulted in the closure of the Rancho Cucamonga facility. For example, it likely would be technologically infeasible to achieve the point source control efficiency required by Subsection (f) for small point sources with low concentrations of lead in the exhaust. Even if achievable, this requirement would have resulted in no measurable benefit in the community, at great expense. Similarly, pre-June versions of the rule would have required total enclosure of handling and storage of lead-containing materials, including slag. For Gerdau, this would have required construction of total enclosure for our lead handling and slag storage area, which currently spans approximately 12.4 acres. The cost of construction of such an enclosure would have been many millions of dollars, and it could not have been completed within the time frame specified. Testing has shown that our slag has a lead content within the range of naturally occurring soils in California, so this expense would not have produced a meaningful reduction in lead concentrations in the community.

The June 12, 2015 version of the rule likewise contained a number of provisions that were technologically, economically or legally infeasible. If adopted, these provisions would result in the closure of the Rancho Cucamonga plant. This consequence will be discussed in greater detail in our comments on the proposed rule and the Draft Socio-economic Report.

CEQA does not require the EA to discuss the direct economic impact to the company or the community from the closure. But facility closure would cause substantial environmental effects in the immediate vicinity, in the region, and beyond. These impacts must be discussed in the EA if any of the above-listed provisions is contained in the final rule as adopted.

The Rancho Cucamonga facility is a major employer and contributor to the local economy, and its closure could set in motion localized environmental impacts considered blight or urban decay. Vacancy of a major business or structure can trigger a downward spiral of other business closures and long-term vacancies. In CEQA, "urban decay" is generally defined as visible symptoms of physical deterioration that invite vandalism, loitering, and graffiti. Urban decay may include boarded doors and windows, deferred maintenance of structures, unauthorized use of buildings and parking lots, littering, dead or overgrown vegetation, and third party dumping of refuse. Thus,

Comment 1-9 (continued)

a deteriorating economic condition may cause deterioration of the physical conditions. These changes in the physical environment would be adverse environmental impacts that must be evaluated under CEQA.

The Draft EA would also need to evaluate the alternative scenario of removal of the facility to avoid blight. There would be substantial environmental impacts associated with dismantling the facility. These include engine emissions from demolition equipment and off-road and on-road motor vehicles, including vehicles removing waste from the site. It also would include fugitive emissions associated with demolition and vehicular travel on the site.

Many of our employees are highly skilled and highly compensated workers. But the Rancho Cucamonga facility is the last remaining steel mill in California; therefore, their skills may not match the requirements of other employers in the immediate vicinity. Closure of the plant may initiate an extended period during which the employees drive substantial additional miles looking for new employment. An increase in vehicle miles traveled translates into additional traffic and air quality impacts that would need to be quantified and evaluated in the Draft EA.

On the regional, statewide and global levels, closure of the Rancho Cucamonga facility would affect major market chains, including waste management, metals recycling, and the production of seismic rebar, with consequential environmental impacts. The Rancho Cucamonga facility receives scrap metal from sources throughout Southern California. (Approximately 90% comes from sources within 75 miles of the plant, 6% from sources between 75-125 miles, and the remainder from sources more than 125 miles, including small amounts from Arizona and Nevada.) The plant recycles the scrap metal to produce seismic rebar needed for construction in California. Loss of this facility would cause dislocation in construction, demolition, and metals recycling, manufacturing and supply.

These dislocations would directly cause environmental impacts. Scrap metal would have to be hauled longer distances. Because there is no other steel mini-mill in California, the scrap metal would have to be hauled out of state or out of the country. Given our knowledge of the metals industry, we believe the most likely outcome is that the scrap metal would be hauled by truck or train to the Ports of Los Angeles or Long Beach, transshipped onto marine vessels, and transported to Asia. There, it would be recycled into new steel products. This may or may not include seismic rebar, depending upon the market interests of the scrap purchaser or recycler. In any event, California's need for seismic rebar would need to be met by manufacturers outside California. Thus, the CEQA analysis would need to include the substantial traffic, transportation, air emissions and other impacts associated with transporting the scrap out of California, and transporting seismic rebar into the state. In addition, given California's groundbreaking regulation of greenhouse gas emissions, it is most likely that recycling the scrap metal and manufacturing the seismic rebar outside the state will produce much greater greenhouse gas emissions than baseline emissions for these same activities.

Our air quality expert, Joseph Hower of Ramboll Environ US Corporation, prepared a simple air quality analysis assuming that the work and the Rancho Cucamonga facility would shift to an existing facility in Arizona. Even under this scenario, air emissions impacts of closing the Rancho Cucamonga facility would be significant, as shown in Table 1 below:

Comment 1-9 (continued)

Table 1. Emissions Increase due to Transportation of Scrap Metal and Final Product in the event of Shutdown of the Gerdau TAMCO Facility

Parameter	Delivery Trucks to and from Nucor Plant in Arizona	Delivery Trucks to and from TAMCO	Increase from TAMCO Steel Mill Shutdown
Vehicle Miles Travelled (miles/day)[1]			
Total VMT	141,823	44,738	97,085
Criteria Air Pollutant Emissions (lb/day)[2]			
NO_x	1,934	610	1,324
CO	382.3	120.6	261.7
PM_{10}	60.6	19.1	41.5
$PM_{2.5}$	39.1	12.3	26.7
SO_x	5.2	1.6	3.5
VOC	75.2	23.7	51.5
Greenhouse Gas Emissions (MT/yr)[3]			
CO_2	85,215	26,881	58,334
CH_4	0.6	0.2	0.4
N_2O	2.9	0.9	2.0
Total GHG[4]	86,127	27,169	58,958

Notes:
[1] Project VMT were estimated by multiplying the 2013 VMT by the production rate scaling factor.
[2] Criteria pollutant emissions were estimated using the VMT in SCAB.
[3] Greenhouse gas emissions were estimated using the VMT in California.
[4] Calculated using the following global warming potentials from the Intergovernmental Panel on Climate Change Second Assessment Report. Available at http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html#table-2-14, Accessed August, 2014.

As noted above, the more likely outcome would be a shift in the scrap and manufacturing to Asia, resulting in air emissions far greater than those in Table 1.

Given the magnitude of all these impacts, a full environmental impact report would likely be required.

Response to Comment 1-9

The proposed rule has been revised since the release of the Draft EA based on SCAQMD staff's work with the affected facilities, including Gerdau. It is the SCAQMD staff's understanding based on various conversations with representatives from Gerdau that revisions to Proposed Rule 1420.2 have addressed all the facilities' concerns and that the facility no longer believes closure is reasonably foreseeable. SCAQMD staff has made a number of revisions to Proposed Rule 1420.2 to address concerns raised by Gerdau such as, but not limited to, extending the compliance date

for the total enclosure with negative air from July 2017 to April 2018, revising requirements for storing slag, reducing the inward face velocity for openings in total enclosures with negative air from 300 to 200 feet per minute, and allowing a 15 minute rolling average for demonstrating compliance with differential pressure monitoring for total enclosures with negative air. As proposed, PR 1420.2 does not impose requirements that would make facility closure reasonably foreseeable. Because the revised rule does not contain requirements that are technologically or economically infeasible and facility closure is not reasonably foreseeable, CEQA does not require the analysis of indirect environmental impacts associated with facility closure. Therefore, the direct and indirect impacts from facility closure do need to be analyzed in the Final EA.

Comment 1-10

5. The Draft Relies Excessively on Unsubstantiated Assumptions.

Many conclusions in the Draft EA are based on nothing more than staff impressions with no supporting information. There are several variations on unsupported conclusions:

- For some impact topics, where the rule allows two or more compliance options, the Draft EA analysis seems to assume only one of the options will be followed, and ignores the impacts associated with the other option(s). For example Subsection (h)(5) of the rule requires that all materials capable of generating any amount of fugitive lead dust, including slag, be stored in sealed, leak-proof containers, located within a total enclosure, or stabilized using dust suppressants. The Draft EA does not appear to evaluate any impacts (e.g., construction air emissions, conflict with land use zoning and other restrictions, stormwater runoff from additional impermeable surfaces) associated with fully enclosed storage of slag. If the analysis in the Draft EA is based on the assumption that all regulated companies will use the dust suppressant compliance option, this assumption should be clearly stated. Alternatively, the Draft EA should evaluate the impacts associated with construction and operation of full enclosure of slag.

Response to Comment 1-10

Where there were multiple options for compliance, SCAQMD staff analyzed the impacts associated with the option that each facility would likely choose, based on SCAQMD staff's understanding of the affected facilities. The Draft EA evaluated the most conservative assumptions that are foreseeable at the 13 existing affected facilities to ensure compliance with provisions of PR 1420.2 for all the environmental topics. For future facilities, PR 1420.2 will be adopted and the facilities will need to consider the various requirements for rule compliance and undergo CEQA review when applying for their air quality permits.

With respect to the portion of the comment referring to provision (h)(5) of PR 1420.2, that provision provides for an alternative to the construction of a total enclosure for storage of slag. In particular, it allows facilities to choose other options such as using sealed, leak-proof containers or stabilization using dust suppressants. This provision of Proposed Rule 1420.2 was modified/included to allow use of dust suppressants based on comments from Gerdau. In addition, Proposed Rule 1420.2 also allows use of dust suppressants during transport of slag, as requested by Gerdau. It is the SCAQMD staff's understanding that Gerdau intends to comply with paragraphs (h)(5) and (h)(6) using dust suppressants based on meetings and correspondence with representatives of Gerdau and SCAQMD staff. Since Gerdau is currently applying dust

suppressants to their slag piles, the environmental impacts associated with complying with this rule provision are included in the CEQA baseline. Furthermore, based on a review of operations at the other 12 affected facilities, none of the facilities would need to apply dust suppressants in order to comply with this provision in PR 1420.2. Therefore, there are no new environmental impacts associated with this rule provision which have not been evaluated in the Draft EA.

With respect to the enclosure option, the most conservative assumption for the slag handling and storage provision would be to assume that all facilities would construct total enclosures. However, based on SCAQMD staff review of the operations at the affected facilities, it was found that most of these facilities would be able to comply with this rule provision without the need for construction of a total enclosure. The Draft EA conservatively assumed that two facilities (Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix B of the Draft EA) and Liberty Manufacturing (referred to as Facility L in Table B-10 in Appendix B of the Draft EA)) would construct total enclosures. With the current revisions to PR 1420.2, only one facility (Atlas Pacific Corp) would need to construct a total enclosure to comply with PR 1420.2.

Comment 1-11

- For some impact topics, where there is a potential exemption from the rule, the analysis appears to assume that the exemption will apply to all companies and their activities that would otherwise be regulated, and the Draft EA does not discuss the impacts of any compliance actions whatsoever. For example, the Draft EA appears to assume that all slag handling will be exempt from the sealed container requirement in Subsection ___, because it does not consider construction or operational impacts associated with totally enclosed slag conveyance systems handling hot slag.

Response to Comment 1-11

Where there were potential exemptions, SCAQMD staff analyzed the impacts associated with the option that each facility would likely choose in order to comply with PR 1420.2, based on SCAQMD staff's understanding of the affected facilities. In the commenter's example, SCAQMD staff did not assume that all slag handling would be exempt, but that most of the facilities already comply with the rule provisions based on its understanding of each facility's operations; therefore, their compliance activities would be considered to be in the CEQA baseline and no environmental impacts would result from PR 1420.2. Additionally, the Draft EA conservatively assumed that two facilities (Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix B of the Draft EA) and Liberty Manufacturing (referred to as Facility L in Table B-10 in Appendix B of the Draft EA)) would construct total enclosures in order to comply with this provision of PR 1420.1. With the current revisions to PR 1420.2, only one facility (Atlas Pacific Corp) would need to construct a total enclosure to comply with PR 1420.2. Therefore, the Draft EA evaluated the most conservative assumptions that are foreseeable at the 13 existing affected facilities to ensure compliance with provisions of PR 1420.2. For future facilities, PR 1420.2 will be adopted and the facilities will need to consider the various requirements for rule compliance and undergo CEQA review when applying for their air quality permits.

Comment 1-12

- Some assumptions are articulated but the basis for the assumptions are not documented, or the assumptions are not supported with references to relevant data or technical references demonstrating the reasonableness of the assumptions. The Draft EA makes broad and unsubstantiated assumptions regarding zoning, land use, and noise ordinances, among others. In many cases, it would be fairly simple to obtain accurate information or data rather than making broad, unsupported assumptions, yet the Draft EA makes no effort to do so. For example, the discussion of Questions XII. d) and XVII. c) in the Checklist state that it is not known whether the regulated facilities are in an airport land use plan or within two miles of a public airport. The District expects the rule to affect thirteen known facilities at thirteen known locations. (DEA, p. 1.6). Given the known locations of the facilities and of the region's airports, it would be a straightforward task to locate this information. Similarly, it would be a simple matter to determine how the requirements of the rule would be treated under local zoning, land use and other ordinances regulating landscaping, aesthetics, building heights, noise and other parameters in the relevant cities and counties. The Draft EA fails to do so.

Given the very small number of sources regulated by the rule, the Draft EA's failure to provide meaningful detail is contrary to CEQA's requirements for public disclosure and opportunity to comment.

Response to Comment 1-12

Respecting the commenter's concern about aesthetic impacts, the Draft EA already considers the potential impact from minor facility modifications that could impact aesthetics due to the rule (these modifications do not include the meltshop/baghouse project at Gerdau as this project has previously been approved and is part of the CEQA baseline). In particular, page 2-11 of the Draft EA states "Since PR 1420.2 affects operations on-site at existing facilities in industrial areas, any new construction at these facilities is expected to be similar to existing buildings or other structures".

Respecting potential airport impacts, on Page 2-35 of the Draft EA, the analysis states that "Two of the facilities are located within two miles of a public airport." Senior Aerospace is located approximately 0.6 miles east of the Burbank Airport but is not located within the airport influence area. Teledyne Battery Products is located approximately 1.7 miles southeast of the San Bernardino International Airport but is not within the airport safety review area. At the commenter's request, this clarifying information has been updated in Section XII.d) on Page 2-43 and in Section XVII.c) on Page 2-51 of the Final EA, but does not provide new information or affect the analysis and significance determination of the Draft EA.

Regarding potential land use and zoning impacts, the Draft EA already considers the potential impact from minor facility modifications that could impact land use due to the rule (these modifications do not include the meltshop/baghouse project at Gerdau as this project has previously been approved and is part of the CEQA baseline). In particular, the Draft EA already stated on Page 2-41 that the potential facility modifications will not divide an established community because any facility modifications will occur onsite or will be so minor that they will not affect any land use plans, policies, or regulations, including any zoning or building height

provisions. For example, the likely construction of an enclosure at Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix B of the Draft EA) would be consistent with the land use policies, regulations, building height requirements, and zoning of the Agua Mansa Specific Plan and General Plan for the city of Rialto.

Regarding potential noise impacts, the Draft EA already considers the potential impact from minor facility modifications that could impact noise due to the rule (these modifications do not include the meltshop/baghouse project at Gerdau as this project has previously been approved and is part of the CEQA baseline). As stated on Page 2-43 of the Draft EA, construction activities are anticipated to have the potential for the most noise impacts, but these would be indistinguishable from surrounding background noise found in the industrial areas where all facilities making modifications pursuant to PR 1420.2 are located, and are thus less than significant.

Comment 1-13

Page	Comment
1-2	**Introduction**: The text states that the rule will reduce "the further accumulation of lead dust in and around these" metal melting facilities. The Draft EA does not provide any evidence that accumulation has occurred or is occurring in and around these facilities. Therefore, the Draft EA should not take credit for such reductions in evaluating the effects of the rule.

Response to Comment 1-13

In the prior statement in the Draft EA, the purpose of Rule 1420.2 is "to reduce lead emissions from metal melting facilities by limiting the ambient lead concentration and requiring housekeeping and maintenance provisions to reduce the amount of lead emitted into the air from point and fugitive sources". Through atmospheric deposition, lead dust generated at facilities will necessarily deposit on the soil in the vicinity of the facility and will accumulate over time. Lead is an element which does not decompose and SCAQMD monitoring data has shown elevated levels of lead at source-oriented monitors placed at Trojan Battery and Gerdau, which substantiates the statement that lead accumulation on surfaces is expected in the vicinity of these lead sources.

Comment 1-14

1-2	**Project Location:** The text following this heading describes the entire South Coast Air Basin and portions of the Salton Sea and Mojave Desert Air Basins. The inference is that this entire area is the Project Location. This is misleading in that the rule affects specifically 13 facilities that have been identified by the SCAQMD. As summarized in EPA's Integrated Science Assessment (ISA; see 78 Fed.Reg. 38318, June 26, 2013), "Since the phase-out of Pb in on-road gasoline, Pb is widely recognized as a source-oriented air pollutant. Variability in air Pb concentrations is highest in areas including a Pb source, with high concentrations downwind of the sources and low concentration at areas far from sources." (80 Fed.Reg. 278, 283, January 5, 2015.) This means that lead emission reductions from the rule will have an effect near the source but there will be no measurable change in the SCAB as whole.

Response to Comment 1-14

The project location section of the Draft EA describes SCAQMD's jurisdiction. A description of the 13 facilities affected by PR 1420.2 was included on Page 1-6 of the Draft EA. This proposed rule would also affect any potential new facility that meets the proposed rule's applicability provisions. As such, the project location section appropriately described the entire SCAQMD jurisdiction because a new facility could choose to locate its operations anywhere within the entire jurisdiction of SCAQMD.

Comment 1-15

> Presenting the project area as the entire SCAB and portions of two more basins causes deficiencies in the EA. The Draft EA fails to present relevant information about the existing environment in the vicinity of the 13 regulated facilities. The SCAQMD's network of ten non-source oriented monitors shows ambient concentrations in 2007 to 2013 "well below the 2008 NAAQS for lead of 0.15 $\mu g/m^3$," ranging from 0.01 to 0.03 $\mu g/m^3$. (Preliminary Draft Staff Report dated April 2015, p. 1-7.) Information is presented in the April 2015 Staff Report regarding fence-line monitoring for the Gerdau/Tamco facility, but even for this facility there is no information presented in the Staff Report or the Draft EA about ambient lead levels in the surrounding community. Information is presented in the Draft Staff Report about Trojan Battery, but it the text does not disclose whether the measurements are taken at the fenceline or in the community. Without relevant information regarding the environmental setting, it is impossible to accurately assess the effects of the rule.

Response to Comment 1-15

A more robust discussion of the lead monitoring data can be found in the Staff Report for PR 1420.2. The analysis in the Draft EA did not rely on the monitoring data in the environmental impact analysis or CEQA significance determinations and the Draft EA was not deficient in this regard. However, at the request of the commenter, additional information on the recent monitoring data has been included beginning on Page 1-6 in the Final EA.

Comment 1-16

1-4	**Health Effects of Lead:** The Draft EA references and quotes a few selective phrases from U.S. EPA documents to create the misleading impression that there is substantial doubt and uncertainty regarding a health protective lead exposure level to ensure young children do not experience nervous system effects including cognitive effects. Selective quotes suggest that the federal NAAQS of 0.15 $\mu g/m^3$ is not health protective for young children. In fact, EPA's January 5, 2015 Federal Register Notice clearly explains that the agency proposes to retain the 0.15 $\mu g/m^3$ primary NAAQS because it will protect the public welfare from any known or anticipated adverse effects associated with the presence of lead in the ambient air, including an adequate margin of safety to address uncertainties and a reasonable degree of protection against hazards that research has not yet even identified. (80 Fed.Reg. 278 *et seq*.) EPA also stated that when a standard of a particular level is just met at a monitor sited to record the highest source-oriented concentration in an area, the large majority of children in the surrounding area would likely experience exposures to concentrations well below that level. (80 Fed.Reg at 287.) The misleading presentation of EPA's research and conclusions taints the Draft EA's discussion of the environmental and regulatory setting, as well as the policy decisions reflected in the rule. The EPA's work should be presented more fully and accurately in the EA.

Response to Comment 1-16

A more robust discussion of the health effects of lead can be found in the Staff Report for PR 1420.2. The analysis in the Draft EA did not rely on the subject information in the environmental impact analysis or CEQA significance determinations. However, at the request of the commenter, additional information about the health effects of lead has been added on Page 1-4 of the Final EA.

Comment 1-17

1-6	**Table 1-1:** The SIC codes presented in this table do not correspond to the NAIC codes used on pages 1-8 to 1-16, making it difficult for the reader to follow the descriptions of the regulated companies and the Project Description. References should be standardized. Both Table 1-1 and the discussion on pages 1-8 to 1-16 would be improved by identifying the facilities by name. Naming the facilities would also aid the reader in reviewing assumptions regarding construction and other actions required for compliance, to confirm the accuracy of emissions estimates and other impact analyses.

Response to Comment 1-17

Table 1-1 lists the facilities by their SIC codes for informational purposes. In order to be consistent with the descriptions of facilities starting on Page 1-13 of the Final EA, Table 1-1 has been replaced with a table showing the corresponding NAICS codes. Furthermore, the names of facilities have been added in the various discussion sections of the Final EA, when the identification of the specific facility is relevant to the discussion and analysis of environmental impacts.

Comment 1-18

1-10	**Process Emission Points and Controls:** Gerdau strongly disagrees that transfer, handling and storage of slag can be a source of fugitive lead dust emissions. Gerdau has submitted test data to the District showing that the lead content of its slag is within the range of lead concentration present in native soils in California. The EA does not present any data supporting its statement that slag is a source of lead emissions. As such, the EA misrepresents the environmental setting for the project. This in turn results in the EA attributing emissions benefits to implementation of the rule.

Response to Comment 1-18

The transfer, handling, and storage of slag is one of the processes that occurs at the affected facilities. While the commenter has submitted source test information regarding the lead content of the slag at its facility, those results might not be indicative of the slag handled at other facilities. Based on visual inspection at the various affected facilities, SCAQMD staff identified the transfer, handling, and storage of uncovered slag as a potential source of fugitive emissions and proposed provisions in PR 1420.2 to control those emissions. The SCAQMD staff reviewed the data regarding samples taken from Gerdau's slag. Based on review of the data there is lead in the slag. As Gerdau is aware, provisions of Proposed Rule 1420.2 were modified for the storage and transport of slag based on information provided from Gerdau. The proposed rule allows the use of dust suppressants or total enclosures and other closed transportation systems for the storage and transport of slag. The analysis in the Draft EA did not quantify the reductions from the transfer, handling, and storage of slag and did not take credit for those reductions.

Comment 1-19

1-17	**Applicability:** The EA states that data from SCAQMD monitors at two metal mantling facilities have shown the potential for this source category to exceed the NAAQS lead limit of 0.15 $\mu g/m^3$ averaged over a rolling 3 month period. This statement does not accurately reflect the data. At least with respect to data gathered at TAMCO/Gerdau, monitoring occurred on the grounds of the facilities, near the fenceline. Monitoring did not occur in the ambient air as defined for purposes of compliance with the federal NAAQS. By overstating data regarding the lead concentrations in the existing setting, the EA in turn attributes environmental benefits to implementation of the proposed rule. In this regard, it also should be noted that the definition of ambient air in the proposed rule does not conform to federal definitions. This should be fully explained in the EA so that the public is not misled by quotes from federal documents taken out of context.

Response to Comment 1-19

A more robust discussion of the lead monitoring data can be found in the Staff Report for PR 1420.2. The analysis in the Draft EA did not rely on the monitoring data in the environmental impact analysis or CEQA significance determinations. However, at the request of the commenter, additional information on the recent monitoring data has been included beginning on Page 1-6 in the Final EA.

For the purposes of this rule, ambient air will refer to any outdoor air which is similar to the California Air Resources Board definition rather than the federal definition. It should also be noted that the proposed rule and the 2008 NAAQS for lead requires compliance with ambient air lead

standards based on facility emissions that contribute to exceedances, with facility emissions not having to be the sole cause.

Comment 1-20

2-6	**Discussion and Evaluation of Environmental Impacts:** Paragraph 3 states that the CEQA analysis assumes a worst case scenario where facilities are expected to do further actions to meet the core requirements of the proposed rule, or additional controls as part of a compliance plan. However, as noted in Part I of these comments, the analysis omits all impacts associated with Gerdau's construction and operation of its meltshop/baghouse project. In addition, the analysis omits impacts associated with the potential closure of the Gerdau facility if the rule as analyzed in the EA were to be promulgated. As such, the EA fails to evaluate all impacts associated with the proposed rule.

Response to Comment 1-20

As described on Page 2-7 of the Draft EA, the commenter's meltshop/baghouse project was previously analyzed under CEQA by the City of Rancho Cucamonga as the lead agency (Project File No.: Environmental Assessment and Conditional Use Permit DRC2008-00512) and, as a CEQA responsible agency, the SCAQMD issued air permits to construct on July 24, 2014, which was prior to the PR 1420.2 rulemaking process. Since the construction of the meltshop/baghouse was previously analyzed under a separate CEQA document and the permits to construct have been issued, SCAQMD staff found the construction of the meltshop/baghouse to be reasonably certain with or without PR 1420.2; therefore, SCAQMD staff considered the meltshop/baghouse as part of the CEQA baseline and did not include the impacts associated with the construction of the meltshop/baghouse in the Draft EA. The Draft EA focused on the additional measures that the facility would have to implement in order to comply with PR 1420.2, which included the installation of a negative air pressure system and increased housekeeping.

The rule has been revised since the release of the Draft EA based on SCAQMD's staff's work with the affected facilities, including Gerdau. It is the SCAQMD staff's understanding based on various conversations with representatives from Gerdau that revisions to Proposed Rule 1420.2 have addressed all the facilities' concerns and that the facility no longer believes closure is reasonably foreseeable. SCAQMD staff has made a number of revisions to Proposed Rule 1420.2 to address concerns raised by Gerdau such as, but not limited to, extending the compliance date for the total enclosure with negative air from July 2017 to April 2018, revising requirements for storing slag, reducing the inward face velocity for openings in total enclosures with negative air from 300 to 200 feet per minute, and allowing a 15 minute rolling average for demonstrating compliance with differential pressure monitoring for total enclosures with negative air. As proposed, PR 1420.2 does not impose requirements that would make facility closure reasonably foreseeable. Because the revised rule does not contain requirements that are technologically or economically infeasible and facility closure is not reasonably foreseeable, CEQA does not require the analysis of indirect environmental impacts associated with facility closure. Therefore, the direct and indirect impacts from facility closure do need to be analyzed in the Final EA.

Comment 1-21

2-7	**Discussion and Evaluation of Environmental Impacts:** The text at the top of the page suggests that most facilities are expected to meet point source requirements in the rule. Table 2-3 on page 2-16. In fact, the EA assumes that ***no*** construction of point source controls will be required, and so attributes no impacts to this portion of the rule. The EA should be more explicit in stating the assumptions underlying its analysis and conclusions. The EA also should explain the basis for assuming that no additional point source controls will be required. For example, the EA might explain that point sources not already equipped with air pollution control devices are expected to be exempt through other provisions of the rule.

Response to Comment 1-21

A provision was added to Proposed Rule 1420.2 that allows low emitting lead sources with an inlet or uncontrolled lead emission rate of 0.005 lb/hour or less to be exempt from demonstrating a control efficiency of 99 percent as required in subdivision (f), provided the facility conducts a source test every 24 months. The Draft EA provided specific assumptions used for lead point source controls in Table 2-1, stating that "all 13 facilities currently have point source emission controls" and that five facilities would likely need to replace the filter media in their existing control devices.

Comment 1-22

	In addition, the proposed rule contains many requirements that are not addressed in the assumptions presented on pages 2-6 to 2-7. For example, the explanation of assumptions does not address the requirements for total enclosure of materials storage areas, including slag storage. If the EA is based on the assumption that no construction or operation is required because all regulated facilities will use dust suppressants on slag piles and handling of hot slag will be exempt, this must be stated clearly in the EA.

Response to Comment 1-22

This comment is referring to provision (h)(5) of PR 1420.2, which does not require the construction of a total enclosure for storage of slag, but allows facilities to choose other options such as using sealed, leak-proof containers or stabilization using dust suppressants. PR 1420.2 was modified to allow use of dust suppressants based on comments from Gerdau. In addition, PR 1420.2 also allows use of dust suppressants during transport of slag, as requested by Gerdau. It is the SCAQMD staff's understanding that Gerdau intends to comply with paragraphs (h)(5) and (h)(6) using dust suppressants based on meetings and correspondence with representatives of Gerdau and SCAQMD staff. Currently, Gerdau is applying dust suppressants to their slag piles; therefore, the environmental impacts associated with complying with this rule provision are included in the CEQA baseline. Furthermore, based on a review of operations at the other 12 affected facilities, none of the facilities would need to apply dust suppressants in order to comply with this provision in PR 1420.2. Therefore, there are no new environmental impacts associated with this rule provision which have not been evaluated in the Draft EA.

Based on SCAQMD staff review of the operations at the affected facilities, it was found that most of these facilities would be able to comply with the rule provision related to materials storage areas, including slag storage, without the need for construction of a total enclosure. The Draft EA conservatively assumed that two facilities (Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix B of the Draft EA) and Liberty Manufacturing (referred to as Facility L in Table B-10 in Appendix B of the Draft EA)) would construct total enclosures. With the current revisions to PR 1420.2, only one facility (Atlas Pacific Corp) would need to construct a total enclosure to comply with PR 1420.2. Therefore, the Draft EA evaluated the most conservative assumptions that are foreseeable at the 13 existing affected facilities to ensure compliance with provisions of PR 1420.2 for all the environmental topics. For future facilities, PR 1420.2 will be adopted and the facilities will need to consider the various requirements for rule compliance and undergo CEQA review when applying for their air quality permits.

Comment 1-23

2-8/9	**Table 2-1:** The table does not list Transportation as an *Environmental Topic to be Analyzed* for Total Enclosures or Compliance Plan. Because Total Enclosures will need to be constructed for two facilities and the Compliance Plan requirement of the PR 1420.2 is expected to result in construction of new air pollution control devices, construction activities will involve additional vehicle trips to the applicable site. This should be captured in the transportation analysis and listed in the *Environmental Topic to be Analyzed* column of Table 2-1.

Response to Comment 1-23

Transportation impacts associated with construction of the enclosures at the two facilities and compliance plan requirements were analyzed in the Draft EA. In response to this comment, "Transportation" will be added to Table 2-1 for "Total Enclosures" and "Compliance Plan" in the Final EA.

Comment 1-24

2-10 to 2-11	**Aesthetics:** The Draft EA dismisses the topic of aesthetic impacts with the observation that the 13 regulated facilities are located in urbanized industrial or commercial areas. This is not sufficient under CEQA. Aesthetic issues can be of particular interest to neighbors in highly urbanized settings. In addition, requirements for total enclosure of slag handling and storage could result in the construction of new conveyor systems and tall new walls that would be visible from a distance. There are only 13 regulated facilities. The EA should more specifically describe the setting of the 13 facilities, and provide a meaningful, supported explanation for the conclusion that there will be no significant aesthetic impacts.

Response to Comment 1-24

Based on correspondences and meetings with Gerdau representatives, it is SCAQMD staff's understanding that Gerdau intends to use dust suppressants in lieu of constructing any type of structures to comply with transport and storage of slag. As previously discussed in Response to Comment 1-10, the proposed rule added the option to use dust suppressants based on comments from Gerdau and information regarding the lead content in their slag. The Draft EA conservatively assumed that two facilities (Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix

B of the Draft EA) and Liberty Manufacturing (referred to as Facility L in Table B-10 in Appendix B of the Draft EA)) would construct total enclosures. With the current revisions to PR 1420.2, only one facility (Atlas Pacific Corp) would need to construct a total enclosure to comply with PR 1420.2. Atlas Pacific Corp is located in an industrial area in the city of Rialto in San Bernardino County and is surrounded by a tilt-up concrete warehouse building to the north, a junk yard to the west, and vacant land to the east, west, and south. The enclosure to be built will be consistent with the existing industrial buildings in the vicinity of the facility and will have to comply with the building height restrictions within the city of Rialto's Agua Mansa Specific Plan and the General Plan for the city of Rialto. Furthermore, the San Bernardino Mountains are to the north of the facility and there are no residences to the south of the facility whose scenic views could be blocked by the structures.

Comment 1-25

2-13 to 2-23	**Air Quality:** See Part 1, General Comments. The air quality analysis fails to consider the construction and operational emissions associated with the Gerdau meltshop/baghouse project.

Response to Comment 1-25

As described on Page 2-7 of the Draft EA, the commenter's meltshop/baghouse project was previously analyzed under CEQA by the City of Rancho Cucamonga as the lead agency (Project File No.: Environmental Assessment and Conditional Use Permit DRC2008-00512) and, as a CEQA responsible agency, the SCAQMD issued air permits to construct on July 24, 2014, which was prior to the PR 1420.2 rulemaking process. Since the construction of the meltshop/baghouse was previously analyzed under a separate CEQA document and the permits to construct have been issued, SCAQMD staff found the construction of the meltshop/baghouse to be reasonably certain with or without PR 1420.2; therefore, SCAQMD staff considered the meltshop/baghouse as part of the CEQA baseline and did not include the impacts associated with the construction of the meltshop/baghouse in the Draft EA. The Draft EA focused on the additional measures that the facility would have to implement in order to comply with PR 1420.2, which included the installation of a negative air pressure system and increased housekeeping.

Comment 1-26

2-14	**III. a):** The Draft EA concludes that there would be no adverse impact related to inconsistency with an air quality plan because the proposed rule is consistent with the plan. This reasoning improperly equates the Project and Project Objectives with the Project impacts. The Draft EA must discuss whether the emissions associated with the construction and operational actions needed to achieve compliance will conflict with an approved air quality plan.

Response to Comment 1-26

The Draft EA properly evaluated whether the project itself would conflict with or obstruct any applicable air quality plan as required in the checklist on page 2-13 of the Draft EA. In response to the comment, a discussion has been added regarding the project's impacts contained in Section III.b) and f) of the Draft EA (Page 2-15). Specifically, construction and operational emissions associated with PR 1420.2 will not exceed the SCAQMD's CEQA significance thresholds,

therefore PR 1420.2 will not conflict with an approved air quality plan and this impact remains less than significant.

Comment 1-27

2-17	The text at the top of the page presents very limited actions required to comply with the requirements of the rule. This picture is not accurate with respect to construction of total enclosure of slag handling and storage. If the EA is premised on the assumption that no facility will need to construct enclosed conveyors and storage enclosures, this assumption should be disclosed and explained. In the same vein, there is no support for the assumption in footnote 4 that no grading would be required, particularly if Gerdau is required to construct enclosed slag conveyors and total enclosures for slag storage. The last paragraph states that staff assumed construction periods for the various facilities will not overlap. See Part 1, General Comments, with respect to the long construction schedule required to complete the Gerdau meltshop/baghouse.

Response to Comment 1-27

Page 2-6 of the Draft EA includes a section titled "Discussion and Evaluation of Environmental Impacts", which goes into detail the assumptions used in the CEQA analysis based on the actions facilities would need to take to ensure compliance with PR 1420.2. This information is repeated on Page 2-16 of the Draft EA and provides a complete view of the actions needed to comply with the rule. Further, as described on Page 2-7 of the Draft EA, the commenter's meltshop/baghouse project was previously analyzed under CEQA by the City of Rancho Cucamonga as the lead agency (Project File No.: Environmental Assessment and Conditional Use Permit DRC2008-00512) and, as a CEQA responsible agency, the SCAQMD issued air permits to construct on July 24, 2014, which was prior to the PR 1420.2 rulemaking process. Since the construction of the meltshop/baghouse was previously analyzed under a separate CEQA document and the permits to construct have been issued, SCAQMD staff found the construction of the meltshop/baghouse to be reasonably certain with or without PR 1420.2; therefore, SCAQMD staff considered the meltshop/baghouse as part of the CEQA baseline and did not include the impacts associated with the construction of the meltshop/baghouse in the Draft EA. The Draft EA focused on the additional measures that the facility would have to implement in order to comply with PR 1420.2, which included the installation of a negative air pressure system and increased housekeeping. Since Gerdau would only need to install a negative air pressure system, no grading would be required for that action and it was not analyzed in the Draft EA.

As discussed in Section III.c) on Page 2-21 of the Draft EA, "criteria pollutant project-specific air quality impacts from implementing PR 1420.2 would not exceed air quality significance thresholds (Error! Reference source not found.), cumulative impacts are not expected to be significant for air quality. SCAQMD cumulative significance thresholds are the same as project-specific significance thresholds. Therefore, potential adverse impacts from implementing the proposed rule would not be "cumulatively considerable" as defined by CEQA Guidelines §15064(h)(1) for air quality impacts. Per CEQA Guidelines §15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulative considerable." Therefore, it is not necessary to evaluate the

overlapping emissions from the construction of Gerdau's meltshop/baghouse with the construction emissions for rule compliance.

Comment 1-28

2-19	**Operational Impacts:** The EA assumes that a round trip distance of 200 miles to transport hazardous waste. The EA does not contain sufficient information regarding the location of the regulated facilities or the waste disposal sites to substantiate this assumption.

Response to Comment 1-28

The Draft EA assumed a worst case average distance of affected facilities sending operational hazardous waste to the Allied Waste La Paz County Landfill in Arizona (which is based on a 200 mile round trip from the I-10 district border. Most of the facilities send their hazardous waste to a local smelter or to the US Ecology Inc. in Beatty, Nevada (which is about 126 miles round trip from the SCAQMD border).

Comment 1-29

2-21	**III. d) Toxic Air Contaminants:** See comments above regarding construction schedule assumptions. Twenty-one days is insufficient time to construct the Gerdau meltshop/baghouse. It also is insufficient time to construct enclosed conveyors for slag handling, total enclosures for slag storage, site paving the large Gerdau site, and other requirements of the rule. If the EA is premised on the assumption that compliance with these standards will not be required due to use of other compliance options or exemptions, the assumptions should be disclosed and explained.

Response to Comment 1-29

PR 1420.2 was modified to allow use of dust suppressants based on comments from Gerdau, and Gerdau will not need to construct enclosures as a result of PR 1420.2. In addition, PR 1420.2 also allows use of dust suppressants during transport of slag, as requested by Gerdau. It is the SCAQMD staff's understanding that Gerdau intends to comply with paragraphs (h)(5) and (h)(6) using dust suppressants based on meetings and correspondence with representatives of Gerdau and SCAQMD staff. Currently, Gerdau is applying dust suppressants to their slag piles; therefore, the environmental impacts associated with complying with this rule provision are included in the CEQA baseline. Furthermore, based on a review of operations at the other 12 affected facilities, none of the facilities would need to apply dust suppressants in order to comply with this provision in PR 1420.2. Therefore, there are no new environmental impacts associated with this rule provision which have not been evaluated in the Draft EA.

The SCAQMD's CEQA thresholds of significance are based on a maximum daily mass emission basis. By assuming a shorter construction duration, SCAQMD staff also assumed more equipment would be needed on a daily basis, which would provide a conservative analysis of the maximum daily emissions. It should be noted that Proposed Rule 1420.2 was modified to extend the time to install the total enclosure with negative air from July 2017 to April 2018 in response to comments from Gerdau.

Comment 1-30

2-22	**Greenhouse Gas Impacts:** See comments above. In the same manner that the EA underestimates construction and operational emission of criteria pollutants, so too it underestimates emissions of greenhouse gas emissions. In addition, as described in Part I, General Comments, closure of the Rancho Cucamonga facility would cause major disruptions and shifts in scrap metal hauling and recycling and the manufacture of seismic rebar for the California market. These shifts would result in a substantial increase in greenhouse gas emissions that must be evaluated in the EA, if the proposed rule retains any provisions that would result in the closure of the Rancho Cucamonga facility.

Response to Comment 1-30

The greenhouse gas emissions were estimated using the same assumptions used in the air quality analysis. As described in responses to comments above, since the air quality emissions were not underestimated, neither were the greenhouse gas emissions.

The rule has been revised since the release of the Draft EA based on SCAQMD's staff's work with the affected facilities, including Gerdau. It is the SCAQMD staff's understanding based on various conversations with representatives from Gerdau that revisions to Proposed Rule 1420.2 have addressed all the facilities' concerns and that the facility no longer believes closure is reasonably foreseeable. SCAQMD staff has made a number of revisions to Proposed Rule 1420.2 to address concerns raised by Gerdau such as, but not limited to, extending the compliance date for the total enclosure with negative air from July 2017 to April 2018, revising requirements for storing slag, reducing the inward face velocity for openings in total enclosures with negative air from 300 to 200 feet per minute, and allowing a 15 minute rolling average for demonstrating compliance with differential pressure monitoring for total enclosures with negative air. As proposed, PR 1420.2 does not impose requirements that would make facility closure reasonably foreseeable. Because the revised rule does not contain requirements that are technologically or economically infeasible and facility closure is not reasonably foreseeable, CEQA does not require the analysis of indirect environmental impacts associated with facility closure. Therefore, the direct and indirect impacts from facility closure do need to be analyzed in the Final EA.

Comment 1-31

2-23 to 2-25	**Biological Impacts:** The EA dismisses impacts to biological resources because the regulated facilities are within urban areas. This is not sufficient analysis under CEQA. The June 2015 version of the rule evaluated in the EA would require elimination of nearly all landscaped areas at the Gerdau plant. The same may be true of other regulated facilities. Within an urban environment, even non-native vegetation can be important in connecting habitats of sensitive species. Moreover, CEQA requires analysis of impacts to migratory birds regardless whether a specific species is listed as threatened or endangered.

Response to Comment 1-31

Although PR 1420.2 contains certain landscape limits, SCAQMD staff is unaware of any evidence suggesting that landscaped areas at the affected facilities play any role with respect to any species or habitats, including migratory birds and the commenter has not provided any evidence to the

contrary. Most of the facilities are located within urban, industrialized areas and are either completely paved or do not contain landscaped areas which are important in connecting the habitats of sensitive species. At the request of US Battery Manufacturing Company, which has landscaped areas along the property boundary, PR 1420.2 has been updated to allow a greater area of landscaping square footage (from 100 ft^2 to 500 ft^2). Although this facility has the largest landscaped area of any of the affected facilities, this facility is located within an industrial area, surrounded by a railroad track to the south and other industrial concrete buildings. This facility does not provide habitat for sensitive species and there are no additional biological impacts which were not envisioned in the Draft EA.

Comment 1-32

2-24	**Biological Impacts:** The EA suggests that the proposed rule would have a beneficial impact "more closely in line with protecting biological resources" because it is designed to reduce lead emissions. Implicit in this claimed environmental benefit is the assumption that current levels of lead in the environment are harming biological resources. The EA must provide support for this assumption or delete the unsubstantiated claim of environmental benefit to biological resources.

Response to Comment 1-32

The purpose of Rule 1420.2 is "to reduce lead emissions from metal melting facilities by limiting the ambient lead concentration and requiring housekeeping and maintenance provisions to reduce the amount of lead emitted into the air from point and fugitive sources". Through atmospheric deposition, lead dust generated at facilities will necessarily deposit on the soil in the vicinity of the facility and will accumulate over time. Lead is an element which does not decompose and SCAQMD monitoring data has shown elevated levels of lead at source-oriented monitors placed at Trojan Battery and Gerdau, which substantiates the statement that lead accumulation on surfaces is expected in the vicinity of these lead sources.

Based on the elevated levels of lead detected by the ambient air monitors placed in the vicinity of Trojan Battery and Gerdau, and the atmospheric deposition of lead dust in the vicinity of affected facilities, it is reasonable to assume that by limiting the source of lead emissions, PR 1420.2 will reduce the amount of lead which is introduced into the environment surrounding the affected facilities.

Comment 1-33

2-26	**Cultural Resources Discussion, V. a):** The EA states that none of the facilities include any existing structures that would be considered historically significant, that have contributed to California history, or that pose high artistic values. The EA provides no substantiation for this conclusion in the form of cultural resources surveys or even site visits by trained historians or architects.

Response to Comment 1-33

SCAQMD staff is unaware of any evidence that the facilities include historically significant structures and the commenter has not provided any evidence or made any claims to the contrary. As stated on Page 2-26 of the Draft EA, "PR 1420.2 would require the placement of ambient air quality monitors, construction of total enclosures, and implementation of housekeeping and

maintenance activity requirements, such as wet washing, vacuuming, and stabilizing dirt areas. Ambient air monitors may be placed off-site in the surrounding industrial area." None of the provisions in PR 1420.2 would affect existing structures and the commenter has not provided any evidence to the contrary. The enclosure to be constructed at Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix B of the Draft EA) would be a new enclosure which would not affect ant of the existing structures on-site. Facilities which would require the use of different filter media for their point source controls would not result in changes to the existing structures or control equipment.

Comment 1-34

2-27 to 2-31	**Energy:** The Draft EA fails to quantify and evaluate the following energy (gas, electricity, gasoline and diesel) requirements of compliance with the proposed rule: construction and operation of enclosed slag conveyors; construction of enclosed slag storage; construction and operation of the Gerdau meltshop/baghouse, including three new 1,500 hp exhaust fans; 1-in-3 day air monitoring.

Response to Comment 1-34

As described on Page 2-7 of the Draft EA, the commenter's meltshop/baghouse project was previously analyzed under CEQA by the City of Rancho Cucamonga as the lead agency (Project File No.: Environmental Assessment and Conditional Use Permit DRC2008-00512) and, as a CEQA responsible agency, the SCAQMD issued air permits to construct on July 24, 2014, which was prior to the PR 1420.2 rulemaking process. Since the construction of the meltshop/baghouse was previously analyzed under a separate CEQA document and the permits to construct have been issued, SCAQMD staff found the construction of the meltshop/baghouse to be reasonably certain with or without PR 1420.2; therefore, SCAQMD staff considered the meltshop/baghouse as part of the CEQA baseline and did not include the impacts associated with the construction of the meltshop/baghouse in the Draft EA. The Draft EA analyzed the impacts from the additional measures that the facility would have to implement in order to comply with PR 1420.2, which included the installation of a negative air pressure system and increased housekeeping. The energy impacts from the construction of the two enclosures at Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix B of the Draft EA) and Liberty Manufacturing were included in Table 2-7 of the Draft EA.

This comment is referring to provision (h)(5) of PR 1420.2, which does not require the construction of a total enclosure for storage of slag, but allows facilities to choose other options such as using sealed, leak-proof containers or stabilization using dust suppressants. Proposed Rule 1420.2 was modified to allow use of dust suppressants based on comments from Gerdau. In addition, Proposed Rule 1420.2 also allows use of dust suppressants during transport of slag, as requested by Gerdau. It is the SCAQMD staff's understanding that Gerdau intends to comply with paragraphs (h)(5) and (h)(6) using dust suppressants based on meetings and correspondence with representatives of Gerdau and SCAQMD staff. Currently, Gerdau is applying dust suppressants to their slag piles; therefore, the environmental impacts associated with complying with this rule provision are included in the CEQA baseline. Furthermore, based on a review of operations at the other 12 affected facilities, none of the facilities would need to apply dust suppressants in order to comply with this provision in PR 1420.2. Therefore, there are no new environmental impacts associated with this rule provision which have not been evaluated in the Draft EA.

The energy impacts associated with the monitoring requirements of PR 1420.2 were included in Table 2-9 on Page 2-30.

Comment 1-35

2-33	**Geology and Soils, VII. b):** The EA fails to evaluate any impacts on soil erosion or loss of topsoil associated with removing landscaping, grading and paving the site. If it is assumed that no facility will be required to take these actions due to other compliance options or exemptions, the EA should clearly state the assumptions and the underlying support for the assumptions.

Response to Comment 1-35

As stated on page 2-6 of the Draft EA, SCAQMD staff analyzed impacts on soil erosion and loss of topsoil from paving at two facilities. At the request of US Battery Manufacturing Company, which has landscaped areas along the property boundary, PR 1420.2 has been updated to allow a greater area of landscaping square footage (from 100 ft^2 to 500 ft^2). Once these facilities are paved, the potential of substantial soil erosion and the loss of topsoil would be minimized. Additionally, the Gerdau Plant contains large unpaved areas and no geological hazards are reasonably foreseen from paving their property.

Comment 1-36

2-41	**Land Use and Planning, X. b):** The Draft EA summarily dismisses this topic because the regulated facilities are located in urbanized, industrial or commercial areas. This is inadequate under CEQA. Rule requirements implicating the zoning, planning and other land use controls of local governments include the construction of tall walls or buildings, installation of enclosed conveyors, removal of landscaping, to illustrate just a few. The EA must be revised to include a meaningful discussion of potential land use impacts.

Response to Comment 1-36

Regarding potential land use and zoning impacts, the Draft EA already considers the potential impact from minor facility modifications that could impact land use due to the rule (these modifications do not include the meltshop/baghouse project at Gerdau as this project has previously been approved and is part of the CEQA baseline). In particular, the Draft EA already stated on page 2-41 that the potential facility modifications will not divide an established community because any facility modifications will occur onsite or will be so minor that they will not affect any land use plans, policies, or regulations, including any zoning or building height provisions. For example, the likely construction of an enclosure at Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix B of the Draft EA) would be consistent with the land use policies, regulations, building height requirements, and zoning of the Agua Mansa Specific Plan and General Plan for the city of Rialto.

As described on Page 2-7 of the Draft EA, the commenter's meltshop/baghouse project was previously analyzed under CEQA by the City of Rancho Cucamonga as the lead agency (Project File No.: Environmental Assessment and Conditional Use Permit DRC2008-00512) and, as a CEQA responsible agency, the SCAQMD issued air permits to construct on July 24, 2014, which

was prior to the PR 1420.2 rulemaking process. Since the construction of the meltshop/baghouse was previously analyzed under a separate CEQA document and the permits to construct have been issued, SCAQMD staff found the construction of the meltshop/baghouse to be reasonably certain with or without PR 1420.2; therefore, SCAQMD staff considered the meltshop/baghouse as part of the CEQA baseline and did not include the impacts associated with the construction of the meltshop/baghouse in the Draft EA. The Draft EA analyzed the impacts from the additional measures that the facility would have to implement in order to comply with PR 1420.2, which included the installation of a negative air pressure system and increased housekeeping.

The Draft EA conservatively assumed that two facilities (Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix B of the Draft EA) and Liberty Manufacturing (referred to as Facility L in Table B-10 in Appendix B of the Draft EA)) would construct total enclosures. With the current revisions to PR 1420.2, only one facility (Atlas Pacific Corp) would need to construct a total enclosure to comply with PR 1420.2. Atlas Pacific Corp is located in an industrial area in the city of Rialto and is surrounded by a tilt-up concrete warehouse building to the north, a junk yard to the west, and vacant land to the east, west, and south. The enclosure to be built will be consistent with the existing industrial buildings in the vicinity of the facility and will have to comply with the building code requirements within the city of Rialto's Agua Mansa Specific Plan and the General Plan for the city of Rialto.

As previously discussed, Proposed Rule 1420.2 allows use of dust suppressants for storage and transport of slag. The owner or operator of a lead melting facility has a variety of choices to comply with the storage and transport of slag. Based on meetings with affected facilities, the only facility that has commented on the concern for constructing a structure storing or transporting for slag has been Gerdau. This was an issue that Gerdau provided written comments and also discussed in Working Group meetings. As a result, Proposed Rule 1420.2 was modified to allow in addition to storing slag in sealed, leak-proof containers, and transport of slag within closed conveyor systems or in sealed, leak-proof containers to allow use of dust suppressants for both the storage and transport of slag. Provision (h)(3)(c) of the September 2, 2015 version of PR 1420.2, which addresses the paving of landscape areas, does not conflict with city permits, ordinance, or requirements for the State Water Control Board where paving would be required.

Comment 1-37

2-43	**Noise, XII. a), b), and c):** The Draft EA omits discussion of the potential noise impacts associated with the construction and operation of enclosed slag conveyors. If it is assumed that no facility will be required to construct and operate enclosed slag conveyors due to other compliance options or exemptions, the EA should clearly state the assumptions and the underlying support for the assumptions.

Response to Comment 1-37

The Draft EA conservatively assumed that two facilities (Atlas Pacific Corp (referred to as Facility H in Table B-10 in Appendix B of the Draft EA) and Liberty Manufacturing (referred to as Facility L in Table B-10 in Appendix B of the Draft EA)) would construct total enclosures. With the current revisions to PR 1420.2, only one facility (Atlas Pacific Corp) would need to construct a total enclosure to comply with PR 1420.2. Atlas Pacific Corp is located in an industrial area in the city of Rialto in San Bernardino County and is surrounded by a tilt-up concrete warehouse building to

the north, a junk yard to the west, and vacant land to the east, west, and south. By building an enclosure over existing processes occurring at the Atlas Pacific Corp facility, the existing noise impacts would be reduced at that facility. As previously discussed, Proposed Rule 1420.2 allows use of dust suppressants for storage and transport of slag. The owner or operator of a lead melting facility has a variety of choices to comply with the storage and transport of slag. Based on meetings with affected facilities, the only facility that has commented on the concern for constructing a structure storing or transporting for slag has been Gerdau. This was an issue that Gerdau provided written comments and also discussed in Working Group meetings. As a result, Proposed Rule 1420.2 was modified to allow in addition to storing slag in sealed, leak-proof containers, and transport of slag within closed conveyor systems or in sealed, leak-proof containers to allow use of dust suppressants for both the storage and transport of slag. Currently, Gerdau is applying dust suppressants to their slag piles; therefore, the environmental impacts associated with complying with this rule provision are included in the CEQA baseline. Furthermore, based on a review of operations at the other 12 affected facilities, none of the facilities would need to apply dust suppressants in order to comply with this provision in PR 1420.2. Therefore, there are no new environmental impacts associated with this rule provision which have not been evaluated in the Draft EA.

Comment 1-38

2-43	**Noise, XII. d):** The Draft EA states that it is not known whether existing facilities are located within an airport land use plan or within 2 miles of a public airport. Only 13 facilities are regulated by the rule. This information is readily available and should be disclosed in the Draft EA.

Response to Comment 1-38

On Page 2-35 of the Draft EA, the analysis states that "Two of the facilities are located within two miles of a public airport." Senior Aerospace is located approximately 0.6 miles east of the Burbank Airport but is not located within the airport influence area. Teledyne Battery Products is located approximately 1.7 miles southeast of the San Bernardino International Airport but is not within the airport safety review area. This information has been updated on Page 2-43 of the Final EA.

Comment 1-39

2-47 to 2-49	**Solid and Hazardous Waste:** The Draft EA states that no demolition is expected as a result of the proposed rule. See comments above regarding the EA's failure to evaluate Gerdau's substantial meltshop/baghouse construction, which will include generation of demolition waste. In addition, cities and counties are required by state law to reduce the amount of waste, including construction waste, going to landfills. In the event that onerous or infeasible requirements are restored or added to the rule, causing closure of the Rancho Cucamonga facility, then either cities and counties will struggle to meet their diversion requirements under state law, or the scrap metal currently processed at the Rancho Cucamonga facility will need to be transported to out of state or out of country facilities, causing environmental impacts described elsewhere in these comments.

Response to Comment 1-39

As described on Page 2-7 of the Draft EA, the commenter's meltshop/baghouse project was previously analyzed under CEQA by the City of Rancho Cucamonga as the lead agency (Project File No.: Environmental Assessment and Conditional Use Permit DRC2008-00512) and, as a CEQA responsible agency, the SCAQMD issued air permits to construct on July 24, 2014, which was prior to the PR 1420.2 rulemaking process. Since the construction of the meltshop/baghouse was previously analyzed under a separate CEQA document and the permits to construct have been issued, SCAQMD staff found the construction of the meltshop/baghouse to be reasonably certain with or without PR 1420.2; therefore, SCAQMD staff considered the meltshop/baghouse as part of the CEQA baseline and did not include the impacts associated with the construction of the meltshop/baghouse in the Draft EA. The Draft EA focused on the additional measures that the facility would have to implement in order to comply with PR 1420.2, which included the installation of a negative air pressure system and increased housekeeping.

The rule has been revised since the release of the Draft EA based on SCAQMD's staff's work with the affected facilities, including Gerdau. It is the SCAQMD staff's understanding based on various conversations with representatives from Gerdau that revisions to Proposed Rule 1420.2 have addressed all the facilities' concerns and that the facility no longer believes closure is reasonably foreseeable. SCAQMD staff has made a number of revisions to Proposed Rule 1420.2 to address concerns raised by Gerdau such as, but not limited to, extending the compliance date for the total enclosure with negative air from July 2017 to April 2018, revising requirements for storing slag, reducing the inward face velocity for openings in total enclosures with negative air from 300 to 200 feet per minute, and allowing a 15 minute rolling average for demonstrating compliance with differential pressure monitoring for total enclosures with negative air. As proposed, PR 1420.2 does not impose requirements that would make facility closure reasonably foreseeable. Because the revised rule does not contain requirements that are technologically or economically infeasible and facility closure is not reasonably foreseeable, CEQA does not require the analysis of indirect environmental impacts associated with facility closure. Therefore, the waste impacts from facility closure do need to be analyzed in the Final EA.

Comment 1-40

2-49 to 2-51	**Transportation and Traffic:** See Part I, General Comments. In the event that onerous or infeasible requirements are restored or added to the rule, causing closure of the Rancho Cucamonga facility, then the scrap metal currently processed at the Rancho Cucamonga facility will need to be transported to out of state or out of country facilities, causing environmental impacts described elsewhere in these comments.

Response to Comment 1-40

The rule has been revised since the release of the Draft EA based on SCAQMD's staff's work with the affected facilities, including Gerdau. It is the SCAQMD staff's understanding based on various conversations with representatives from Gerdau that revisions to Proposed Rule 1420.2 have addressed all the facilities' concerns and that the facility no longer believes closure is reasonably foreseeable. SCAQMD staff has made a number of revisions to Proposed Rule 1420.2 to address concerns raised by Gerdau such as, but not limited to, extending the compliance date for the total enclosure with negative air from July 2017 to April 2018, revising requirements for storing slag, reducing the inward face velocity for openings in total enclosures with negative air from 300 to 200 feet per minute, and allowing a 15 minute rolling average for demonstrating compliance with

differential pressure monitoring for total enclosures with negative air. As proposed, PR 1420.2 does not impose requirements that would make facility closure reasonably foreseeable. Because the revised rule does not contain requirements that are technologically or economically infeasible and facility closure is not reasonably foreseeable, CEQA does not require the analysis of indirect environmental impacts associated with facility closure. Therefore, the transport of scrap material outside of the SCAQMD boundaries do need to be analyzed in the Final EA.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Revised Draft Socioeconomic Assessment for Proposed Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities

September 2015

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Preface

In response to a request from the Battery Council International to provide cost assumptions to each affected facility, SCAQMD staff scheduled meetings with affected facilities to review cost assumptions. Based on meetings with facility operators, the cost assumptions for the cost of equipment, monitoring and sampling, source tests, preparation of plans, implementation of housekeeping and maintenance provisions, and SCAQMD review fees did not change significantly. Some operators provided SCAQMD staff with information of compliance approaches that the SCAQMD staff did not capture in the socioeconomic estimate. Based on input from operators, staff conservatively estimates that a one-time capital cost increase would primarily come from upgrading pollution controls at two facilities, adding an additional sweeper for one facility, and installation of rain gutters at one facility representing a total of $1.6 million or $196,800 per year when annualized over 10-years with the real interest rate of 4 percent. During the individual facility meetings, a number of operators provided SCAQMD staff with information that decreased the estimates of annual recurring costs. Based on information from the operators, annual recurring costs will decrease primarily from reducing the number of PTFE bags needed at four facilities and a lower number of required source tests due to staff overestimates of lead emission point sources at two facilities. The estimated reduction in annual recurring cost is $576,047, which will more than offset the increase in annualized capital cost of $196,800 resulting in a net annual cost reduction of $379,247.

EXECUTIVE SUMMARY

A socioeconomic analysis was conducted to assess the impacts of the Proposed Rule (PR1420.2). A summary of the analysis and findings is presented below.

Elements of Proposed Rule	The purpose of PR 1420.2 is to protect public health by minimizing public exposure to lead emissions from metal melting facilities and preventing exceedances of the lead National Ambient Air Quality Standards (NAAQS) in the Basin. PR 1420.2 will require ambient air lead concentration limits, lead point source emissions controls and standards, ambient air monitoring, total enclosures of areas where metal melting operations and associated operations are conducted, housekeeping and maintenance activity measures, periodic source testing, and reporting and recordkeeping requirements. Under PR 1420.2, metal melting facilities that exceed the ambient air concentration limits or a specific lead point source emission rate, the facility will first be required to submit a compliance plan of additional measures that can be implemented. If the facility exceeds the ambient lead concentration limits, the facility will be required to implement measure(s) in the compliance plan which can range from enhanced or additional housekeeping provisions to enhanced or additional emission controls, and/or total enclosures with negative air.
Affected Facilities and Industries	Proposed Rule 1420.2 would affect 13 metal melting facilities. Cumulatively these facilities process more than 50,000 tons of lead annually through a combination of metal melting furnaces. Nine of the thirteen affected facilities are located in Los Angeles County, one in Riverside County, and the remaining 3 in San Bernardino County. Among the 13 affected facilities that could potentially need additional controls due to the requirement of the proposed rule, one is classified with chemical manufacturing sector (NAICS 325), and the remaining 12 are in the manufacturing sector (NAICS 331-335).
Major Assumptions and Limitation of Analysis	The main requirements of the proposed rule that have cost impacts would include ambient air monitoring and sampling, point source emissions controls, total enclosures, housekeeping measures, maintenance activity requirements, source testing, recordkeeping, and reporting. Since all facilities that would be subject to the proposed rule already have control devices constructed capable of meeting the point source pollution control requirements in the rule, it is assumed that facilities may install additional control devices in series as part of the compliance plan, should one be triggered and be

	required to be implemented. If the compliance plan is triggered, it is assumed that facilities would first be required to enhance the housekeeping and maintenance provisions already in place by increasing the frequency of those activities, before installing pollution control equipment.
Compliance Costs	The main requirements of the proposed rule that have cost impacts for affected facilities would include ambient air monitoring and sampling, point source emissions controls, total enclosures, housekeeping measures, maintenance activity requirements, source testing, recordkeeping, and reporting. The annual compliance costs due to PR1420.2 are estimated to range from $7.2 million to $6.5 million, depending on the real interest rate assumed (1%-4%). The cost is slightly higher in 2016 because of the one-time cost of 30 consecutive days of ambient air monitoring (daily) for all facilities during the commissioning of the monitors, and a higher cost of source testing in that year for demonstrating a control efficiency requirement which requires testing the inlet and outlet of the stack. After the first year, PR 1420.2 allows facilities to demonstrate compliance with an emission rate that was consistent with the demonstrated control efficiency which will then require testing just the outlet of the stack. The Iron and Steel Mills and Ferroalloy Manufacturing industry (NAICS 331110) where one of the affected facility belongs, would bear the largest share of compliance costs (71% or approximately $5.1 million annually based on 4% real interest) due to installing a complete baghouse replacement to achieve ambient lead levels compliant with PR 1420.2. Although SCAQMD staff has attributed the substantial compliance cost of a complete baghouse replacement at this affected facility to PR 1420.2 in this socioeconomic assessment it should be acknowledged that approximately five years prior to start of the PR 1420.2 rulemaking process the facility initiated replacement of their existing baghouse. According to the facility's operator, "the primary objective of the baghouse replacement project at the facility was to ensure attainment and maintenance of the lead NAAQS and protect public health by reducing exposure to lead and other toxic air contaminant…" Further, absent adoption of PR 1420.2 the facility would be required to proceed with the baghouse replacement project given that the facility's recently approved AB2588 Health Risk Assessment exceeds the action risk level of a twenty-five in one million maximum individual cancer risks and cancer burden pursuant to SCAQMD Rule 1402. Based on the baghouse specifications provided by the facility and technical review SCAQMD staff anticipates that the baghouse replacement project will comply with requirements of PR 1420.2.

Regional Job Impacts	The proposed rule is expected to result in approximately 140 jobs forgone annually between 2016 and 2035 when a 4-percent real interest rate is assumed (approximately 120 jobs with a 1-percent real interest rate). The projected job impacts represent about 0.001 percent of the total employment in the four-county region. The manufacturing sector (NAICS 31-33), which is projected to bear the majority of estimated total compliance costs would have about 30 jobs forgone on annual average. The sector of professional and technical services (NAICS 541) is projected to gain about 20 jobs on an annual average from additional demand for equipment installation and maintenance, expenditures made by the affected facilities to conduct source tests and ambient monitoring analysis as well as filing for compliance plans. The remainder of the projected reduction in employment would be across all major sectors of the economy.
Competitiveness	It is projected that the manufacturing sector, where most of the affected facilities belong, would experience a rise in its relative cost of services by 0.006 percent and a rise in its delivered price by 0.004 percent in 2025 from the implementation of the proposed rule.

INTRODUCTION

The purpose of PR 1420.2 is to protect public health by minimizing public exposure to lead emissions from metal melting facilities and preventing exceedances of the lead National Ambient Air Quality Standards (NAAQS) in the Basin. Based on the SCAQMD Annual Emissions Reporting program and permitting information for equipment processing and handling lead, the metal melting industry is the most significant stationary source of reported lead emissions. The proposed rule will require metal melting facilities to comply with an ambient air lead concentration limit of 0.150 μg/m^3 and 0.100 μg/m^3 (after ~~January~~ April 1, 2018) averaged over any consecutive 30 days.

In addition to the ambient air lead concentration limit, PR 1420.2 contains requirements for lead point source emissions controls and standards, ambient air monitoring, total enclosures of areas where metal melting operations and associated operations are conducted, housekeeping and maintenance activity measures, periodic source testing, and reporting and recordkeeping requirements. Metal melting facilities that exceed the ambient air concentration limits will be subject to additional requirements including enhanced emission controls, total enclosures with negative air, housekeeping measures, and compliance plan submittal.

LEGISLATIVE MANDATES

The socioeconomic assessments at the SCAQMD have evolved over time to reflect the benefits and costs of regulations. The legal mandates directly related to the assessment of the proposed rule include the SCAQMD Governing Board resolutions and various sections of the California Health & Safety Code (H&SC).

SCAQMD Governing Board Resolutions

On March 17, 1989 the SCAQMD Governing Board adopted a resolution that calls for an economic analysis of regulatory impacts that includes the following elements:

- Affected industries
- Range of control costs
- Cost effectiveness
- Public health benefits

On October 14, 1994, the Board passed a resolution which directed staff to address whether the rules or amendments brought to the Board for adoption are in the order of cost effectiveness as defined in the AQMP. The intent was to bring forth those rules that are cost effective first.

Health & Safety Code Requirements

The state legislature adopted legislation that reinforces and expands the Governing Board resolutions for socioeconomic assessments. H&SC Sections 40440.8(a) and (b), which became effective on January 1, 1991, require that a socioeconomic analysis be prepared

for any proposed rule or rule amendment that "will significantly affect air quality or emissions limitations."
Specifically, the scope of the analysis should include:

- Type of affected industries
- Impact on employment and the economy of the district
- Range of probable costs, including those to industries
- Emission reduction potential
- Necessity of adopting, amending or repealing the rule in order to attain state and federal ambient air quality standards
- Availability and cost effectiveness of alternatives to the rule

Additionally, the SCAQMD is required to actively consider the socioeconomic impacts of regulations and make a good faith effort to minimize adverse socioeconomic impacts. H&SC Section 40728.5, which became effective on January 1, 1992, requires the SCAQMD to:

- Examine the type of industries affected, including small businesses; and
- Consider socioeconomic impacts in rule adoption

Finally, H&SC Section 40920.6, which became effective on January 1, 1996, requires that incremental cost effectiveness be performed for a proposed rule or amendment that imposes Best Available Retrofit Control Technology or "all feasible measures" requirements relating to ozone, carbon monoxide (CO), oxides of sulfur (SOx), oxides of nitrogen (NOx), and their precursors. This statute does not apply to the proposed rules; moreover, cost effectiveness in terms of dollars per ton is not meaningful for risk-based regulations, since many other factors besides the amount of pollution affect the risk such as the toxic potency and the location of receptors.

AFFECTED INDUSTRY/FACILITIES

Industry Profile

Metalworking companies recycle millions of tons of abandon metal each year. Metal is recycled and used as the primary material source to make parts that are used by many industrial applications such as aerospace, infrastructure, national defense, solar panels, electric cars, and medical devices. According to the California Metal Coalition, "California is home to nearly 4,000 metalworking facilities, employing over 110,000 Californians with high-paying manufacturing jobs and health benefits." "Eight out of ten employees in the metalworking sector are considered ethnic minorities or reside in communities of concern." Employment growth in this sector is seen to be caused by the needs of manufacturing facilities, as well as the construction of new infrastructures such as bridges and buildings. Repair and maintenance of aging structures are also seen to provide more employment for metalworking companies.

Table 1 presents key facts about the industry in California.

Table 1

Key Facts of California Metalworking Companies[1]	
Approximate Number of Metalworking Facilities in California	**3,700**
Average Number of Employees per Company	**30**
Number of Californians Employed in the Metalworking Industry	**111,000**
Average Full-Time Hourly Wage of Metalworking Employee	**$19.25**
Annual Average Salary per Employee	**$40,040**
Multiplier Effect of Manufacturing is 2.5 jobs for every 1 job created	**277,000**
Tons of Metal Recycled Per Year by California Metalworking Companies	**1,830,000**
Recycling 1 ton of waste rather than disposing in landfill produces $275 more in goods and services*	**$503,250,000**

***Cal-Recycle (formerly California Integrated Waste Management Board)

Affected Facilities

Proposed Rule 1420.2 would affect 13 metal melting facilities. Cumulatively these facilities process more than 50,000 tons of lead annually through a combination of metal melting furnaces. Nine of the thirteen affected facilities are located in Los Angeles County, one in Riverside County, and the remaining 3 in San Bernardino County.

Table 2 lists the type of potentially affected facilities, and for each type, the facilities' industry classification, and the number of such facilities. A detailed discussion of the assumptions and basis for the number of facilities that could potentially require additional pollution controls can be found in the Staff Report for the proposed rule.

Among the 13 affected facilities that could potentially need additional controls due to the requirement of the proposed rule, one is classified with other miscellaneous chemical product and preparation (NAICS 325), and the remaining 12 are in the manufacturing sector (NAICS 331-335).

Small Businesses

The SCAQMD defines a "small business" in Rule 102 for purposes of fees as one which employs 10 or fewer persons and which earns less than $500,000 in gross annual receipts. The SCAQMD also defines "small business" for the purpose of qualifying for access to services from the SCAQMD's Small Business Assistance Office (SBAO) as a business with an annual receipt of $5 million or less, or with 100 or fewer employees. In addition to the SCAQMD's definition of a small business, the federal Clean Air Act Amendments (CAAA) of 1990 and the federal Small Business Administration (SBA) also provide definitions of a small business.

[1] http://www.metalscoalition.com/industry-facts.html

Table 2
Affected Facilities that Potentially Could Need
Additional Monitoring and Controls to Comply with PR 14202.2

Type of Facility	Industry Classification (6-Digit NAICS Code)	Estimated Number of Facilities**
Lead-Acid Battery	Storage Battery Manufacturing (335911)	6
Scrap Metal Recyclers	Secondary Smelting and Alloying of Aluminum (331314)	2
Iron and Steel Mills	Iron and Steel Mills and Ferroalloy Manufacturing (331110)	1
Other Lead Product Manufacturing	Other Nonferrous Metal Foundries (331529)	1
Metal Forging and Heat Treating	Other Metal Container Manufacturing Products (332439)	1
Metal Melting	Sheet Metal Work Manufacturing (332322)	1
Chemical Products	All Other Miscellaneous Chemical Product and Preparation (325998)	1
Total		**13**

The CAAA classifies a business as a "small business stationary source" if it: (1) employs 100 or fewer employees, (2) does not emit more than 10 tons per year of either VOC or NOx, and (3) is a small business as defined by SBA. The SBA definitions of small businesses vary by six-digit North American Industrial Classification System (NAICS) codes. In general terms, a small business must have no more than 500 employees for most manufacturing industries, and no more than $7 million in average annual receipts for most nonmanufacturing industries.[2] A business in the industry of primary metal (NAICS 331) with fewer than 750 to 1000 employees is considered a small business by SBA.

Information on employees and sales for seven out of 13 facilities is available, based on the 2015 Dun and Bradstreet data. Based on SCAQMD permit data, only one of the seven facilities was reported as a small business as defined under Rule 102. Under CAAA definition, six out of seven facilities are considered small businesses. Under SBA definition, all seven facilities are considered small businesses.

[2] See the SBA website (http://www.sba.gov/community/blogs/community-blogs/small-business-matters/what-small-business-what-you-need-know-and-wh).The latest SBA definition of small businesses by industry can be found at http://www.sba.gov/content/table-small-business-size-standards.

COST ASSUMPTIONS

Probable compliance cost of the proposed rule were developed based on a combination of data supplied by stakeholders from the metal melting industry; including industry representatives, facility operators, equipment manufacturers and vendors. Additionally, SCAQMD staff reviewed each facility's operating permits, performed on-site surveys and conducted phone interviews to determine the type of additional equipment (e.g., high efficiency bags for enhanced emissions control equipment, sweepers for housekeeping, etc.) and services needed to comply with the proposed rule. SCAQMD staff used this permit data and survey information to understand the type and frequency of housekeeping activities currently implemented by each facility subject to the proposed rule and to determine additional housekeeping activities that to be implemented by each to comply with the proposed rule requirements.

The costs presented in this assessment primarily cover both the capital cost and maintenance cost of emissions control equipment, for example, Polytetrafluoroethylene (PTFE) baghouse bags and sweepers for housekeeping. However, the costs do not include uncertainties or unexpected construction costs (e.g., variations in final quantities of PTFE bags needed, additional engineering cost, and/or contract administration). The costs presented in this assessment intend to represent typical to high costs for equipment, maintenance activities and administrative review. All estimated costs have been adjusted to reflect current dollar values.

COMPLIANCE COSTS

The main requirements of the proposed rule that have cost impacts for affected facilities would include ambient air monitoring and sampling, point source emissions controls, total enclosures, housekeeping measures, maintenance activity requirements, source testing, recordkeeping, and reporting. The annual compliance costs due to PR1420.2 are estimated to range from $7.2 million to $6.5 million, depending on the real interest rate assumed (1%-4%)[3]. The cost is slightly higher in 2016 because of the one-time cost of 30 consecutive days of ambient air monitoring (daily) for all facilities, and a higher cost of source testing in that year. Table 3 presents average annual compliance cost of the PR 1420.2 by requirement categories.

[3] In 1987, the SCAQMD staff began to calculate cost-effectiveness of control measures and rules using the Discounted Cash Flow method with a discount rate of 4%. Although not formally documented, the discount rate is based on the 1987 real interest rate on 10-year Treasury Notes and Bonds, which was 3.8%. The maturity of 10 years was chosen because a typical control equipment life is 10 years; however, a longer equipment life would not have corresponded to a much higher real interest-- the 1987 real interest rate on 30-year Treasury Notes and Bonds was 4.4%. Since 1987, the 4% discount rate has been used by SCAQMD staff for all cost-effectiveness calculations, including in BACT analysis, for the purpose of consistency.

Table 3
Annual Compliance Cost of PR 1420.2 by Category

One-Time Cost Category	One-Time Cost	Annualized at 4% Real Interest Rate	Annualized at 1% Real Interest Rate
High Volume Sampler**	$126,000	$15,535	$13,303
Backup Power*	$12,000	$4,320	$4,080
Total Enclosure Building ***	$473,000	$34,804	$26,211
Upgrade Baghouse***	$37,000,000	$2,722,525	$2,050,367
Housekeeping/sweeper**	$570,000	$70,276	$60,182
Additional Housekeeping**	$240,000	$29,590	$25,340
Differential Pressure Monitor**	$90,000	$11,096	$9,502
Wind Monitoring**	$39,000	$4,808	$4,118
Ambient Monitoring Plan**	$109,655	$13,519	$11,578
Compliance Plan**	$141,960	$17,502	$14,988
Ambient Air Monitoring Review**	$42,400	$5,228	$4,477
Compliance Plan Review**	$42,400	$5,228	$4,477
Recurring Cost Category	**First Year**	**Subsequent Years**	
Roof Washing	$70,990	$70,990	
Baghouse Maintenance	$2,941,005	$2,941,005	
Source Test****	$1,410,000	$750,000	
Ambient Monitoring Analysis****	$1,148,640	$865,056	
Total		**$7,243,786**	**$6,537,978**

*Cost is annualized over 3 years
**Cost is annualized over 10 years
***Cost is annualized over 20 years
****The costs of source test and ambient monitoring analysis are lower in subsequent years; as such an average annual number (2016-2035) was used here for calculating the annual total.

Ambient Air Monitoring

PR 1420.2 facilities will be required to collect and analyze ambient air lead samples to determine compliance with the ambient air quality lead concentration limits of the proposed rule. The proposed rule requires submittal of an ambient air monitoring plan, placement of at least three monitors at three distinct sampling sites, and a minimum sampling frequency of one sample every six days. Facilities that exceed the proposed ambient air lead standard will be required to increase the frequency of sampling to either one in three days or daily, depending on the magnitude of the exceedance.

Twelve of the thirteen facilities subject to PR 1420.2 will be required to submit a Lead Ambient Air Monitoring and Sampling Plan required by Paragraph (e)(1) and (e)(2) of the proposed rule. SCAQMD staff assumes that one facility with an existing Ambient Air

Monitoring Plan meets the requirements for a Lead Ambient Air Monitoring and Sampling Plan set-forth in Paragraph (e)(2)(A) through (e)(2)(d) of PR 1420.2; as a result, this facility will not need to submit a new Lead Ambient Air Monitoring Plan. However, to ensure that maximum cost impacts were considered the SCAQMD staff did not discount the relief from this specific provision in the cost analyses.

In addition to the cost of the Lead Ambient Air Monitoring and Sampling Plan of $8,435[4] per plan the SCAQMD staff assumed that each facility would need to purchase three high volume samplers at a unit cost of $3,000 plus one wind monitor at a unit cost of $4,000. Further, SCAQMD staff assumed that one facility would likely be required to collect daily ambient air samples resulting in a need for six high volume samplers for potential monitor breakdown, backup power to ensure continuous monitoring during power failures and a wind monitor. The additional cost for sufficient backup power is $4,000 per unit and SCAQMD staff assumed that the facility would need three backup units. , SCAQMD staff assumed that each Lead Ambient Air Monitoring Plan would require between 20 to 50 hours of SCAQMD Staff review at the plan review rates required by Rule 306 of $132 per hour. The variation in review hours reflects the complexity of each individual compliance plan.

Finally, staff estimated that the analyses of ambient air monitoring lead samples would cost $1,148,640 the first year and **$**865,056 during subsequent years. The elevated cost for the first year of sampling analyses are due to daily monitoring and sampling requirements for first 30 consecutive days from the date of initial sampling at every facility per paragraph (e)(4) as part of commissioning the monitors. Subsequent to this initial monitoring and sampling period, facilities can immediately transition to a 1 in 6 day monitoring and sampling frequency unless a facility has exceeded the ambient air lead concentration or has an existing approved monitoring plan that requires a higher monitoring frequency. There is currently only one facility that meets the provisions of subparagraph (e)(5)(C) that requires daily monitoring. As a result, the SCAQMD staff assumed that one facility will be required to monitor and sample lead ambient air levels daily and all other facilities will monitor and sample at a frequency of 1 in 6 days.

Lead Point Source Emissions Controls

PR 1420.2 requires all lead emissions from lead point sources to be vented to a lead control device. Specifically, the proposed rule requires that lead point source emission controls meet a minimum lead reduction efficiency of 99%, effective March 1, 2016. Currently, PR 1420.2 facilities are regulated under Rule 1420, which establishes a particulate matter control efficiency of 99 percent, and a lead control efficiency of 98 percent. As a result, it is expected that all facilities should meet the point source requirement.

As a conservative estimate, the socioeconomic impacts of lead point source emissions controls required by PR 1420.2 SCAQMD staff assumed that all facilities would be

[4] Based on 1992 cost estimates from Rule 1420 and inflated to current dollar values based on Marshall & Swift Equipment Cost Index

required to, at a minimum; install PTFE bags. Based on this assumption and review of existing Rule 1420 Compliance Plans and SCAQMD permits, the SCAQMD staff determined that nine of the thirteen facilities subject to the rule would need to replace their existing baghouse bags with PTFE grade bags at an estimated cost of $12.92[5] per square foot of cloth needed for each facility baghouse. Also, SCAQMD staff assumed that each bag would need to be replaced biennially. Further, there is a steel mini mill facility subject to the rule that has initiated the process to replace their baghouse. The SCAQMD has approved the permit to construct this bag house earlier this year. It is assumed for the purpose of this analysis that this baghouse would be installed to comply with PR1420.2, as a result the costs are attributed to implementation of PR1420.2. Since this facility is also subject to Rule 1402 and will begin risk reduction, this baghouse is expected to also be part of this facility's risk reduction plan. Based on correspondences from this facility, the estimated capital cost for the baghouse replacement at this facility is $37 million[6]. As a result, SCAQMD staff estimated that the capital cost to implement lead point source emissions control was approximately $37 million with an annual maintenance cost ranging from $2,050,367 to $2,722,525 for bag replacement at all facilities.

Total Enclosures

PR 1420.2 requires that no later than March 1, 2016, furnace, refining, casting and lead oxide production areas be located within a total enclosure. The areas may be enclosed individually or in groups. The intent of this requirement is to provide maximum containment and minimize fugitive lead-dust emissions generated in areas where melting, processing, handling and storage of lead-containing materials occur. SCAQMD staff assumed that it would cost $110[7] per square foot to construct a total enclosure and that all but two facilities subject to PR 1420.2 currently meet this requirement. SCAQMD staff concluded that these two facilities would need total enclosures based on a review of facility maps and observations made at site visits in which staff identified specific areas of each facility that would likely require total enclosures. Based on the parameter of each facilities open equipment and production areas (1,800 ft^2 and 2,500 ft^2 respectively) SCAQMD staff determined that this requirement would result in capital cost of $473,000 for the two facilities not meeting this requirement.

Housekeeping

PR 1420.2 includes housekeeping requirements that are proposed to minimize fugitive lead-dust emissions. All requirements will be effective within 30 days of rule adoption with the exception of the requirements to conduct semi-annual roof top cleanings and to pave, concrete, asphalt, or otherwise stabilize all facility grounds, which will be effective no later than 180 days after rule adoption. Upon surveying each facility subject to PR1420.2 SCAQMD, staff concluded that all facilities currently conduct housekeeping

[5] Based on Section Six (Particulate Matter Controls) of the EPA Air Pollution Control Cost Manuel-Sixth Edition Available at: http://www.epa.gov/ttn/catc/dir1/cs6ch1.pdf

[6] Based on technical comments submitted by stakeholders regarding baghouse project costs

[7] http://www.cmdgroup.com/market-intelligence/articles/rsmeans-dollar-per-square-foot-construction-costs-for-four-industrial-type/

measures consistent with the proposed requirements; however, five facilities did not maintain Rule 1186 compliant sweepers onsite. Therefore, SCAQMD staff assessed an additional cost impact ranging from $90,000 to $120,000 per additional sweeper needed at each facility. The range was based on the size of sweeper likely needed for each facility. As a result, it is assumed that the additional housekeeping measures required by PR 1420.2 would result in a capital cost of $570,000. Further, it is assumed that it would cost $70,990[8] annually to conduct roof washings required by the housekeeping requirements of the rule.

Source Tests

The proposed rule will require annual source tests for all lead control devices in order to demonstrate compliance with the lead control reduction efficiency for any lead point source emission control of 99 percent. Initial source tests for new and modified lead control devices with an initial start-up date on or after the adoption date of the proposed rule will be required within 60 days of initial start-up. Existing lead control devices in operation before the adoption date of the rule will require a source test no later than six months after adoption of the rule. An existing source test for existing lead control devices, conducted on or after January 1, 2014 may be used as the initial source test if it meets certain criteria. SCAQMD staff estimates that the cost for an inlet and outlet source test is $15,000[9] each resulting in a total cost of $30,000 per stack.

However, the proposed rule provides an incentive for lead control devices that demonstrate exemplary lead emission rate source test results. If an annual source test demonstrates 99 percent or greater reduction of lead emissions and total facility mass lead emissions of less than 0.020 pounds per hour pursuant to paragraph (j)(1) of PR1420.2, then the next test for all lead point sources shall be performed no later than 24 months after the date of the most recent source test. Additionally, subsequent source tests to the initial source tests demonstrating a minimum 99 percent control efficiency of lead emissions may show that the total mass lead outlet emission rate is no greater than the total mass lead emission rate requisite to achieve 99 percent control efficiency. Consequently, SCAQMD staff assumed that all facilities would be able to take advantage of these incentives, resulting in a combined first year source test cost totaling $1,380,000 and $367,500 every year thereafter. SCAQMD staff assumed all facilities would take advantage of these incentives given the substantial cost reduction from source testing in subsequent years to the first year attributed to the reduced frequency of source testing and lead outlet emissions rates no greater than the total mass lead emission rate requisite to achieve a 99 percent control efficiency (outlet test only).

Compliance Plan

Compliance with PR 1420.2 is primarily based on ambient air concentrations of lead at fence line monitors. The proposed rule is designed to control lead point source emissions

[8] Assumes a cost of $1,000 per washing and $250 of water use based on 2010 version of Rule 1420.1, and the cost was doubled for structures > than 45 feet in height. All cost were inflated to current dollar values based on Marshall & Swift Equipment Cost Index

[9] Source test cost estimates provided by SCAQMD Source Testing Division for a triplicate metals test

and fugitive lead-dust emissions to achieve the ambient air concentration limits. Under PR 1420.2, an owner or operator of a metal melting facility is required to submit a Compliance Plan if one or more of the following occurs:

- The ambient air lead concentration is greater than 0.120 µg/m^3 averaged over 30 consecutive days on and after July 1, 2016;
- The ambient air lead concentration is greater than 0.100 µg/m^3 averaged over 30 consecutive days on and after ~~January~~ April 1, 2018, or;
- The point source emission rate for all lead sources is greater than 0.080 pound per hour on and after July 1, 2016.

The purpose of this provision is to address those facilities that still may have difficulty demonstrating compliance with the ambient air lead concentration limit even after implementation of PR 1420.2 core requirements. The Compliance Plan will identify additional measures to be implemented if certain exceedances are triggered by a given facility. The SCAQMD estimated a unit cost of $10,920[10] for a facility to develop a compliance plan plus a unit cost of $132.50 for SCAQMD staff to review a compliance plan. The total cost for all facilities to obtain an approved compliance plan is estimated to be $184,360. SCAQMD staff assumed that all facilities will be required to submit a compliance plan and based on previous Lead NAAQS exceedances SCAQMD staff assumed two facilities would be required to implement additional compliance measures. The cost of implementing these measures was assumed to be equivalent to purchasing an additional Rule 1186 compliant sweeper for each facility at a cost of $120,000 and installing digital differential pressure monitors for a total enclosure at each facility. Based on the requirements for total enclosures with negative air only one facility would need three digital differential pressure monitors at a unit cost of $30,000[11] per monitor and resulting in a total capital cost of $90,000.

In order to compile the annual compliance costs for the additional controls assumed to be needed, it is assumed that facilities would finance the capital costs of control equipment at a real interest rate of four percent over its equipment life; as a sensitivity test, a real interest rate of one percent was also applied which is closer to the prevailing real interest rate.[12] Table 4 reports the projected compliance costs, by potentially affected industries, due to the additional requirements needed for the 13 affected facilities. Each year, the compliance costs due to PR1420.2 are estimated to range from $6.5 to 7.2 million, depending on the real interest rate assumed (1%-4%). The Iron and Steel Mills and Ferroalloy Manufacturing (NAICS 331110) where one of the affected facility belong, would bear the largest share (71%) of compliance costs.

When determining which option to implement, facilities will ultimately choose the most cost-effective option for their particular situation. However, to conservatively estimate the cost impacts of the proposed rule, the analysis will assume that impacted facilities will fully utilize all the control equipment. All the costs discussed in this section are

[10] Based on Compliance Plan cost of $10,000 (adjusted for inflation) estimated for 1420.1 in 2010
[11] Based on Attachment H of Final Socioeconomic Report for Rule 1420.1adopted on October 1, 2010
[12] See https://www.federalregister.gov/articles/2015/01/29/2015-01616/discount-rates-for-cost-effectiveness-analysis-of-federal-programs (accessed March 28, 2015).

expressed in 2015 dollars. For the purpose of projecting future compliance costs in the near future, it is assumed that these costs would remain the same within the analysis time frame and may increase only with inflation.

Table 4
Projected Compliance Costs by Industry for Affected Facilities that Potentially Could Need Additional Pollution Controls (2015 Dollars)

Industry that Typically Uses the Equipment (6-Digit NAICS Code)	Number of Facilities	Projected Annual Compliance Costs	
		4% Real Interest Rate	1% Real Interest Rate
Storage Battery Manufacturing (335911)	6	$1,273,477	$1,262,535
Secondary Smelting and Alloying of Aluminum (331314)	2	$343,255	$333,364
Iron and Steel Mills and Ferroalloy Manufacturing (331110)	1	$5,159,682	$4,480,491
Other Nonferrous Metal Foundries (331529)	1	$170,963	$168,720
Other Metal Container Manufacturing Products (332439)	1	$84,857	$84,208
Sheet Metal Work Manufacturing (332322)	1	$67,913	$67,264
All Other Miscellaneous Chemical Product and Preparation (325998)	1	$143,639	$141,396
All Industries	**13**	**$7,243,786**	**$6,537,978**

Table 5 shows the projected compliance costs by facility due to the additional requirements of the PR 1402.2. Gerdau, a steel mini mill, would bear the largest share of compliance costs (71% or approximately $5.1 million annually based on 4% real interest) due to the installation of a complete baghouse replacement that is necessary to reduce lead emissions. Although Gerdau's meltshop/baghouse project received air permits from the SCAQMD on July 24, 2014, prior to the 1420.2 rulemaking process, the socioeconomic analysis nonetheless analyzed the cost of the meltshop/baghouse given that it will help Gerdau achieve ambient lead levels compliant with Rule 1420.2 and help implement a Risk Reduction Plan required under Rule 1402. ~~The Iron and Steel Mills and Ferroalloy Manufacturing (NAICS 331110) where one of the affected facility belong,~~

~~would bear the largest share of compliance costs (71%) due to installing a complete baghouse replacement to achieve a lead reduction efficiency of 99 percent when compared to other potentially affected industries.~~

Table 5
Projected Compliance Costs by Facility that Potentially Could Need Additional Pollution Controls (2015 Dollars)

Industry that Typically Uses the Equipment (6-Digit NAICS Code)	Projected Annual Compliance Costs	
	4% Real Interest Rate	1% Real Interest Rate
Iron and Steel Mills and Ferroalloy Manufacturing (331110)	$5,159,682	$4,480,491
Storage Battery Manufacturing (335911)	$71,789	$71,140
Storage Battery Manufacturing (335911)	$156,634	$154,391
Storage Battery Manufacturing (335911)	$506,391	$501,882
Storage Battery Manufacturing (335911)	$76,538	$75,889
Storage Battery Manufacturing (335911)	$207,415	$206,766
Storage Battery Manufacturing (335911)	$254,710	$252,467
Secondary Smelting and Alloying of Aluminum (331314)	$249,778	$245,531
Secondary Smelting and Alloying of Aluminum (331314)	$93,477	$87,832
Other Nonferrous Metal Foundries (331529)	$170,963	$168,720
Other Metal Container Manufacturing Products (332439)	$84,857	$84,208
Sheet Metal Work Manufacturing (332322)	$67,913	$67,264
All Other Miscellaneous Chemical Product and Preparation (325998)	$143,639	$141,396
Total 13 Facilities	**$7,243,786**	**$6,537,978**

MACROECONOMIC IMPACTS ON REGIONAL ECONOMY

The REMI model (PI+ v1.7.2) was used to assess the total socioeconomic impacts of a policy change (i.e., the proposed rule). The model links the economic activities in the counties of Los Angeles, Orange, Riverside, and San Bernardino, and for each county, it

is comprised of five interrelated blocks: (1) output and demand, (2) labor and capital, (3) population and labor force, (4) wages, prices and costs, and (5) market shares.[13]

The assessment herein is performed relative to a baseline ("business as usual") where the proposed rule would not be implemented. The proposed rule would create a policy scenario under which the affected facilities would incur an annual compliance costs totaling $7.2 million to $6.5 million to install additional control equipment and comply with other requirements of the PR 1420.2. The annualized compliance costs are assumed to start in 2016 and would remain the same until 2035, last year of the analysis time frame.

Direct effects of the proposed rule have to be estimated and used as inputs to the REMI model in order for the model to assess secondary and induced impacts for all the actors in the four-county economy on an annual basis and across a user-defined horizon (2016 to 2035). Direct effects of the proposed rule include additional costs to the affected entities and additional sales, by local vendors, of equipment, devices, or services that would meet the proposed requirements. Whereas all the compliance expenditures that are incurred by the affected facilities will increase their cost of doing business, the purchase of additional high volume samplers, sweepers, backup power, wind monitors and the spending on building enclosures, source test, and ambient monitoring analyses will increase the sales of various sectors. Table 6 lists the industry sectors modeled in REMI that would either incur cost or benefit from the compliance expenditures.[14]

[13] Within each county, producers are made up of 66 private non-farm industries, three government sectors, and a farm sector. Trade flows are captured between sectors as well as across the four counties and the rest of U.S. Market shares of industries are dependent upon their product prices, access to production inputs, and local infrastructure. The demographic/migration component has 160 ages/gender/race/ethnicity cohorts and captures population changes in births, deaths, and migration. (For details, please refer to REMI online documentation at http://www.remi.com/products/pi.)

[14] It is worth mentioning that improved public health due to reduced air pollution emissions may also result in a positive effect on worker productivity and other economic factors; however, public health benefit assessment requires the modeling of air quality improvements. Therefore, it is conducted for Air Quality Management Plans and not for individual rules or rule amendments.

Table 6
Industries Incurring *vs.* Benefitting from Compliance Costs/Spending

Source of Compliance Costs	REMI Industries Incurring Compliance Costs (NAICS)	REMI Industries Benefitting from Compliance Spending (NAICS)
High Volume Sampler	Manufacturing Sector (NAICS 331-335, and Chemical Manufacturing Sector (NAICS 325) All Affected Facilities	*One-time-Capital:* Computer and Electronics (NAICS 334)
Backup Power	Iron and Steel Mills and Ferroalloy Manufacturing (NAICS 331)	*One-time-Capital:* Computer and Electronics (NAICS 334)
Building Enclosure	Secondary Smelting and Alloying of Aluminum (NAICS 331)	*One-time-Capital:* Construction (236)
Housekeeping/Street Sweepers	Manufacturing Sector (NAICS 331-335, and Chemical Manufacturing Sector (NAICS 325). Not All Affected Facilities	*One-time-Capital:* Transportation Equipment Manufacturing (NAICS 336)
Upgrade Baghouse	Iron and Steel Mills and Ferroalloy Manufacturing (NAICS 331)	*One-time-Capital:* Machinery Manufacturing (NAICS 333)
Wind Monitoring	Manufacturing Sector (NAICS 331-335, and Chemical Manufacturing Sector (NAICS 325). All Affected Facilities	*One-time-Capital:* Computer and Electronics (NAICS 334)
Differential Pressure Monitors	Iron and Steel Mills and Ferroalloy Manufacturing (331110) and Storage Battery Manufacturing (335)	*One-time-Capital:* Computer and Electronics (NAICS 334)
Ambient Air Monitoring Plan	Manufacturing Sector (NAICS 331-335, and Chemical Manufacturing Sector (NAICS 325). All Affected Facilities	*One-time:* Professional, Scientific, and Technical Services (541)

Compliance Plan	Manufacturing Sector (NAICS 331-335, and Chemical Manufacturing Sector (NAICS 325). All Affected Facilities	*One-time:* Professional, Scientific, and Technical Services (541)
Ambient Air Monitoring and Compliance Review	Manufacturing Sector (NAICS 331-335, and Chemical Manufacturing Sector (NAICS 325). All Affected Facilities	*One-time* *Gov (SCAQMD).*
Source Test	Manufacturing Sector (NAICS 331-335, and Chemical Manufacturing Sector (NAICS 325). All Affected Facilities	*Recurring Cost:* Professional, Scientific, and Technical Services (541)
Ambient Air Monitoring Analysis	Manufacturing Sector (NAICS 331-335, and Chemical Manufacturing Sector (NAICS 325). All Affected Facilities	*Recurring Cost:* Professional, Scientific, and Technical Services (541)
Roof Washing	Manufacturing Sector (NAICS 331-335, and Chemical Manufacturing Sector (NAICS 325). All Affected Facilities	*Recurring Cost:* Construction/Contractors (NAICS 238*)*
Baghouse Maintenance	Manufacturing Sector (NAICS 331-335, and Chemical Manufacturing Sector (NAICS 325). Not all Affected Facilities	*Recurring Cost:* Professional, Scientific, and Technical Services (541

The proposed rule is expected to result in approximately 140 jobs forgone between 2016 and 2035 when a 4-percent real interest rate is assumed (approximately 120 jobs with a 1-percent real interest rate). The projected job impacts represent about 0.001 percent of the total employment in the four-county region. As presented in Table 7, almost all major sectors of the regional economy would incur minor jobs forgone from secondary and induced impacts of the proposed rule.

In 2016, 50 additional jobs could be created in the overall economy. Positive job impacts in the sector of manufacturing (NAICS 31-33) are due to purchase of various types of control equipment by the affected facilities (as presented in Table 6). The sector of professional and technical services (NAICS 541) are projected to gain 20 jobs annually from additional demand for equipment installation and maintenance as well as expenditures made by the affected facilities to conduct source tests and ambient monitoring analysis as well as filing for compliance plans.

Although the manufacturing sector would bear the majority of estimated total compliance costs of the PR 1420.2, the industry job impact is projected to be relatively small (annual average of 30 jobs foregone between 2016 and 2035). This is because other businesses in the manufacturing sector, specifically in the machinery manufacturing industry, are expected to benefit from the increased sale of various types of control equipment, thus offsetting the direct effect of compliance costs incurred by other manufacturing facilities.

In earlier years, positive job impacts from the expenditures made by the affected facilities would more than offset the jobs forgone from the additional cost of doing business.

Table 7
Job Impacts of Proposed Rule

Industries (NAICS)	2016	2025	2035	Average Annual (2016-2035)
Construction (23)	-2	-22	-8	-18
Manufacturing (31-33)	23	-35	-28	-29
Wholesale trade (42)	0	-8	-6	-7
Retail trade (44-45)	-9	-21	-15	-19
Professional and technical services (54)	38	11	42	18
Food services and drinking places (722)	-1	-10	-8	-8
Government (92)	2	-17	-14	-13
Other Industries	-2	-71	-51	-62
Total	**49**	**-174**	**-87**	**-138**

Figure one presents a trend of job gain and losses over 2016-2035 time periods. In addition, staff has analyzed an alternative scenario (worst case) where the affected facilities would not purchase any control or service from providers within the Basin. This scenario would result in 200 jobs forgone, on average annually.

Figure 1
Projected Regional Job Impact, 2016-2035

Competitiveness

The additional cost brought on by the proposed rule would increase the cost of services rendered by the affected industries in the region. The magnitude of the impact depends on the size and diversification of, and infrastructure in a local economy as well as interactions among industries. A large, diversified, and resourceful economy would absorb the impact described above with relative ease.

Changes in production/service costs will affect prices of goods produced locally. The relative delivered price of a good is based on its production cost and the transportation cost of delivering the good to where it is consumed or used. The average price of a good at the place of use reflects prices of the good produced locally and imported elsewhere.

It is projected that the manufacturing sector, where most of the affected facilities belong, would experience a rise in its relative cost of services by 0.006 percent and a rise in its delivered price by 0.004 percent in 2025 from the implementation of the proposed rule.

RULE ADOPTION RELATIVE TO THE COST EFFECTIVENESS SCHEDULE

On October 14, 1994, the Governing Board adopted a resolution that requires staff to address whether rules being proposed for adoption are considered in the order of cost-effectiveness. The 2012 Air Quality Management Plan (AQMP) ranked, in the order of cost-effectiveness, all of the control measures for which costs were quantified. It is generally recommended that the most cost-effective actions be taken first. PR 1420.2 will reduce lead emissions and is not a control measure in the 2012 Air Quality Management Plan (AQMP) because it is a rule to reduce lead emissions, and thus was not ranked by cost-effectiveness relative to other AQMP control measures in the 2012 AQMP.

INCREMENTAL COST-EFFECTIVENESS

Please refer to the Staff Report.

REFERENCES

California Metal Melting Coalition.
http://www.metalscoalition.com/industry-facts.html

Dun & Bradstreet Enterprise Database. 2015.

Regional Economic Modeling Inc. (REMI). Policy Insight® for the South Coast Area (70 sector model). Version 1.7.2.

South Coast Air Quality Management District. Draft Staff Report Proposed Rule 1420.2 –Emission Standards for Lead from Metal Melting Facilities, Diamond Bar, CA. July 2015.

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 34

PROPOSAL: Amend Rule 1106 - Marine Coating Operations, as set forth in Proposed Amended Rule 1106 – Marine and Pleasure Craft Coating Operations, and Rescind Rule 1106.1 - Pleasure Craft Coating Operations

SYNOPSIS: The proposed amendment is two-fold, first, Rule 1106.1 is proposed to be rescinded and second, Rule 1106 will subsume the requirements of Rule 1106.1 - Pleasure Craft Coating Operations, revise VOC content limits for pretreatment wash primers, antenna, repair and maintenance thermoplastic, inorganic zinc, and specialty marking coatings in order to align limits with U.S. EPA Control Techniques Guidelines and other California air districts, and add new categories for marine aluminum antifoulant, mist, nonskid and organic zinc coatings and marine deck primer sealant. The proposed amendment also adds provisions for pollution prevention measures, enhanced enforceability, and to promote clarity and consistency.

COMMITTEE: Stationary Source, July 24, 2015, Reviewed

RECOMMENDED ACTIONS:
Adopt the attached resolution:

1. Certifying the Final Supplemental Environmental Assessment for Proposed Amended Rule 1106 - Marine and Pleasure Craft Coating Operations and rescinding of Rule 1106.1 – Pleasure Craft Coating Operations;
2. Adopting Proposed Amended Rule 1106 - Marine and Pleasure Craft Coating Operations; and
3. Rescinding Rule 1106.1 - Pleasure Craft Coating Operations.

Barry R. Wallerstein, D.Env.
Executive Officer

PF:DD:DH

Background
Rule 1106 - Marine Coating Operations and Rule 1106.1 - Pleasure Craft Coating Operations are both source specific rules that were adopted to reduce emissions of volatile organic compounds (VOC) and stratospheric ozone depleting and global warming compounds from marine coatings applied on boats, ships, and vessels, and their appurtenances, and to buoys and oil drilling rigs intended for the marine environment, and for pleasure craft, as defined in Rule 1106.1, including parts and components.

Rule 1106 was adopted on November 4, 1988 and has been subsequently amended seven times. The most recent amendment was on January 13, 1995 which incorporated corrective action items in efforts to resolve deficiencies as determined by U.S. EPA. The corrective action items in that amendment included language and an equation for control device equivalency, an applicability statement, test methods that were required to be specified, language regarding multiple test methods with the addition of the most recent test method, an updated definition for aerosol coatings and exempt compounds, and a permanent exemption for aerosol containers.

Rule 1106.1 was adopted on May 1, 1992 and has been subsequently amended three times. The most recent amendment was on February 12, 1999 which removed Pleasure Craft Coating Operations from existing Rule 1106 - Marine Coating Operations. Many of the existing coating categories in Rule 1106 at that time were not representative of the pleasure craft coating industry. Consequently, the SCAQMD adopted Rule 1106.1 with the intent of identifying the special categories of coatings applied on pleasure craft.

Proposal
The proposal is two-fold: First, Rule 1106.1 is proposed to be rescinded and second, Rule 1106 is proposed to be amended to subsume the requirements of Rule 1106.1 - Pleasure Craft Coating Operations, revise VOC content limits for pretreatment wash primers, antenna, repair and maintenance thermoplastic, inorganic zinc, and specialty marking coatings in order to align limits with U.S. EPA Control Techniques Guidelines and other California air districts, and add new categories for marine aluminum antifoulant, mist, nonskid and organic zinc coatings and marine deck primer sealant. The proposed amendment also adds provisions for pollution prevention measures, enhanced enforceability, and to promote clarity and consistency.

Key Issues
Touch-up Coatings
Staff visited several facilities conducting marine and pleasure craft coating operations and found many operators believed the touch-up exemption meant any touch-up operation. The definition for a touch-up coating does not allow for maintenance and repair “touch-up” coatings because it is only intended for minor imperfections or minor

mechanical damage incurred after the main coating operation. The touch-up exemption in the current rule (Rule 1106) provides an exemption from the VOC content limits for touch-up coatings and defines them as any coating used to cover minor imperfections prior to shipment appearing after the main coating operation. Many operators indicated to staff that they did not consider the definition for touch-up coating, just the exemption. Staff has remedied this scenario by adding additional language to paragraph (j)(2) which will direct the reader to read the definition for a touch-up coating. The definition has also been revised to allow touch-up coatings prior to use, instead of prior to shipment, to be consistent with other air district authorities.

Survey and Reporting

Staff is conducting a survey with marine and pleasure craft coating manufacturers to determine the VOC inventory based on throughput. The survey will provide data to show the VOC content of the many marine and pleasure craft coatings used in the SCAQMD jurisdiction, as well as the volume of coatings used. This data will be used to establish an accurate VOC inventory for the marine and pleasure craft industry operating in the SCAQMD jurisdiction. Staff continues to collect data from marine coating and pleasure craft coating manufacturers and suppliers and when completed, an accurate VOC inventory will determine the overall impact the industry has on emission contribution. In addition, staff will be able to use the inventory to identify compliant and non-compliant products usage and take action to eliminate the use of non-compliant marine and pleasure craft coatings.

Staff will also require two reports from marine and pleasure craft coating manufacturers and one report from their distributors and these reports will be submitted to SCAQMD on an annual basis starting with 2015 and continuing up to 2018. The first of the reports will be the Annual Quantity Emissions Report (AQER) which will be due, annually, on April 1 beginning with the year 2015. This report will require both manufacturers and their distributors to document any marine and pleasure craft coating supplied into the SCAQMD, the volume that was supplied and the VOC content for each and every marine and pleasure craft coating. The second report will be the manufacturer's distributors list. This report will be due, annually, on April 1 beginning with the year 2015 and continuing up to 2018 and will document all the manufacturer's distributors that supply marine and pleasure craft coatings into the district.

Industry Issues and Staff Responses

ISSUES:	STAFF RESPONSES:
Recordkeeping requirements would add an undue burden to the UV/EB industry and would eliminate the current exemptions for UV/EB in Rule 109.	Proposed Amended Rule 1106 will not place undue burden on the UV/EB industry or eliminate current exemptions in Rule 109. Under proposed Rule 1106, records will be maintained pursuant to Rule 109, including the exemptions contained therein.
The UV/EB industry requests inclusion of a definition for energy curable materials and ASTM D7767 to the proposed rulemaking.	Staff added a definition for energy curable coatings to Proposed Amended Rule 1106 that will include a reference to ASTM D7767-11.
Additional flexibility should be offered to UV/EB processes as related to the requirements for transfer efficiency.	Aside from a VOC emissions reduction benefit, transfer efficiency requirements reduce PM2.5 and PM10 (overspray) which can travel by wind beyond property boundaries and become a nuisance to other entities in the area. In addition, transfer efficiency requirements also reduce spray particulate matter (PM2.5 and PM10) fallout from spray coating operations, which is important as many of the facilities spray coatings next to bodies of water and the fallout material can be washed into the water during cleanup.
There are a few coatings specified on submarine component drawings that are used on valves and these coatings will no longer be complaint due to the reduced VOC content limits in Proposed Amended Rule 1106. These coatings have to meet certain military specifications per U.S. Navy requirements.	Staff proposes to craft an exemption for these coatings of no more than 12 gallons per calendar year, of all products combined. This exemption will require that the products used shall be in compliance with the U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair (Surface Coating) as provided in Part 63 of the Federal Register.
The revised definition for pleasure craft in the Proposed Amended Rule 1106 would move Disneyland's park attraction vessels out of the pleasure craft category for those that exceed 20 meters in length (Mark Twain, Columbia).	Staff has included additional language in the definition for pleasure craft to include amusement park attraction vessels regardless of their length.

ISSUES:	STAFF RESPONSES:
Reporting requirements for UV/EB manufacturers	Reporting by the manufacturers is not a disincentive to the end user, and has proved successful in other rules. In developing the inventory for low and near zero VOC marine and pleasure craft coatings, reporting of these products would be advantageous to the UV/EB coatings industry. It would show that these coatings are available and in use therefore, staff would have a basis to lower the allowable VOC limits in future rule amendments.

Public Process

Over the past four months, staff has worked with the American Coatings Association, as well as other interested parties on the proposed amendment. A working group meeting was held with industry representatives and interested stakeholders on June 17, 2015 and a public workshop was held with industry representatives and interested stakeholders on August 12, 2015. Staff has incorporated feedback received into the proposed amendment.

California Environmental Quality Act

In accordance with the California Environmental Quality Act (CEQA), the SCAQMD is the Lead Agency and prepared a Draft Environmental Assessment (EA) to analyze environmental impacts from the proposed project pursuant to its certified regulatory program (SCAQMD Rule 110). The Draft EA included a project description and analysis of potential adverse environmental impacts that could be generated from the proposed project. The Draft EA was released for a 30-day public review and comment period beginning August 19, 2015, and ending 5 p.m. on September 18, 2015. The environmental analysis in the Draft EA concluded that PAR 1106 would not generate any significant adverse impacts.

Since the release of the Draft EA, minor modifications have been made to the document. However, none of the modifications alter any conclusions reached in the Draft EA, nor provide new information of significance relative to the Draft document. As a result, these minor revisions do not require recirculation of the Draft EA pursuant to CEQA Guidelines § 15073.5. Therefore, the Draft EA is now a Final EA and is included as Attachment H in the Board Package.

Socioeconomic Analysis
The proposed amendment codifies existing practices at Marine and Pleasure Craft Coating Operations that are subject to current Rule 1106 and Rule 1106.1. As such, there will be no additional costs or other socioeconomic impacts anticipated. Therefore, no socioeconomic analysis is required under Health and Safety Code § 40728.5.

Implementation and Resource Impact
Existing SCAQMD resources will be sufficient to implement the proposed amendment with minimal impact on the budget.

Attachments
A. Summary of Proposal
B. Rule Development Process
C. Key Contacts List
D. Resolution
E. Proposed Rescinded Rule 1106.1
F. Proposed Amended Rule 1106
G. Final Staff Report
H. Final Supplemental Environmental Assessment

ATTACHMENT A
SUMMARY OF PROPOSAL

Proposed Amended Rule 1106 - Marine and Pleasure Craft Coating Operations

Subsume the requirements of Rule 1106.1 into Rule 1106

- Rescind Rule 1106.1
- Subsume the requirements of Rule 1106.1 into Rule 1106

Align VOC limits of certain coating categories consistent with U.S. EPA Control Techniques Guidelines (CTG) and other local APCDs/AQMDs

- Inorganic Zinc Coating - Align with U.S. CTG
- Pretreatment Wash Primer - Align with other California APCDs/AQMDs
- Antenna Coating - Align with other California APCDs/AQMDs
- Repair and Maintenance Thermoplastic Coating - Align with other California APCDs/AQMDs
- Specialty Marking Coating - Align with other California APCDs/AQMDs

Add new coating categories consistent with U.S. EPA Control Techniques Guidelines (CTG) and other local APCDs/AQMDs

- Marine Aluminum Antifoulant
- Mist Coating
- Nonskid Coating
- Organic Zinc Coating
- Marine Deck Primer Sealant

Other revisions and clarifications

- Inclusion of a most restrictive VOC content limit
- Prohibition of possession, specification and sale of non-compliant coatings
- Establish requirements for transfer efficiency, labeling, recordkeeping and reporting

ATTACHMENT B
RULE DEVELOPMENT PROCESS
Proposed Amended Rule 1106 -
Marine and Pleasure Craft Coating Operations

Beginning of Rule Development Process
October 2014

↓

Working Group Meeting - with Industry
June 17, 2015

↓

Stationary Source Committee Meeting
July 24, 2015

↓

Public Workshop - with Industry
August 12, 2015

↓

Set Hearing
September 4, 2015

↓

Public Hearing
October 2, 2015

Ten (10) months spent in rule development

ATTACHMENT C
KEY CONTACTS LIST
Proposed Amended Rule 1106 -
Marine and Pleasure Craft Coating Operations

Marine Coating Manufacturers

- Akzo Nobel
- Epifanes NA Inc.
- Pacific Southwest Coatings
- Pettit Marine Paints
- PPG Industries
- Rust-Oleum
- The Sherwin Williams Company
- Valspar Paint

Pleasure Craft Category: Boatyards, marinas and shipyards

- Al Larson Boat Shop
- Balboa Boatyard
- Basin Marine
- Cabrillo Boat Shop
- Dana Point Shipyard
- Gambol Industries
- King Harbor Marine Center
- Larson's Shipyard
- Marina Shipyard
- Newport Harbor Shipyard
- Seamark Marine
- South Coast Shipyard
- Sunset Aquatic Shipyard
- The Boatyard
- Windward Yacht & Repair Center

Marine Category: Ships

- Queen Mary
- Pacific Battleship Center, U.S.S. Iowa
- S.S. Lane Victory

Government Agencies

- Department of Pesticide Regulation (DPR)
- Los Angeles Regional Water Quality Control Board
- U.S. Environmental Protection Agency (U.S. EPA)

Other Interested Parties

- American Coatings Association (ACA)
- DDU Enterprises, Inc.
- Disneyland Resort
- E4 Strategic Solutions, Inc.
- EPMAR Corporation
- Heraeus Noble Light America, LLC
- Institute of Research and Technical Assistance (IRTA)
- Llewellen Supply
- Raymond Regulatory Resources, LLC (3R)
- UV Specialties, LLC
- VACCO Industries
- Wave Front Technology
- West Coast Marine

ATTACHMENT D
RESOLUTION NO. 15 -_____

A Resolution of the South Coast Air Quality Management District (SCAQMD) Governing Board amending Rule 1106 – Marine Coating Operations as set forth in Proposed Amended Rule 1106 – Marine and Pleasure Craft Coating Operations, and rescinding Rule 1106.1 – Pleasure Craft Coating Operations.

A Resolution certifying the Final Environmental Assessment for Proposed Amended Rule 1106 - Marine and Pleasure Craft Coating Operations and Rescission of Rule 1106.1 – Pleasure Craft Coating Operations.

WHEREAS, the SCAQMD Governing Board has determined with certainty that proposed amended Rule 1106 and the rescission of Rule 1106.1 is a "project" pursuant to the terms of the California Environmental Quality Act (CEQA); and

WHEREAS, the SCAQMD has had its regulatory program certified pursuant to Public Resources Code Section 21080.5 and has conducted CEQA review and analysis pursuant to such program (Rule 110); and

WHEREAS, the SCAQMD has prepared a Draft Environmental Assessment (EA) pursuant to its certified regulatory program and CEQA guidelines Section 15252 setting forth the potential environmental consequences of proposed amended Rule 1106 and the rescission of Rule 1106.1; and

WHEREAS, the SCAQMD staff has determined in the Draft EA that potential adverse environmental impacts were not significant; and

WHEREAS, the Draft EA was circulated for a 30-day public review and comment period, no comment letters were received, and the Draft EA has been revised such that it is now a final EA; and

WHEREAS, it is necessary that the adequacy of the Final EA including responses to comments must be determined by the South Coast Air Quality Management District Governing Board prior to its certification; and

WHEREAS, the SCAQMD is not required to prepare a State of Findings, a Statement of Overriding Considerations, or a Mitigation Monitoring Plan because the proposed project is not expected to generate significant adverse environmental impacts; and

WHEREAS, the SCAQMD Governing Board has determined that a need exists to rescind Rule 1106.1 and amend Rule 1106 to enhance readability and provide clarity of the rule language; and

WHEREAS, the SCAQMD Governing Board obtains its authority to rescind Rule 1106.1 and amend Rule 1106 from Sections 39002, 40000, 40001, 40440, 40702 and 41508 of the California Health and Safety Code; and

WHEREAS, the SCAQMD Governing Board has determined that Rule 1106.1 as proposed to be rescinded, and Rule 1106 as proposed to be amended, are written or displayed so that its meaning can be easily understood by the persons directly affected by it; and

WHEREAS, the SCAQMD Governing Board has determined that Rule 1106.1 as proposed to be rescinded, and Rule 1106 as proposed to be amended, are in harmony with, and not in conflict with or contradictory to, existing federal or state statutes, court decisions, or regulations; and

WHEREAS, the SCAQMD Governing Board has determined that Rule 1106.1 as proposed to be rescinded, and Rule 1106 as proposed to be amended, do not impose the same requirements as any existing state or federal regulation and the proposed amendments to the rule are necessary and proper to execute the powers and duties granted to, and imposed upon, the SCAQMD; and

WHEREAS, the SCAQMD Governing Board has determined that rescinding 1106.1 and amending Rule 1106 reference the following statutes which the SCAQMD hereby implements, interprets or makes specific; Health and Safety Code Sections 40001 (a) and (b) (air quality standards and air pollution episodes); 40702 (adoption of rules and regulations); and, 40440 (rules and regulations to carry out the air quality management plan and to require best available retrofit control technology); and

WHEREAS, the SCAQMD Governing Board has determined that a Socioeconomic Impact Assessment is not required, pursuant to Health and Safety Code Section 40440.8 or Section 40728.5, because proposed amended Rule 1106 and the rescission of Rule 1106.1 will not have a significant impact on air quality or emissions limitations; and

WHEREAS, a public hearing has been properly noticed in accordance with the provisions of Health and Safety Code Section 40725; and

WHEREAS, the SCAQMD Governing Board has held a public hearing in accordance with all provisions of law; and

WHEREAS, the SCAQMD Governing Board specifies the manager of rescinded Rule 1106.1 and proposed amended Rule 1106 as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of this proposed amendments are based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; and

WHEREAS, the SCAQMD Governing Board finds and determines, taking into consideration the factors in Section (d)(4)(D) of the Governing Board Procedures (to be codified as Section 30.5(4)(D) of the Administrative Code), that the modifications adopted which have been made to Proposed Amended Rule 1106 and to the proposed rescission of Rule 1106.1, since notice of public hearing was published do not significantly change the meaning of the proposed amended rule within the meaning of Health and Safety Code Section 40726; and

WHEREAS, the SCAQMD Governing Board has determined that proposed amended Rule 1106 and the rescission of Rule 1106.1 should be adopted for the reasons contained in the Final Staff Report.

NOW, THEREFORE, BE IT RESOLVED, that the SCAQMD Governing Board has received and considered the EA and hereby determines that the EA is adequate and certifies, pursuant to the authority granted by law, the Final EA for proposed amended Rule 1106 and rescission of Rule 1106.1, and

BE IT FURTHER RESOLVED, that the SCAQMD Governing Board does hereby adopt the proposed amended Rule 1106 and rescind Rule 1106.1, pursuant to the authority granted by law as set forth in the attached and incorporated herein by reference.

BE IT FURTHER RESOLVED, that the SCAQMD Governing Board requests that proposed amended Rule 1106 be submitted into the State Implementation Plan.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby directed to forward a copy of this Resolution, the rescinded Rule 1106.1 and proposed amended Rule 1106 to the California Air Resources Board for approval and subsequent submittal to the U.S. Environmental Protection Agency for inclusion into the State Implementation Plan.

DATE: _____ _____

CLERK OF THE BOARDS

ATTACHMENT E

(Adopted May 1, 1992)(Amended March 8, 1996)
(Amended June 13, 1997)(Amended February 12, 1999)
(Proposed Rescinded Rule 1106.1 October 2, 2015)

Proposed Rescinded Rule 1106.1. PLEASURE CRAFT COATING OPERATIONS

Rescinded by the South Coast Air Quality Management District Board on October 2, 2015.

~~(a) Applicability~~

~~This rule is applicable to all coating operations of pleasure craft, as defined in paragraph (b)(10) of this rule, or their parts and components, for the purpose of refinishing, repairing, modification, or manufacturing such craft. This rule shall also apply to establishments engaged in activities described in the United States Office of Management and Budget's 1987 Standard Industrial Classification Manual, under Standard Industrial Classification (SIC) codes 3732 - Boat Building and Repairing and 4493 - Marinas. Pleasure craft coating operations which are subject to the requirements of this rule shall not be subject to the requirements of Rule 1106 - Marine Coating Operations.~~

~~(b) Definitions~~

~~For purposes of this rule, the following definitions shall apply:~~

~~(1) AEROSOL COATING PRODUCT is a pressurized coating product containing pigments or resins that dispenses product ingredients by means of a propellant, and is packaged in a disposable can for hand-held application, or for use in specialized equipment for ground traffic/marking applications.~~

~~(2) ANTIFOULANT COATING is any coating applied to the underwater portion of a pleasure craft to prevent or reduce the attachment of biological organisms, and registered with the United States Environmental Protection Agency (EPA) as a pesticide under the Federal Insecticide, Fungicide, and Rodenticide Act (7 United States Code Section 136).~~

~~(3) CLEAR WOOD FINISHES are clear and semi-transparent topcoats applied to wood substrates to provide a transparent or translucent film.~~

~~(4) EXEMPT COMPOUNDS (See Rule 102 Definition of Terms).~~

~~(5) EXTREME HIGH GLOSS COATING is any coating which achieves at least 95 percent reflectance on a 60o meter when tested by ASTM Method D 523-89.~~

(6) FINISH PRIMER/SURFACER is a coating applied with a wet film thickness of less then 10 mils prior to the application of a topcoat for purposes of providing corrosion resistance, adhesion of subsequent coatings, a moisture barrier, or promotion of a uniform surface necessary for filling in surface imperfections.

(7) GRAMS OF VOC PER LITER OF COATING, LESS WATER AND LESS EXEMPT COMPOUNDS is the weight of VOC per combined volume of VOC and coating solids and which is calculated by the following equation:

$$\text{Grams of VOC per Liter of Coating, Less Water and Less Exempt Compounds} = \frac{Ws - Ww - Wes}{Vm - Vw - Ves}$$

Where:

W_s = weight of volatile compounds in grams

W_w = weight of water in grams

W_{es} = weight of exempt compounds in grams

V_m = volume of material in liters

V_w = volume of water in liters

V_{es} = volume of exempt compounds in liters

(8) HIGH BUILD PRIMER/SURFACER is a coating applied with a wet film thickness of 10 mils or more prior to the application of a topcoat for purposes of providing corrosion resistance, adhesion of subsequent coatings, or a moisture barrier, or promoting a uniform surface necessary for filling in surface imperfections.

(9) HIGH GLOSS COATING is any coating which achieves at least 85 percent reflectance on a 60o meter when tested by ASTM D 523-89.

(10) PLEASURE CRAFT are vessels which are manufactured or operated primarily for recreational purposes, or leased, rented, or chartered to a person or business for recreational purposes. The owner or operator of such vessels shall be responsible for certifying that the intended use is for recreational purposes.

(11) PLEASURE CRAFT COATING is any marine coating, except unsaturated polyester resin (fiberglass) coatings, applied by brush, spray, roller, or other means to a pleasure craft.

(12) PRETREATMENT WASH PRIMER is a coating which contains no more than 12 percent solids, by weight, and at least 1/2 percent acids, by weight; is used to provide surface etching; and is applied directly to fiberglass and metal surfaces to provide corrosion resistance and adhesion of subsequent coatings.

(13) SEALER is a low viscosity coating applied to bare wood to seal surface pores to prevent subsequent coatings from being absorbed into the wood.

(14) TEAK PRIMER is a coating applied to teak or previously oiled decks in order to improve the adhesion of a seam sealer to wood.

(15) TOPCOAT is any final coating applied to the interior or exterior of a pleasure craft.

(16) VARNISHES are clear wood topcoats formulated with various resins to dry by chemical reaction on exposure to air.

(17) VOLATILE ORGANIC COMPOUND (VOC) is any volatile compound which contains the element carbon, excluding methane, carbon dioxide, carbon monoxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds.

(c) Requirements

(1) VOC Content

(A) Within the District, a person shall not sell, offer for sale, solicit, apply, or require any other person to use in the District any pleasure craft coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter of coating applied, less water and exempt solvents:

COATING	VOC LIMIT		
	On or After 7/1/94	On or After 2/12/99	On or After 1/1/2001
Topcoats			
Extreme High Gloss	490	650	490
High Gloss	420	420	420
Pretreatment Wash Primers	780	780	780
Finish Primer/Surfacer	420	600	420
High Build Primer Surfacer	340	340	340
Teak Primer	775	775	775

COATING	VOC LIMIT		
	On or After 7/1/94	On or After 2/12/99	On or After 1/1/2001
Antifoulant Coatings			
Aluminum Substrate	560	560	560
Other Substrates	150	400	330
Clear Wood Finishes			
Sealers	550	550	550
Varnishes	490	490	490
Others	420	420	420

In the case of any coating sold, offered for sale, or solicited for use, this prohibition shall only apply where it is designated anywhere on the container by any sticker or label affixed thereto, or where it is indicated in any sales or advertising literature, that the coating may be used as, or is suitable for use as, a pleasure craft coating.

(B) This section shall not apply to pleasure craft coatings sold, offered for sale, or solicited, for shipment or use outside of this District or for shipment to other manufacturers for repackaging.

(2) Solvent cleaning of coating application equipment, parts, products, tools, machinery, equipment, and general work areas, and the storage and disposal of VOC-containing materials used in solvent cleaning operations, shall be carried out in accordance with Rule 1171 (Solvent Cleaning Operations).

(3) A person shall not apply pleasure craft coatings subject to the requirements of this rule with a coating containing carbon tetrachloride or any of the Group II exempt compounds as defined in paragraph (b)(4) except for: methylene chloride; perchloroethylene; cyclic, branched, or linear, completely methylated siloxanes (VMS); or parachlorobenzotrifluoride (PCBTF).

(d) Recordkeeping Requirement

Records shall be maintained in accordance with Rule 109.

(e) Compliance Test Methods

For purposes of this rule, the following test methods shall be used:

(1) VOC Content

(A) The VOC content of coatings shall be determined by:

(i) EPA Reference Method 24, (40 Code of Federal Regulations, Part 60, Appendix A). The exempt solvent content shall be determined by SCAQMD Method 302 and 303 (SCAQMD "Laboratory Method of Analysis for Enforcement Samples" manual); or

(ii) SCAQMD Methods 304 – Determination of Volatile Organic Compounds (VOC) in Various Materials, 303 – Determination of Exempt Compounds, and 302 – Distillation of Solvents from Paints, Coatings and Inks (SCAQMD "Laboratory Method of Analysis for Enforcement Samples" manual).

(B) VOC content determined to exceed the limits established by this rule through the use of any of the above-referenced test methods shall constitute a violation of this rule.

(2) Acid Content in Coatings

The percent acid by weight of pretreatment wash primers shall be determined by ASTM D 1613-85 – Acidity in Volatile Solvents and Chemical Intermediates Used in Paints, Varnishes, Lacquers, and Related Products.

(3) The following classes of compounds: cyclic branched, or linear completely fluorinated alkanes; cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine, will be analyzed as exempt compounds for compliance with subdivision (c), only at such time as manufacturers specify which individual compounds are used in the coating formulations and identify the test methods, which prior to such analysis, have been approved by the USEPA and the SCAQMD, that can be used to quantify the amounts of each exempt compound.

(f) Exemptions

The provisions of this rule shall not apply to aerosol coating products.

ATTACHMENT F

(Adopted November 4, 1988)(Amended May 5, 1989)(Amended June 2, 1989)
(Amended March 2, 1990)(Amended November 2, 1990)(Amended December 7, 1990)
(Amended August 2, 1991)(Amended January 13, 1995)
(Proposed Amended Rule 1106 October 2015)

PROPOSED AMENDED RULE 1106. MARINE AND PLEASURE CRAFT COATING OPERATIONS

(a) Purpose

The purpose of this rule is to reduce emissions of volatile organic compounds (VOC) and stratospheric ozone depleting and global warming compounds from Marine and Pleasure Craft Coating Operations.

(~~a~~b) Applicability

This rule applies to:

(1) MARINE COATING OPERATIONS:

~~This rule applies to~~Which means all coating operations of boats, ships, and vessels, and their appurtenances, including but not limited to structures, such as piers, docks ~~and~~, ~~to~~buoys and oil drilling rigs, intended for exposure to either a marine or fresh water environment.~~Coating operations of vessels which are manufactured or operated primarily for recreational purposes are subject to the requirements of Rule 1106.1 – Pleasure Craft Coating Operations.~~

(2) PLEASURE CRAFT COATING OPERATIONS:

Which means all coating operations for purposes of refinishing, repairing, modifying, or manufacturing of pleasure craft as defined in paragraph (c)(~~29~~30) of this rule, and to their parts and components.

(~~b~~c) Definitions

For the purpose of this rule the following definitions shall apply:

(1) AEROSOL COATING PRODUCT ~~is~~ means a pressurized coating product containing pigments, ~~or~~ resins, and/or other coating solids that ~~is dispensed~~dispenses product ingredients by means of a propellant, and is packaged in a disposable aerosol container~~can~~ for hand-held application~~, or for use in specialized equipment for ground marking and traffic marking applications~~.

(2) AIR DRIED COATING is any coating that is formulated by the manufacturer to be cured at a temperature below 90 °~~o~~C (194 °~~o~~F).

(3) ANTENNA COATING is any coating applied to equipment and associated structural appurtenances which are used to receive or transmit electromagnetic signals.

(4) ~~ANTIFOULING~~ ANTIFOULANT COATING is any coating applied to the underwater portion of ~~a~~ boats, ships, vessels, ~~vessel~~ or pleasure craft to prevent or reduce the attachment of biological organisms~~. An antifouling coating~~ and shall be registered with the ~~Environmental Protection Agency (EPA) as a pesticide~~United States Environmental Protection Agency ("U.S. EPA") as a pesticide under the Federal Insecticide, Fungicide, and Rodenticide Act (7 United States Code Section 136).

(5) BAKED COATING is any coating that is formulated by the manufacturer to be cured at a temperature at or above 90 °~~o~~C (194 °~~o~~F).

(6) CLEAR WOOD COATINGS are clear and semi-transparent topcoats applied to wood substrates to provide a transparent or translucent film.

(7) DISTRIBUTOR means any person to whom a ~~consumer~~ product is sold or supplied for the purposes of resale or distribution in commerce, except that manufacturers, retailers, and consumers are not distributors.

(~~6~~8) ELASTOMERIC ADHESIVE is any adhesive containing natural or synthetic rubber.

(9) ENERGY CURABLE COATINGS are single-component reactive products that cure upon exposure to visible-light, ultra-violet light or to an electron beam. The VOC content of thin film Energy Curable Marine and Pleasure Craft Coatings may be determined by manufacturers using ASTM Test Method 7767-11 "Standard Test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers, and Blends and Thin Coatings Made from Them".

(~~7~~9~~1~~0) EXEMPT COMPOUNDS ~~are any of the following compounds:~~(See Rule 102 - Definition of Terms).

~~(A) Group I (General)~~

~~trifluoromethane (HFC-23)~~

~~pentafluoroethane (HFC-125)~~

~~1,1,2,2-tetrafluoroethane (HFC-134)~~

~~tetrafluoroethane (HFC-134a)~~

~~1,1,1-trifluoroethane (HFC-143a)~~

~~1,1-difluoroethane (HFC-152a)~~

~~chlorodifluoromethane (HCFC-22)~~

~~dichlorotrifluoroethane (HCFC-123)~~

~~2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)~~

~~dichlorofluoroethane (HCFC-141b)~~

~~chlorodifluoroethane (HCFC-142b)~~

~~cyclic, branched, or linear, completely fluorinated alkanes~~

~~cyclic, branched, or linear, completely fluorinated ethers with no unsaturations~~

~~cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations~~

~~sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine~~

~~(B) Group II~~

~~methylene chloride~~

~~1,1,1-trichloroethane (methyl chloroform)~~

~~trichlorotrifluoroethane (CFC-113)~~

~~dichlorodifluoromethane (CFC-12)~~

~~trichlorofluoromethane (CFC-11)~~

~~dichlorotetrafluoroethane (CFC-114)~~

~~chloropentafluoroethane (CFC-115)~~

~~The use of Group II compounds and/or carbon tetrachloride may be restricted in the future because they are toxic, potentially toxic, upper-atmosphere ozone depleters, or cause other environmental impacts. By January 1, 1996, production of chlorofluorocarbons (CFC), 1,1,1,-trichloroethane (methyl chloroform), and carbon tetrachloride will be phased out in accordance with the Code of Federal Regulation Title 40, Part 82 (December 10, 1993).~~

(~~8~~10~~11~~) EXTREME HIGH GLOSS COATING is any coating which achieves at least 95 percent reflectance on a 60°~~o~~ meter when tested by ASTM Test Method D-523-14 ~~—~~"Standard Test Method for Specular Gloss".

(~~11~~12) FINISH PRIMER/SURFACER is any coating applied with a wet film thickness of less than 10 mils (one mil = 0.001 of an inch) and is applied prior to the application of a Marine or Pleasure Craft Coating for the purpose of providing corrosion resistance, adhesion for subsequent coatings, a moisture barrier, and promotes a uniform surface necessary for filling in surface imperfections.

(~~9~~~~12~~13) GRAMS OF VOC PER LITER OF COATING, LESS WATER AND LESS EXEMPT COMPOUNDS, OR REGULATORY VOC, is the weight of VOC per combined volume of VOC and coating solids and can be calculated by the following equation:

$$\text{Grams of VOC per Liter of Coating, Less Water and Less Exempt Compounds} = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where: W_s = weight of volatile compounds in grams
W_w = weight of water in grams
W_{es} = weight of exempt compounds in grams
V_m = volume of material in liters
V_w = volume of water in liters
V_{es} = volume of exempt compounds in liters

(~~13~~14) GRAMS OF VOC PER LITER OF MATERIAL, OR ACTUAL VOC, is the weight of VOC per volume of material and shall be calculated by the following equation:

$$\text{Grams of VOC per Liter of Material} = \frac{W_s - W_w - W_{es}}{V_m}$$

Where: W_s = weight of volatile compounds in grams
W_w = weight of water in grams
W_{es} = weight of exempt compounds in grams
V_m = volume of material in liters

(~~10~~~~14~~15) HEAT RESISTANT COATING is any coating which during normal use must withstand temperatures of at least 204 °~~o~~C (400 °~~o~~F).

(~~11~~~~15~~16) HIGH GLOSS COATING is any coating which achieves at least 85 percent reflectance on a 60°~~o~~ meter when tested by ASTM Method D-523-14 ~~–~~"Standard Test Method for Specular Gloss".

(~~12~~~~16~~17) HIGH TEMPERATURE COATING is any coating that during normal use ~~which~~ must withstand temperatures of at least 426 °~~o~~C (800 °~~o~~F).

(~~17~~18) HIGH BUILD PRIMER/SURFACER is any coating applied with a wet film thickness of 10 mils or more (one mil = 0.001 of an inch) prior to the application of a topcoat for purposes of providing corrosion resistance, adhesion of subsequent coatings, a moisture barrier, or promoting a uniform surface necessary for filling in surface imperfections.

(~~18~~19) HIGH-VOLUME, LOW-PRESSURE (HVLP) means spray application equipment designed to atomize 100 percent by air pressure only and is

operated between 0.1 and 10 pounds per square inch~~,~~ gauge~~,~~ (psig), air atomizing pressure measured dynamically at the center of the air cap and at the air horns.

(~~19~~20) INORGANIC ZINC COATING is a coating that contains 960 grams per liter or more elemental zinc incorporated into an inorganic silicate binder that is applied to steel to provide galvanic corrosion resistance.

(~~13~~~~20~~21) LOW ACTIVATION INTERIOR COATING is any coating used on interior surfaces aboard ~~ships~~ boats, ships, and vessels, to minimize the activation of pigments on painted surfaces within a radiation environment.

(~~21~~22) LOW-SOLIDS COATINGS are coatings containing one pound or less of solids per gallon of material.

(~~14~~~~22~~23) MARINE COATING is any coating, except unsaturated polyester resin (fiberglass) coatings, containing volatile organic materials and applied by any means to ~~ships,~~ boats, ships, and vessels, and their appurtenances, structures such as piers, ~~and~~ docks, ~~intended for exposure to a marine environment, and also to~~ buoys and oil drilling rigs, intended for ~~the~~ exposure to either a marine or fresh water environment.

(~~23~~24) MARINE DECK SEALANT PRIMER is any sealant primer intended by the manufacturer to be applied to wooden marine decks. A sealant primer is any product intended by the manufacturer to be applied to a substrate, prior to the application of a sealant, to enhance the bonding surface.

(~~15~~~~24~~25) METALLIC HEAT RESISTANT COATING is any coating which contains more than 5 grams of metal particles per liter of coating as applied and which must withstand temperatures over 80 °~~o~~C (~~175~~176 °~~o~~F).

(~~25~~26) MIST COATING is any low viscosity, thin film, epoxy coating applied to an inorganic zinc primer that penetrates the porous zinc primer and allows the occluded air to escape through the film prior to curing.

(~~16~~~~26~~27) NAVIGATIONAL AIDS COATING is any coating that is applied to ~~are~~ buoys or other Coast Guard waterway markers that are recoated aboard ship at their usage site and immediately returned to the water.

(~~27~~28) NONSKID COATING means any coating applied to the horizontal surface of a marine vessel for the specific purpose of providing slip resistance for personnel.

(~~28~~29) ORGANIC ZINC COATING is a coating that contains 960 grams per liter or more elemental zinc incorporated into an organic silicate binder that is applied to steel to provide galvanic corrosion resistance.

~~(17) PRETREATMENT WASH PRIMER is any coating which contains at least 1/2 percent acids, by weight, to provide surface etching and is applied directly to metal surfaces to provide corrosion resistance, adhesion, and ease of stripping.~~

(~~29~~30) PLEASURE CRAFT are marine or fresh water vessels that are less than 20 meters in length and are manufactured or operated primarily for recreational purposes, or are leased, rented, or chartered to a person or business for recreational purposes. Vessels operated in amusement~~Amusement~~ theme parks ~~that operate vessels~~ in a fresh water environment solely for the purpose of an amusement park attraction shall be considered pleasure craft vessels regardless of their length. The owner or operator of a pleasure craft vessel shall be responsible for certifying that the intended use is for recreational purposes.

(~~30~~31) PLEASURE CRAFT COATING is any marine coating, except unsaturated polyester resin (fiberglass) coatings, applied by brush, spray, roller, or other means to a pleasure craft. A pleasure craft coating that is sold, offered for sale, or solicited for use within the South Coast Air Quality Management District (SCAQMD) jurisdiction must be designated by the manufacturer as a pleasure craft coating by any sticker or label affixed on the container, or where it is indicated in any sales or advertising literature, that the coating may be used as, or is suitable for use as, a pleasure craft coating.

(~~31~~32) PRETREATMENT WASH PRIMER is a coating which contains a minimum of 1/2 percent acid, by weight, applied directly to bare metal surfaces to provide necessary surface etching.

(~~1832~~33) REPAIR AND MAINTENANCE THERMOPLASTIC COATING is any resin-bearing coating, such as vinyl, chlorinated rubber, or bituminous coatings, in which the resin becomes pliable with the application of heat, and is used to recoat portions of a previously coated substrate which has sustained damage to the coating following normal coating operations.

(~~1933~~34) SEALANT FOR WIRE-SPRAYED ALUMINUM is any coating of up to one mil (one mil = 0.001 of an inch) in thickness of an epoxy

material which is reduced for application with an equal part of an appropriate solvent (naphtha, or ethylene glycol monoethyl ether).

(~~34~~35) SEALER is a coating applied to bare wood to seal surface pores to prevent subsequent coatings from being absorbed into the wood.

(~~2035~~36) SOLVENT CLEANING OPERATION is ~~the removal of loosely held uncured adhesives, uncured inks, uncured coatings, and contaminants from parts, products, tools, machinery, equipment, and general work areas. Contaminants include, but are not limited to, dirt, soil, and grease. In a cleaning process which consists of a series of cleaning methods, each distinct method shall constitute a separate solvent cleaning operation~~as defined in Rule 1171 - Solvent Cleaning Operations.

(~~2136~~37) SPECIAL MARKING COATING is any coating used for items such as flight decks, ~~ships'~~ vessel identification numbers~~,~~ and other demarcations for safety~~/~~ or identification~~applications~~.

(~~2237~~38) TACK COAT is an epoxy coating of up to two mils ~~(0.002 inch)~~ (one mil = 0.001 of an inch) thick applied to an existing epoxy coating. The existing epoxy coating must have aged beyond the time limit specified by the manufacturer for application of the next coat.

(~~38~~39) TEAK PRIMER is a coating applied to teak wood or previously oiled teak wood decks in order to improve the adhesion of a seam sealer.

(~~39~~40) TOPCOAT is any final coating applied to the interior or exterior of a marine or pleasure craft.

(~~2340~~41) TOUCH-UP COATING is any coating operation incidental to the main coating process but necessary ~~used~~ to cover minor imperfections ~~prior to shipment appearing after the main coating operation~~or minor mechanical damage incurred prior to ~~intended~~ use.

(~~41~~42) TRANSFER EFFICIENCY means the amount of coating solids adhering to the object being coated divided by the total amount of coating solids sprayed; expressed as a percentage.

(~~2442~~43) UNDERSEA WEAPONS SYSTEM COATING is any coating applied to any or all components of a weapons system intended for exposure to a marine environment and~~that is~~ intended to be launched or fired ~~underwater~~undersea.

(~~43~~44) VARNISHES are clear or pigmented wood topcoats formulated with various resins to dry by chemical reaction.

(~~25~~44~~45~~45) VOLATILE ORGANIC COMPOUND (VOC) is ~~any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds~~as defined in Rule 102 - Definition of Terms.

(~~26~~45~~46~~46) WIRE-SPRAYED ALUMINUM is any molten multi-aluminum coating applied to a steel substrate using oxygen fueled combustion spray ~~methods~~equipment.

(~~c~~d) Requirements

(1) VOC Content of Marine Coatings

Except as otherwise provided in this rule, a person shall not apply a marine coating within the SCAQMD jurisdiction with a VOC content in excess of the following limits shown in the Table of Standards I, expressed as grams of VOC per liter of coating, as applied, less water and less exempt solvents:

	~~Baked~~	~~Air Dried~~
~~General Coating~~	~~275 g/L~~	~~340 g/L~~
~~Specialty Coating~~		
~~Heat Resistant~~	~~360~~	~~420~~
~~Metallic Heat Resistant~~		~~530~~
~~High Temperature~~		~~500~~
~~Pre-Treatment Wash Primer~~	~~780~~	~~780~~
~~Underwater Weapons Systems~~	~~275~~	~~340~~
~~Elastomeric Adhesives with 15%, by Weight, Natural or Synthetic Rubber~~		~~730~~
~~Solvent-Based Inorganic Zinc~~		~~650~~
~~Navigational Aids~~		~~340~~
~~Sealant for Wire-Sprayed Aluminum~~		~~610~~
~~Special Marking~~		~~490~~
~~Tack Coat~~		~~610~~
~~Low Activation Interior Coating~~		~~420~~
~~Repair and Maintenance Thermoplastic~~		~~550~~

~~Extreme High-Gloss Coating 420 490~~

~~Antenna Coating 530~~

~~Antifoulant 400~~

~~High Gloss 275 340~~

TABLE OF STANDARDS I

MARINE COATING CATEGORY	VOC LIMITS Less water and exempt compounds Grams per Liter (g/L)	
	BAKED	AIR DRIED
	CURRENT LIMIT	CURRENT LIMIT
Antenna Coating		340
Antifoulant Coatings:		
Aluminum Substrates		560
Other Substrates		400
Elastomeric Adhesives (with 15%, by Weight, Natural or Synthetic Rubber)		730
Inorganic Zinc Coating		340
Low Activation Interior Coating		420
Mist Coating		610
Navigational Aids Coating		340
Nonskid Coating		340
Organic Zinc Coating		340
Pre-Treatment Wash Primer	420	420
Repair and Maintenance Thermoplastic Coating		340
Sealant for Wire-Sprayed Aluminum		610
Special Marking Coating		420
Specialty Coatings:		
Heat Resistant Coating	360	420
Metallic Heat Resistant Coating		530
High Temperature Coating		500
Tack Coating		610
Topcoats:		
Extreme High-Gloss Coating	420	490
High Gloss Coating	275	340
Underwater Weapons Systems Coating	275	340
Any Other Coating Type	275	340

(2) VOC Content of Pleasure Craft Coatings

Except as otherwise provided in this rule, a person shall not apply a pleasure craft coating within the SCAQMD jurisdiction with a VOC content in excess of the following limits shown in the Table of Standards

II, expressed as grams of VOC per liter of coating, as applied, less water and less exempt solvents:

TABLE OF STANDARDS II

VOC LIMITS Less water and exempt compounds Grams per Liter (g/L)	
PLEASURE CRAFT COATING CATEGORY	CURRENT LIMIT
Antifoulant Coatings:	
Aluminum Substrate	560
Other Substrate	330
Clear Wood Coatings:	
Sealers	550
Varnishes	490
Primer Coatings:	
Finish Primer/Surfacer	420
High Build Primer/Surfacer	340
Marine Deck Sealant Primer	760
Pretreatment Wash Primer	780
Teak Primer	775
Topcoats:	
Extreme High Gloss Coating	490
High Gloss Coating	420
Any Other Coating Type	420

(3) VOC Content of Low-Solids Coatings

Except as otherwise provided in this rule, a person shall not apply a marine coating or a pleasure craft coating within the SCAQMD jurisdiction with a VOC content in excess of the following limit shown in the Table of Standards III, expressed as grams of VOC per material of coating, as applied:

TABLE OF STANDARDS III

VOC LIMIT – MARINE & PLEASURE CRAFT COATINGS Grams per liter of material VOC	
COATING CATEGORY	CURRENT LIMIT
Low-Solids Coating	120

(4) Most Restrictive VOC Limit

If any representation or information on the container of any coating subject to this rule, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature that indicates that the coating meets the definition of or is recommended for use for more than one of the marine coating categories listed in ~~sub~~paragraph (d)(1) or the pleasure craft coating categories listed in ~~sub~~paragraph (d)(2), or the low-solids coating category listed in ~~sub~~paragraph (d)(3), then the lowest VOC content limit shall apply.

~~anywhere on the container of any coating listed in either Table of Standards or label theretoor literatureany representation is made that the coating may be used as, or is suitable for use as, a for which a lower standard is specified in the table or in paragraph(d)(1) or (d)(2), standard~~

(~~2~~5) Approved Emission Control System

~~(A) Approved Emission Control System~~

~~Owners and/or operators may comply with the provisions of paragraph (c)(1) by using an emission control system, which has been approved in writing by the Executive Officer, for reducing VOC emissions. The control system must achieve a minimum capture efficiency using USEPA, ARB, and District methods specified in subparagraph (e)(4)(A) and a destruction efficiency of at least 85 percent by weight, and,~~

~~(B) The approved system shall reduce the VOC emissions, when using non-compliant coatings, to an equivalent or greater level that would be achieved by the provisions in paragraph (c)(1)~~A person may comply with the provisions of paragraphs (d)(1), (d)(2) or (d)(3), by using an approved emission control system, consisting of a collection and control device, provided such emission control system is approved pursuant to Rule 203 - Permit to Operate, in writing, by the Executive Officer for reducing emissions of VOC. The Executive Officer shall approve such emission control system only if the VOC emissions resulting from the use of non-compliant coatings will be reduced to a level equivalent to or lower than the limits specified in paragraphs (d)(1), (d)(2) or (d)(3), as applicable. The required efficiency of an emission control system at which an equivalent or greater level of VOC reduction will be achieved shall be calculated by the following equation:

$$C.E. = \left[1 - \left\{ \frac{(VOC_{LWc})}{(VOC_{LWn,Max})} \times \frac{1 - (VOC_{LWn,Max}/D_{n,Max})}{1 - (VOC_{LWc}/D_c)} \right\} \right] \times 100\%$$

Where: C.E. = Control Efficiency, expressed as a percentage

VOC_{LWc} = VOC Limit of Rule 1106, less water and less exempt compounds, pursuant to subdivision (~~c~~d).

$VOC_{LWn,Max}$ = Maximum VOC content of non-compliant coating used in conjunction with a control device, less water and less exempt compounds.

$D_{n,Max}$ = Density of solvent, reducer, or thinner contained in the non-compliant coating, containing the maximum VOC content of the multi-component coating.

D_c = Density of corresponding solvent, reducer, or thinner used in the compliant coating system = 880 g/L.

(~~3~~6) Alternative Emission Control Plan

~~Owners and/or operators may achieve compliance with the requirements~~A person may comply with the provisions of paragraphs (d)(1), (d)(2) and (d)(3)~~paragraph (c)(1)~~ by means of an Alternative Emission Control Plan, pursuant to Rule 108 - Alternative Emissions Control Plans.

(7) Exempt Compounds

A person shall not manufacture, sell, offer for sale, distribute for use in the SCAQMD jurisdiction, or apply any marine or pleasure craft coating which contains any Group II Exempt Compounds listed in Rule 102 - Definition of Terms, in quantities greater than 0.1 percent by weight. Cyclic, branched, or linear, completely methylated siloxanes (VMS) are not subject to this provision.

(8) Carcinogenic Materials

A person shall not manufacture, sell, offer for sale, distribute for use in the SCAQMD jurisdiction, or apply any marine or pleasure craft coating which contains cadmium, nickel, lead or hexavalent chromium that was introduced as a pigment or as an agent to impart any property or

characteristic to the marine or pleasure craft coatings during manufacturing, distribution, or use of the applicable marine or pleasure craft coatings.

(9) Transfer Efficiency

(A) Effective April 1st, 2016 a person shall not apply any marine coating or pleasure craft coating unless one of the following methods of coating transfer is used:

(i) electrostatic application, or

(ii) high-volume, low-pressure (HVLP) spray, or

(iii) brush, dip, or roller, or

(iv) Spray gun application, provided the owner or operator demonstrates that the spray gun meets the HVLP definition in paragraph (c)(~~18~~19) in design and use. A satisfactory demonstration must be based on the manufacturer's published technical material on the design of the spray gun and by a demonstration of the operation of the spray gun using an air pressure tip gauge from the manufacturer of the spray gun.

(v) Any such other marine coating or pleasure craft coating application methods as demonstrated, in accordance with the provisions of paragraph (h)(~~4~~6), to be capable of achieving equivalent or better transfer efficiency than the marine coating or pleasure craft coating application method listed in clause (d)(9)(A)(ii), provided written approval is obtained from the Executive Officer prior to use.

(B) A person shall not apply any marine coating or pleasure craft coating by any of the methods listed in subparagraph (d)(9)(A) unless such coating is applied with properly operating equipment, operated according to procedures recommended by the manufacturer and in compliance with applicable permit conditions, if any.

(~~4~~10) Solvent Cleaning ~~Operations;~~ Storage and Disposal of VOC-containing Materials

~~All solvent~~Solvent cleaning ~~operations~~ of application equipment, parts, products, tools, machinery, equipment, general work areas, and the storage

and disposal of VOC-containing materials used in solvent cleaning operations shall be carried out pursuant to SCAQMD Rule 1171 - Solvent Cleaning Operations.

~~(5) RecordkeepNotwithstanding the provisions of subdivision (g), records shall be maintained pursuant to Rule 109.~~

~~(d) Prohibition of Specification~~

~~(1) A person shall not solicit or require any other person to use, in the district, any coating or combination of coatings to be applied to any marine vessel or marine component subject to the provisions of this rule that does not meet the limits requirements of this rule or of an Alternative Emission Control Plan approved pursuant to the provisions of paragraph (c)(3) of this rule.~~

~~(2) The requirements of paragraph (d)(1) shall apply to all written or oral agreements executed or entered into after November 4, 1988.~~

(e) Prohibition of Possession, Specification and Sale

(1) For the purpose of this rule, no person shall ~~supply, sell, offer for sale, market, manufacture, blend, repackage, apply,~~ store at a worksite, ~~or solicit the application of~~ any marine coating or pleasure craft coating subject to this rule within the SCAQMD jurisdiction that is not in compliance with the requirements shown in the Tables of Standards of paragraphs (d)(1), (d)(2), and (d)(3) unless one or more of the following conditions apply:

(A) The marine or pleasure craft coating is for use at a facility that utilizes an approved emission control device pursuant to ~~sub~~paragraph (d)(5) and the coating meets the limits specified in permit conditions.

(B) The marine or pleasure craft coating is for use at a facility that operates in compliance with an approved Alternative Emissions Control Plan pursuant to subparagraph (d)(6), and the marine or pleasure craft coating is specified in the plan.

~~(C) The requirements of paragraphs (d)(7) and (d)(8).~~

(2) For the purpose of this rule, no person shall solicit from, specify, or require any other person to use in the SCAQMD jurisdiction any marine or pleasure craft coating which, does not meet the:

(A) Applicable VOC limits required by paragraph (d)(1), (d)(2) or (d)(3) for the specific application unless:

(i) The marine or pleasure craft coating is located at a facility that utilizes an approved emission control device pursuant to paragraph (d)(5), and the marine or pleasure craft coating meets the limits specified in permit conditions; or,

(ii) The marine or pleasure craft coating is located at a facility that operates in compliance with an approved Alternative Emissions Control Plan pursuant to paragraph (d)(6), and the marine or pleasure craft coating is specified in the plan.

(B) The requirements of paragraphs (d)(7) and (d)(8).

(3) For the purpose of this rule, no person shall supply, sell, offer for sale, market, blend, package, repackage or distribute any marine or pleasure craft coating for use within the SCAQMD jurisdiction subject to the provisions in this rule which, does not meet the:

(A) Applicable VOC limits required by paragraphs (d)(1), (d)(2) and (d)(3) for the specific application, unless:

(i) The marine or pleasure craft coating is for use at a facility that utilizes an approved emission control device pursuant to paragraph (d)(5), and the coating meets the limits specified in permit conditions; or,

(ii) The marine or pleasure craft coating is for use at a facility that operates in accordance with an approved Alternative Emissions Control Plan pursuant to paragraph (d)(6), and the marine or pleasure craft coating is specified in the plan; and,

(iii) The person that supplies, sells, offers for sale, markets, blends, packages, repackages or distributes the marine or pleasure craft coating keeps the following records for at least five years and makes them available to the Executive Officer upon request:

(I) Marine or pleasure craft coating name and manufacturer;

(II) VOC content of the marine or pleasure craft coating;

(III) Documentation such as manufacturer specification sheets, material safety data sheets, technical data sheets, or any other air quality data sheets that demonstrate that the material is intended for use as a marine or pleasure craft coating;

(B) The requirements of paragraphs (d)(7) and (d)(8).

(4) For the purpose of this rule, no person shall solicit from, specify, require, offer for sale, sell, or distribute to any other person for use in the SCAQMD jurisdiction any marine or pleasure craft coating application equipment which does not meet the requirements of subparagraph (d)(9)(A).

(5) For the purpose of this rule, no person shall offer for sale, sell, supply, market, offer for sale or distribute an HVLP spray gun for use within the SCAQMD unless ~~the~~ said person ~~offering for sale, selling, marketing or distributing the HVLP spray gun for use within the SCAQMD~~ provides accurate information to the spray gun recipient. Such accurate information shall include ~~on~~ the maximum inlet air pressure to the spray gun which would result in a maximum air pressure of 10 pounds per square inch gauge (psig) air pressure, measured dynamically at the center of the air cap and at the air horns, based on the manufacturer's published technical material on the design of the spray application equipment, and by a demonstration of the operation of the spray application equipment using an air pressure tip gauge from the manufacturer of the gun. The information shall either be permanently marked on the gun, or provided on the company's letterhead or in the form of technical literature which clearly identifies the spray gun manufacturer, the seller, or the distributor.

(6) Paragraphs (d)(1), (d)(2) and (d)(3) shall not apply to marine coatings or pleasure craft coatings that are sold, offered for sale, or solicited, for shipment or use outside of the SCAQMD jurisdiction, or for shipment to other manufacturers for repackaging provided such coatings are sold, offered for sale, or solicited, for shipment or use outside the SCAQMD jurisdiction.

(f) Recordkeeping Requirements

(1) Recordkeeping for VOC Emissions

Records of marine coating usage and pleasure craft coating usage, as applicable, shall be maintained pursuant to SCAQMD Rule 109 - Recordkeeping for Volatile Organic Compound Emissions, and shall be made available to the Executive Officer upon request. The records shall also include the following information:

(A) Material name and manufacturer;

(B) Application method;

(C) Marine coating and pleasure craft coating categories, as applicable, and mix ratio specific to the coating;

(D) Regulatory VOC, for the marine coating and pleasure craft coating, as applicable;

(E) Documentation such as manufacturer specification sheets, material safety data sheets, technical data sheets, or any other air quality data sheets that indicate the material is intended for use as a marine coating, pleasure craft coating or solvent, as applicable;

(F) Current manufacturer specification sheets, material safety data sheets, or technical data sheets, which list the actual VOC and regulatory VOC, for each marine and pleasure craft coating, as applicable; and,

(2) Recordkeeping Requirements for Emission Control System

Any person using an emission control system shall maintain daily records of key system operating parameters which will demonstrate continuous operation and compliance of the emission control system during periods of VOC emission producing activities. "Key system operating parameters" are those parameters necessary to ensure or document compliance with subparagraph (h)(~~5~~7)(A), including, but not limited to, temperatures, pressure drops, and air flow rates. These records shall be made available to the Executive Officer upon request.

(g) Administrative Requirements for Marine Coating Manufacturers

(1) Compliance Statement Requirement

Effective April 1st, 2016 for each individual marine coating and pleasure craft coating, marine coating and pleasure craft coating component, and ready to spray mixture**s** (based on the manufacturers stated mix ratio) sold, offered for sale, for shipment or use within the SCAQMD jurisdiction, the

manufacturer shall include the following information on a product data sheet, or an equivalent medium:

(A) The actual VOC and regulatory VOC for marine coating and pleasure craft coating, as applicable; and,

(B) The weight percentage of volatiles, water, and exempt compounds; and,

(C) The density of the material (in grams per liter).

(2) Labeling Requirements

(A) The manufacturer of marine coatings and pleasure craft coatings or marine coating and pleasure craft coating components shall include on all containers the regulatory VOC content, as supplied (in grams of VOC per liter of coating less water and exempt compounds).

(3) Reporting Requirements

(A) Annual Quantity Emissions Reports (AQER)

Effective April 1st, 2016 and thereafter, for each calendar year (January 1 through December 31) beginning with 2015 and continuing with each subsequent calendar year until 2018, a marine coating or pleasure craft coating manufacturer or distributor shall submit to the SCAQMD by April 1st of the following calendar year, an annual quantity and emissions report for products subject to the rule that were sold or distributed for sale within the SCAQMD jurisdiction. The report format shall be approved by the Executive Officer, and shall include the annual sales or distribution volume and the regulatory VOC content of marine coatings and pleasure craft coatings sold or distributed within the SCAQMD jurisdiction.

(B) List of Distributors

Effective April 1st, 2016 and thereafter, for each calendar year (January 1 through December 31) beginning with 2015 and continuing with each subsequent calendar year until 2018, each manufacturer or distributor of a marine coating or pleasure craft coating that were sold or distributed for sale within the SCAQMD jurisdiction, shall submit to the SCAQMD by April 1st a list of all U.S. distributors to whom they supply products that are subject to

this rule, including but not limited to, private label marine coating or pleasure craft coatings, and toll manufactured marine coatings or pleasure craft coatings. The report format shall be approved by the Executive Officer and shall include the distributor's name, address, contact person and telephone number.

(~~e~~h) Test Methods

(1) Determination of VOC Content:

The VOC content of coatings, subject to the provisions of this rule shall be determined by the following methods:

(A) ~~United States Environmental Protection Agency (~~U.S. EPA~~)~~ Reference Test Method 24 (Determination of Volatile Matter Content, Water Content, Volume Solids and Weight Solids of Surface Coatings, Code of Federal Regulations, Title 40, Part 60, Appendix A~~,~~). The exempt compounds' content shall be determined by South Coast Air Quality Management District (SCAQMD) Laboratory Test Method 303 (Determination of Exempt Compounds) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual; or,

(B) SCAQMD Method 304 [Determination of Volatile Organic Compounds (VOCs) in Various Materials] contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual~~.~~; or,

(C) SCAQMD Method 313 [Determination of Volatile Organic Compounds VOC by Gas Chromatography-Mass Spectrometry] in the SCAQMD's "Laboratory Methods of Analysis for Enforcement Samples" manual.

(~~B~~D2) VOC content determined to exceed the limits established by this rule through the use of any of the above-referenced test methods shall constitute a violation of this rule.

(~~C~~E3) Exempt Perfluorocarbon Compounds

The following classes of compounds:

cyclic, branched, or linear, completely fluorinated alkanes;

cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;

cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and

sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine,

~~will~~ shall be analyzed as exempt compounds for compliance with subdivision (~~c~~d), only ~~when~~ at such time as manufacturers specify which individual compounds are used in the ~~coating~~ formulation of the coatings subject to this rule. In addition, prior to any such analysis, the manufacturers shall also identify the test methods approved by the U.S. EPA, California Air Resources Board (CARB), and the SCAQMD ~~approved test methods prior to any such analysis shall~~ that will be used to quantify the amount of each exempt compound.

(~~2~~4) Determination of ~~Metal Content~~Iridescent Particles in Metallic/Iridescent Coatings

The metal and silicon content in metallic/iridescent coatings subject to the provisions of this rule shall be determined by the SCAQMD Method 311 (Determination~~Analysis~~ of Percent Metal in Metallic Coatings by Spectrographic Method) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual.

(~~3~~5) Determination of Acid Content in Marine and Pleasure Craft Coatings

The acid content of any coating subject to the provisions of this rule shall be determined by ASTM D-1613-~~85~~ 06 (2012) (Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint~~.~~, Varnish, Lacquer, and Related Products) ~~contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual~~.

(~~4~~6) Transfer Efficiency

The transfer efficiency of alternative marine coating and pleasure craft coating application methods, as defined by clause (d)(9)(A)(v), shall be determined in accordance with the SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989," and SCAQMD "Guidelines for Demonstrating Equivalency With SCAQMD Approved Transfer Efficiency Spray Gun September 26, 2002".

(~~4~~57) Determination of Efficiency of Emission Control System

(A) The efficiency of the collection device of the emission control system as specified in paragraph ~~(c)(2)~~(d)(5) shall be determined by the ~~USEPA~~ methods specified ~~cited in 55 Federal Register 26865 (June 29, 1990), or any other method approved by the USEPA, the California Air Resources Board, and the SCAQMD~~below~~.~~:

(i) U.S. EPA method cited in 55 Federal Register (FR) 26865, June 29, 1990; or

(ii) SCAQMD's "Protocol for Determination of Volatile Organic Compounds (VOC) Capture Efficiency"; or

(iii) Any other method approved by the U.S. EPA, CARB, and the SCAQMD Executive Officer.

(B) The efficiency of the control device of the emission control system as specified in paragraph (~~c~~d)(~~2~~5) and the VOC content in the control device exhaust gases, measured and calculated as carbon, shall be determined by U.S. EPA Test Methods 25, 25A, or SCAQMD Method 25.1 (Determination of Total Gaseous Non-Methane Organic Emissions as Carbon) as applicable. U.S. EPA Test Method 18, or CARB Method 422 shall be used to determine emissions of exempt compounds.

(~~5~~~~6~~8) Multiple Test Methods

When more than one test method or set of test methods are specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of the rule.

(~~6~~~~7~~9) All test methods referenced in this section shall be the most recently approved version.

(~~h~~i) Rule 442 Applicability

Any ~~*marine coating operation*~~Marine Coating Operation or Pleasure Craft Coating Operation or any facility which is exempt pursuant to subdivision (j) from all or a portion of the VOC limits of subdivision (d) ~~this rule~~ shall comply with the provisions of Rule 442 - Usage of Solvents.

(~~i~~j) Exemptions

The provisions of this rule shall not apply to:

(1) ~~marine~~Marine coatings applied to interior surfaces of potable water containers.

(2) ~~touch~~Touch-up coatings, as defined by paragraph (c)(~~40~~41) of this rule.

~~(3) marine coatings purchased before January 1, l992, in containers of one quart or less and applied to pleasure craft.~~

~~(4) antifoulant coatings applied to aluminum hulls.~~

(~~5~~3) Any aerosol coating product~~s~~.

(4) The provisions of paragraph (d)(9) shall not apply to Marine or Pleasure Craft coatings with a viscosity of 650 centipoise or greater, as applied.

(5) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to marine coatings that are used for vessels that are intended to submerge to at least 500 feet below the surface of the water provided that the total combined usage of such coatings does not exceed 12 gallons per calendar year and such coatings are in compliance with the VOC limits in the U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair (Surface Coatings).

ATTACHMENT G

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

FINAL STAFF REPORT
Proposed Amended Rule 1106 - Marine and Pleasure Craft Coating Operations; and
Proposed Rescinding of Rule 1106.1 - Pleasure Craft Coating Operations

October 2015

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EXECUTIVE SUMMARY

Rule 1106 - Marine Coating Operations and Rule 1106.1 - Pleasure Craft Coating Operations are source specific rules that were adopted to reduce emissions of volatile organic compounds (VOC) and stratospheric ozone depleting and global warming compounds from marine coatings applied on boats, ships, and vessels, and their appurtenances, and to buoys and oil drilling rigs intended for the marine environment, and for pleasure craft, as defined in Rule 1106.1, including the parts and components.

The proposal is two-fold; the proposed amendment to Rule 1106 - Marine Coating Operations and the proposed rescinding of Rule 1106.1 - Pleasure Craft Coating Operations. Proposed Amended Rule (PAR) 1106 - Marine and Pleasure Craft Coating Operations is a source specific rule that will continue to regulate the marine coating industry but will now also apply to the pleasure craft marine coatings by incorporating the requirements of Rule 1106.1 - Pleasure Craft Coating Operations. The air quality objective of these proposed actions is to combine the requirements for marine and pleasure craft coating operations into one rule, align Volatile Organic Compounds (VOC) content limits with United States Environmental Protection Agency (U.S. EPA) Control Techniques Guidelines and other California air districts, and promote consistency with other SCAQMD Regulation XI VOC rules. PAR 1106 - Marine and Pleasure Craft Coating Operations and the Proposed Rescinding of Rule 1106.1 - Pleasure Craft Coating Operations would combine the requirements for marine and pleasure craft coating operations into one rule, reduce the VOC content limits for certain categories of coatings, add VOC content limits for new categories of coatings, and require the use of the most restrictive VOC content limit. The proposed amendment would also prohibit the possession and sale of non-compliant coatings and establish requirements for transfer efficiency, labeling, recordkeeping and reporting.

The proposal seeks to include revised VOC content limits for pretreatment wash primers, antenna, repair and maintenance thermoplastic, inorganic zinc, and specialty marking coatings, in order to align limits with U.S. EPA Control Techniques Guidelines and other California Air Pollution Control Districts and Air Quality Management District's (APCDs/AQMDs), adds new categories for marine aluminum antifoulant, mist, nonskid and organic zinc coatings and marine deck primer sealant and require the use of the most restrictive VOC content limit. The proposed amendment would also prohibit possession and sale of non-compliant coatings and establish requirements for transfer efficiency, labeling, recordkeeping and reporting. In addition, staff is also proposing new definitions to be added to Rule 1106 which are specific to Pleasure Craft Coating Operations definitions from Rule 1106.1. This staff proposal is administrative in nature and staff analysis concludes that the VOC content adjustment to the coating categories noted above will not adversely affect coating manufacturers by way of reformulation, or affect current work practices currently used in the industry.

The proposed administrative amendment is not expected to yield any additional VOC reductions or increases since this industry already has compliant products available that can meet the VOC limits in this proposal.

RULE 1106 – MARINE AND PLEASURE CRAFT COATING OPERATIONS

CHAPTER 1: BACKGROUND ON PROPOSED AMENDED RULE 1106

- Introduction
- Regulatory History
- Affected Facilities
- Process Description

INTRODUCTION

Rule 1106 - Marine Coating Operations and Rule 1106.1 - Pleasure Craft Coating Operations are both source specific rules that were adopted to reduce emissions of volatile organic compounds (VOC) and stratospheric ozone depleting and global warming compounds from marine coatings applied on boats, ships, and vessels, and their appurtenances, and to buoys and oil drilling rigs intended for the marine environment, and for pleasure craft, as defined in Rule 1106.1, including parts and components. The proposed amendment is two-fold. First, Rule 1106.1 is proposed to be rescinded and second, Rule 1106 will subsume the requirements of Rule 1106.1 - Pleasure Craft Coating Operations, while revising VOC content limits for pretreatment wash primers, antenna, repair and maintenance thermoplastic, inorganic zinc, and specialty marking coatings, in order to align limits with U.S. EPA Control Techniques Guidelines and other APCDs/AQMDs. The proposed amendment also adds new categories for marine aluminum antifoulant, mist, nonskid and organic zinc coatings and marine deck primer sealant, and requires the use of the most restrictive VOC content limit. The proposed amendment would also prohibit possession and sale of non-compliant coatings and establish requirements for transfer efficiency, labeling, recordkeeping and reporting.

REGULATORY HISTORY

Rule 1106 was adopted on November 4, 1988 and has been subsequently amended seven times. The most recent amendment was on January 13, 1995 which incorporated corrective action items in efforts to resolve deficiencies as determined by U.S. EPA. The corrective action items in that amendment included language and an equation for control device equivalency, an applicability statement, test methods that were required to be specified, language regarding multiple test methods with the addition of the most recent test method, an updated definition for aerosol coatings and exempt compounds, and a permanent exemption for aerosol containers.

Rule 1106.1 was adopted on May 1, 1992 and has been subsequently amended three times. The most recent amendment was on February 12, 1999 which removed Pleasure Craft Coating Operations from existing Rule 1106 - Marine Coating Operations. Many of the existing coating categories in Rule 1106 at that time were not representative of the pleasure craft coating industry. Consequently, the SCAQMD adopted Rule 1106.1 with the intent of identifying the special categories of coatings applied on pleasure craft.

AFFECTED INDUSTRIES

Rule 1106 is applicable to all coating operations of boats, ships, and their appurtenances, and to buoys and oil drilling rigs intended for the marine environment. Coating operations of vessels which are manufactured or operated primarily for recreational purposes are subject to the requirements of Rule 1106.1.

Rule 1106.1 is applicable to all coating operations of pleasure craft, as defined in paragraph (b)(10) in that rule, or their parts and components, for the purpose of refinishing, repairing, modification, or manufacturing such craft. This rule also applies to establishments engaged in activities

described in the United States Office of Management and Budget's 1987 Standard Industrial Classification Manual, under Standard Industrial Classification (SIC) codes 3732 - Boat Building and Repairing and 4493 - Marinas. Pleasure Craft Coating Operations which are subject to the requirements of Rule 1106.1 are not subject to the requirements of current Rule 1106.

Shipyards, Boatyards and Marinas:

Staff visited numerous shipyards, boatyards and marinas to gather information on what type of work the facilities were doing and what type of coatings they were using. Table 1-1 below shows the shipyards, boatyards and marinas that were visited by SCAQMD staff and Table 1-2 shows the large scale ships that were visited. The majority of the operators in the marine coating and pleasure craft coating industry are non-permitted facilities and are not typically inspected by SCAQMD inspectors. Staff visited several facilities and found many cases of non-compliance with both Rules 1106 and 1106.1 VOC limit standards. Staff also found that the most common maintenance operation at the shipyards, boatyards and marinas is the application of antifoulant coatings (these type coatings are explained in the following section - Process Description). Many shipyards, boatyards and marinas were using antifoulant coatings in excess of the VOC limit standards and were not aware they were exceeding the limit due to their unfamiliarity with the rule requirements. Staff also found that several suppliers to the shipyards, boatyards and marinas and consumers were selling non-compliant coating products.

TABLE 1-1: SHIPYARDS, BOATYARDS AND MARINAS VISITED BY SCAQMD STAFF

SHIPYARD	CITY	COUNTY
Al Larson Boat Shop	Terminal Island	Los Angeles
Cabrillo Boat Shop	Long Beach	Los Angeles
Colonial Yacht Anchorage **(O/B)**	Wilmington	Los Angeles
Gambol Industries	Long Beach	Los Angeles
King Harbor Marine Center	Redondo Beach	Los Angeles
Marina Shipyard	Long Beach	Los Angeles
Seamark Marine	Marina del Rey	Los Angeles
The Boatyard	Marina del Rey	Los Angeles
Wilmington Marine Service Boatyard **(O/B)**	Wilmington	Los Angeles
Windward Yacht & Repair Center	Marina del Rey	Los Angeles
Balboa Boat Yard of California	Newport Beach	Orange
Basin Marine	Newport Beach	Orange
Newport Harbor Shipyard	Newport Beach	Orange
Dana Point Shipyard	Dana Point	Orange
Larson's Shipyard	Newport Beach	Orange
South Coast Shipyard	Newport Beach	Orange
Sunset Aquatic Shipyard	Huntington Beach	Orange

(O/B) Out of Business

TABLE 1-2: LARGE SCALE SHIPS VISITED BY SCAQMD STAFF

SHIP	CITY	COUNTY
Queen Mary	Long Beach	Los Angeles
U.S.S. Iowa	San Pedro	Los Angeles
S.S. Lane Victory	San Pedro	Los Angeles

Staff found that the shipyards, boatyards and marinas perform both mechanical repair and coating services. The mechanical repair services typically include engine work, drive unit work and any other non-coating type work. Coating operations include both top side and bottom side coating operations. Topside coatings are used from the waterline of the vessel up and bottom side coatings are typically for use underwater. Staff found that a small number of shipyards, boatyards and marinas offered topside coating services. The shipyards, boatyards and marinas that do not offer topside coating services default to contractors who perform topside coating operations at the site. The majority of the shipyards, boatyards and marinas offered bottom side coating services which is the application or reapplication of antifoulant coatings. Staff confirmed that antifoulant coatings are used for vessels that remain in the water after use and are subject to marine animal and vegetation fouling and the owner of a vessel needs an antifoulant coating on the bottom of the vessel to prevent marine and vegetative growth. The average recoat operation for antifoulant coatings is typically every two years, and it takes two coats of antifoulant, rolled on, with a third coat applied at the waterline level. Staff found that the application of antifoulant coatings is the main operation for many of the shipyards, boatyards and marinas.

Staff visited the three ships shown in Table 1-2 and learned that none of the ships use an antifoulant coating. The Queen Mary is a stationary museum and there are no plans to move the ship in the future. This ship is scheduled for new paint in the future, possibly within two years. The U.S.S. Iowa is also a museum but can move under its own power. The ship was recently repainted in northern California before it arrived in the Long Beach Harbor. The S.S. Lane Victory is an active ship and goes to sea for tours on occasion. It is scheduled to be repainted either in San Diego or San Francisco next year. All of these ships may need to use coatings for touch-up purposes from time to time, and these operations are conducted using paint brush or roller only; none of them use spray operations.

Staff believes that Proposed Amended Rule 1106 will provide enhanced clarity and compliance with the VOC limits through reporting similar to SCAQMD Rule 1113 - Architectural Coatings. The proposed amendment will include an Annual Quantity Emission Report (AQER) that will require documentation of the VOC content limits for all marine and pleasure craft coating products that are sold in the SCAQMD's jurisdiction. In addition, staff intends to clarify the use of a higher VOC content limit for antifoulant for aluminum substrate hulls and eliminate any confusion that such product could be used on non-aluminum substrate vessel hulls. Staff believes the amendment could potentially provide emission reductions through enhanced clarity and compliance.

PROCESS DESCRIPTION

Coatings for Ships, Yachts, Boats

Water going vessels, commonly referred to as ships, yachts, and boats have coatings specifically designed for the two main portions of a boat; top side and bottom side. With the boat at rest, anything above the water line is considered top side and anything below the water line is considered bottom side.

Top Side

The top side of the ship, yacht or boat is the visual portion of the boat from the water-line up. These coatings not only have to perform well in protecting the substrate in a marine environment but also have aesthetic purposes. The substrates can include wood of various types, fiberglass and composites, steel, stainless steel, aluminum, brass and bronze. These coatings can be applied by hand application, usually with a paint brush or roller, or by atomized spray equipment. There are several categories which are included in Rules 1106 and 1106.1 such as varnish, antenna coatings, pre-treatment wash primers, etc.

Bottom Side

A boat that is docked or moored in both fresh water and sea water is susceptible to what the marine industry calls fouling. Fouling is typically broken down into hard growth such as barnacles, mussels, shipworms and soft growth such as marine plant growth like algae and grass which would if unabated, would continue to grow and cause excessive drag on the boat during operation and could also cause severe damage to the hull substrate via corrosion to steel and aluminum hulls and shipworms boring into wooden hulls. The fouling also poses a potential threat to the environment through transporting harmful marine organisms to other waterways. The solution to fouling is an antifoulant coating, which is used to inhibit the growth of foulant from adhering to the bottom of the boat. There are two different categories for antifoulant coatings, a hard bottom paint and an ablative bottom paint.

Hard Bottom Paint

Hard Bottom Paint is an epoxy type paint formulated with copper, organotin compounds (an organic compound with one or more tin atoms in its molecules) and other biocides and pesticides to control marine growth from adhering to the hull. The copper is used to deter hard growth such as mussels and barnacles, and biocides and pesticides are used to control soft growth such as algae and other marine organisms like ship worms. Most hard bottom paints control marine growth by biocide and pesticide release which are released slowly from the pores of the paint while in water. Other types of hard bottom paint include Teflon® and silicone which make the coating surface too slick for marine growth to adhere to. This type coating is typically used for boats that spend long periods of time at rest in the water.

Ablative Bottom Paint

Ablative bottom paint is specially formulated to be a somewhat sacrificial coating designed to be slowly worn away during boat operation. For the marine environment, ablation is simply a wear

away type coating where the coating continuously wears off at a slow rate during operation thus exposing a new layer with fresh antifoulant compounds. An analogy of this would be washing your hands with a bar of soap where the soap continues to erode during each washing operation yet remains effective in subsequent washings.

There have been environmental concerns with the use of copper in these bottom paints and the toxic effects it has on marine life. The Port of San Diego continues to investigate how much copper can be reduced from copper-based antifoulant coatings and Washington State passed a law which may phase in a ban on copper antifoulant coatings on recreational vessels beginning in January 2018. On October 2013, California Governor Edmund G. Brown Jr. signed into law Assembly Bill AB425 (Atkins) "Pesticides: copper-based antifouling paint: leach rate determination: mitigation measure recommendations." The assembly bill requires: "No later than February 1, 2014, the Department of Pesticide Regulation (DPR) shall determine a leach rate for copper-based antifouling paint used on recreational vessels and make recommendations for appropriate mitigation measures that may be implemented to address the protection of aquatic environments from the effects of exposure to that paint if it is registered as a pesticide." In order to comply with AB 425, the DPR successfully determined such standards and developed measures to address the amount of copper in California's coastal marinas. The DPR further suggested that the State Water Resources Control Board, paint manufacturers, boat owners, boatyards, boat cleaners, and marina operators all work to establish compliance with the state copper standard of 3.1 parts per billion in the water. The DPR is continuing their work on implementing these measures and reducing copper levels throughout state marine waters.

Transfer Efficiency Requirements

Proposed Amended Rule 1106 incorporates similar transfer efficiency requirements found in Rule 1151 - Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations for application of a marine or pleasure craft coating. The transfer efficiency requirement for spray application is the use of electrostatic, HVLP (High Volume, Low Pressure) spray equipment, and other spray guns that meet the HVLP definition of paragraph (b)(18) in design and use. A demonstration must be based on the manufacturer's published technical material on the design of the spray gun and by demonstration of the operation of the spray gun using an air pressure tip gauge from the manufacturer of the spray gun [See clause (d)(9)(A)(v)].

Brush and roller coatings are applied directly from the paint brush bristles or the roller to the substrate and have a very high coating to substrate transfer efficiency. Dip coatings are simply a container filled with paint where an object is dipped into the coating which also provides a very high coating to substrate transfer efficiency. Brush, roller and dip coating processes are proposed to be included as compliant transfer efficiency processes as specified in clause (d)(9)(A)(iii) of the transfer efficiency requirements in order to be to be consistent with the Coating Application Methods provision in the state Suggested Control Measure.

In addition, Proposed Amended Rule 1106 provides two test methods for spray guns that do not meet the HVLP definition in design but can be used to determine if such spray guns can meet the transfer efficiency requirements under SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989" and SCAQMD "Guidelines for Demonstrating Equivalency With District Approved Transfer Efficiency Spray Gun September 26, 2002" [See paragraph (h)(~~4~~6)]. Any spray gun used in the SCAQMD jurisdiction must meet the criteria for these test methods to qualify as a compliant transfer efficient spray gun for use in the SCAQMD jurisdiction.

HVLP spray equipment utilizes very low air pressure (i.e., less than 10 psi) to atomize the coating material and propel the atomized droplets at a low velocity and high volume to the surface being coated. Though, the majority of pleasure craft coatings are applied by hand, there are operations where spray applications are used for primers and topcoats. There are several subsets of HVLP spray guns that can also meet the transfer efficiency requirements and these subsets are discussed below.

High Volume Low Pressure (HVLP)
HVLP spray guns are created to meet the transfer efficiency requirements of governmental agencies, including the SCAQMD. HVLP spray guns can meet the high transfer efficiency requirement and operate at less than 10 psi at the air cap. HVLP spray guns are used in the South Coast Air Basin to spray coatings for a multitude of categories including automotive coatings, metal coatings, wood coatings, industrial coatings and marine coatings.

Low Volume Low Pressure (LVLP)
LVLP spray guns are a subset of non-conventional spray guns and may be used in the spraying of marine or pleasure craft coatings provided the requirements in Proposed Amended Rule 1106 clause (d)(9)(A)(v) for transfer efficiency are met, including achieving equivalent or better transfer efficiency to HVLP using the test method protocols prescribed in Proposed Amended Rule 1106 to determine transfer efficiency, and written approval is obtained from the Executive Officer prior to use. LVLP offers an alternative to HVLP because they have less air flow requirements and can be used with a smaller compressor. This makes LVLP appealing for mobile painters and applicators that use a small air compressor. Manufacturers of LVLP spray guns state that LVLP can operate at less than 10 psi at the air cap and achieve transfer efficiencies equivalent to HVLP application. The working speed of LVLP is not as fast as HVLP spray guns.

Low Volume Medium Pressure (LVMP)
LVMP spray guns are a subset of the non-conventional spray guns and may also be used in the spraying of marine or pleasure craft coatings provided the requirements in Proposed Amended Rule 1106 clause (d)(9)(A)(v) for transfer efficiency are met, including achieving equivalent or better transfer efficiency to HVLP using the test method protocols prescribed in Proposed Amended Rule 1106 to determine transfer efficiency, and written approval is obtained from the Executive Officer prior to use.

Reduced Pressure (RP)

RP spray guns are a subset of non-conventional spray guns and may be used in the spraying of marine or pleasure craft coatings provided the requirements in Proposed Amended Rule 1106 clause (d)(9)(A)(v) for transfer efficiency are met, including achieving equivalent or better transfer efficiency to HVLP using the test method protocols prescribed in Proposed Amended Rule 1106 to determine transfer efficiency, and written approval is obtained from the Executive Officer prior to use. RP spray guns also use smaller air compressors because they need less air flow requirements than HVLP spray guns which makes RP attractive for mobile painters. RP can be an alternative to HVLP and has a fast working speed similar to HVLP guns.

Pressure Fed (PF)

PF spray guns are unique as compared to the other types of spray guns in that they are equipped with auxiliary containers used for holding larger quantities of coating product. PF spray guns can be used in the spraying of marine or pleasure craft coatings provided all the requirements in Proposed Amended Rule 1106 clause (d)(9)(A)(v) for transfer efficiency are met, including achieving equivalent or better transfer efficiency to HVLP using the test method protocols prescribed in Proposed Amended Rule 1106 to determine transfer efficiency, and written approval is obtained from the Executive Officer prior to use.

New Conventional (NC)

Staff has identified an additional new subset of conventional spray guns being marketed as New Conventional (NC). Manufacturers of such spray guns claim the NC spray guns offer the same wide pattern (spray) as the old conventional spray guns but have better transfer efficiency, and have the ability to spray thick fluids. This technology could be used for spraying marine or pleasure craft coatings but only if the spray gun meets all the requirements in Proposed Amended Rule 1106 clause (d)(9)(A)(v) for transfer efficiency, including achieving equivalent or better transfer efficiency to HVLP using the test method protocols prescribed in Proposed Amended Rule 1106 to determine transfer efficiency, and written approval is obtained from the Executive Officer prior to use.

Transfer Efficiency and Special Plural Type Application Equipment

Coatings with a viscosity greater than 650 centipoise have poor flow characteristics and will be exempted from the transfer efficiency requirements. To spray such thick fluids, special plural type application equipment or very high pressures (greater than 1,000 psi) are necessary. Without the proposed exemption, shops forced to use HVLP equipment would otherwise have to thin the high solids coatings with VOC solvents to allow them to be sprayed, thus eliminating the benefit of the low-VOC high solids coatings.

Emission Inventory and Rulemaking Survey:

Staff is conducting a survey with marine and pleasure craft coating manufacturers to determine the VOC inventory based on throughput. The survey will provide data to show the VOC content of

the many marine and pleasure craft coatings used in the SCAQMD jurisdiction, as well as the volume of coatings used. This data will be used to establish an accurate VOC inventory for the marine and pleasure craft industry operating in the SCAQMD jurisdiction. Staff continues to collect data from marine coating and pleasure craft coating manufacturers and suppliers and when completed, an accurate VOC inventory will determine the overall impact the industry has on emission contribution. In addition, staff will be able to use the inventory to identify compliant and non-compliant products usage and take action to eliminate the use of non-compliant marine and pleasure craft coatings.

Reporting Requirements

Staff will require two reports from marine and pleasure craft coating manufacturers and one report from their distributors and these reports will be submitted to SCAQMD on an annual basis starting with 2015 and continuing up to 2018. The first of the reports will be the Annual Quantity Emissions Report (AQER) which will be due, annually, on April 1 beginning with the year ~~2015~~2016. This report will require both manufacturer's and their distributors to document any marine and pleasure craft coating supplied into the SCAQMD, the volume that was supplied and the VOC content for each and every marine and pleasure craft coating. The second report will be the manufacturer's distributors list. This report will also be due, annually, on April 1 beginning with the year ~~2015~~2016 and continuing up to 2018 and will document all the manufacturer's distributors that supply marine and pleasure craft coatings into the district. The reporting by the manufacturers is not a disincentive to the end user, and has proved successful in other rules. In developing the inventory for low and near zero VOC marine and pleasure craft contains, reporting of these products would be advantageous to the UV/EB coating industry. It would show that these coatings are available and in use therefore, staff would have a basis to lower the allowable VOC limits in future rule amendments.

Super-compliant coatings:

The recordkeeping requirements in Proposed Amended Rule 1106 paragraph (d)(1) state, in part, "Records of marine coating usage and pleasure craft coating usage, as applicable, shall be maintained pursuant to SCAQMD Rule 109- Recordkeeping for Volatile Organic Compound emissions, and shall be made available to the Executive Officer upon request…". Rule 109 provides an exemption from the provisions in the rule pertaining to recordkeeping for super compliant material(s) provided the facility can demonstrate that the total permitted facility VOC emissions do not exceed four tons in any calendar year. Rule 109 defines a super compliant material as any material containing 50 grams or less of VOC per liter of material. The exemption provided in Rule 109 as discussed above is also applicable to Proposed Amended Rule 1106.

Touch-up Coatings

Staff visited several facilities conducting marine and pleasure craft coating operations and found many operators believed the touch-up exemption meant any touch-up operation. The definition for a touch-up coating does not allow for maintenance and repair "touch-up" coatings because ~~it's~~ it is only intended for minor imperfections ~~prior to shipment~~ or minor mechanical damage incurred

after the main coating operation. The touch-up exemption in the current rule (Rule 1106) provides an exemption from the ~~rule requirements including the~~ VOC content limits~~. However, the rule does have a definition~~ for touch-up coatings and defines them as any coating used to cover minor imperfections prior to shipment appearing after the main coating operation. Many operators indicated to staff that they did not consider the definition for touch-up coating, just the exemption. Staff has remedied this scenario by adding additional language to paragraph (j)(2) ~~the touch-up exemption~~ which will ~~tying~~ direct the reader to read ~~it to~~ the definition for a touch-up coating. The definition has also been revised to allow touch-up coatings for minor imperfections or mechanical damages prior to use of the material or equipment to be touched up, instead of prior to shipment, to be consistent with other air district authorities.

Department of Defense Specified Coatings for Submarines

Staff determined Pre-treatment Wash Primers and Special Marking Coatings that are intended to be used on submerged vessel (submarine) components require the use of these coatings per military specifications (Mil-Specs) and currently meet the VOC limits in Rule 1106 - Marine Coating Operations. However, these coatings will not meet the new aligned VOC limits in Proposed Amended Rule 1106, which seeks to align these VOC limits with other APCDs/AQMDs. Staff proposes to craft an exemption for this type of no more than 12 gallons per calendar year, of all products combined, for this type operation and will require that the products used will have to be in compliance with the U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair (Surface Coating) as provided in Part 63 of the Federal Register.

Conclusion:

The majority of the operators in the marine and pleasure craft coating industry are non-permitted facilities, and are not typically inspected by SCAQMD inspectors. Staff visited several facilities and found many instances of non-compliance with both Rules 1106 and 1106.1 VOC limit standards. Staff also found that the most common maintenance operation at the boatyards is the application of antifoulant coatings. Many shipyards were using antifoulant coatings in excess of the VOC limit standards and were not aware. Staff also found that several suppliers to the shipyards and consumers were selling non-compliant coating products. Staff believes the proposed amendment will provide enhanced compliance with the VOC limits by requiring an Annual Quantity Emission Report (AQER), further ensuring a mechanism to review the VOC content of marine and pleasure craft coatings sold in the SCAQMD's jurisdiction. In addition, staff intends to clarify a higher VOC content limit for antifoulant for aluminum substrate hulls and eliminate any confusion that such product could be used on non-aluminum substrate vessel hulls. Staff believes the amendment could potentially provide an emission reduction through enhanced clarity and compliance.

RULE 1106 – MARINE AND PLEASURE CRAFT COATING OPERATIONS

CHAPTER 2: SUMMARY OF PROPOSED AMENDED RULE 1106

- OVERVIEW: RESCIND RULE 1106.1 AND SUBSUME THE REQUIREMENTS OF RULE 1106.1 INTO PROPOSED AMENDED RULE 1106
- PROPOSED RESCINDING OF RULE 1106.1
- PROPOSED NEW DEFINITIONS TO BE ADDED TO RULE 1106
- PROPOSED REVISIONS TO EXISTING RULE LANGUAGE

OVERVIEW: RESCIND RULE 1106.1 AND SUBSUME THE REQUIREMENTS OF RULE 1106.1 INTO PROPOSED AMENDED RULE 1106

Staff believes that Rule 1106 - Marine Coating Operations and Rule 1106.1 - Pleasure Craft Coating Operations can be combined into one rule rather than two separate rules. This would be consistent with other APCD and AQMD agencies in California who regulate both marine and pleasure craft operations under one rule. Staff further believes that combining these two rules will provide the regulated community a better understanding of which category, marine or pleasure craft, their operation will fall under, and which VOC content would be appropriate for their particular coating operation. Staff is proposing to rescind Rule 1106.1 - Pleasure Craft Coating Operations and subsume the requirements of Rule 1106.1 into Proposed Amended Rule 1106 - Marine Coating and Pleasure Craft Coating Operations.

PROPOSED RESCINDING OF RULE 1106.1

On May 1, 1992, Rule 1106.1 was adopted as a companion rule to Rule 1106. Rule 1106.1 is applicable to all coating operations of pleasure craft, as defined in paragraph (b)(10) of the rule, or their parts and components, for the purpose of refinishing, repairing, modification, or manufacturing such craft. Staff proposes to rescind Rule 1106.1 and subsume its contents into Proposed Amended Rule 1106. Staff believes that Rule 1106 and Rule 1106.1 should be consolidated into one rule to avoid confusion for end-users of marine products who may not know which rule applies to their application. The other air districts in California, except for one, already have one rule for marine and pleasure craft coating operations. The VOC limits for Proposed Amended Rule 1106 are not impacted, other than to conform to the United States Environmental Protection Agency (U.S. EPA) Control Techniques Guidelines for Ship Building and Ship Repair Operations (Surface Coating) and other California air district rules already in place.

PROPOSED AMENDMENT TO RULE 1106

Rule 1106.1 is proposed to be rescinded and Proposed Amended Rule 1106 will subsume the requirements of Rule 1106.1 - Pleasure Craft Coating Operations, while also revising VOC content limits for pretreatment wash primers, antenna, repair and maintenance thermoplastic, inorganic zinc, and specialty marking coatings in order to align limits with U.S. EPA Control Techniques Guidelines and other California APCD's/AQMD's, and adding new categories for marine aluminum antifoulant, mist, nonskid and organic zinc coatings and marine deck primer sealant. The proposed amendment also prohibits possession and sale of non-compliant coatings and establishes requirements for transfer efficiency, labeling, recordkeeping and reporting.

PROPOSED REVISIONS TO EXISTING RULE LANGUAGE

Additionally, staff proposes to add a provision stating the purpose of Proposed Amended Rule 1106 to provide additional clarity on the purpose of the rule and to be consistent with other Regulation XI coatings rules, make minor revisions to the applicability subdivision, make

revisions and add new definitions to the definitions subdivision, add two tables of standards that will contain VOC limits, and include clarifications and editorial corrections to the entire rule as necessary.

Subdivision (a) Purpose

Staff proposes to include a "Purpose" subdivision in Proposed Amended Rule 1106 to provide clarity on the purpose of the rule and to make this rule consistent with other VOC Regulation XI rules that already include a purpose subdivision as follows:

"The purpose of this rule is to reduce emissions of volatile organic compounds (VOC) and stratospheric ozone depleting and global warming compounds from Marine and Pleasure Craft Coating Operations."

Subdivision (b) Applicability

Staff proposes to subsume Rule 1106.1 into Rule 1106. The applicability subdivision will not only include the existing Marine Coating Operations applicability, with revisions, but will also include the Pleasure Craft Coating Operations applicability language. Staff proposes to write the applicability subdivision in two sections, Marine Coating Operations and Pleasure Craft Coating Operations to facilitate quick and easy identification of the two operations.

"This rule applies to:"

"(1) MARINE COATING OPERATIONS:

~~This rule applies to~~ Which means all coating operations of boats, ships, and vessels, and their appurtenances, including but not limited to structures such as piers, docks ~~and~~, ~~to~~buoys and oil drilling rigs, intended for exposure to either a marine or fresh water environment.~~Coating operations of vessels which are manufactured or operated primarily for recreational purposes are subject to the requirements of Rule 1106.1 – Pleasure Craft Coating Operations.~~"

"(2) PLEASURE CRAFT COATING OPERATIONS:

Which means all coating operations for purposes of refinishing, repairing, modifying, or manufacturing of pleasure craft, as defined in paragraph (c)(~~29~~30) of this rule, and their parts and components."

Subdivision (c) Definitions

Proposed New Definitions to Be Added to Proposed Amended Rule 1106

The following new definitions are proposed to address pleasure craft coating operations, transfer efficiency provisions, and make reference to Rule 1171 consistent with other SCAQMD rules. Staff added Mist Coatings, Nonskid Coatings and Solvent-Based Organic Zinc Coatings categories to be consistent with the U.S. EPA Control Techniques Guidelines (CTG) for Shipbuilding and Ship Repair Operations (Surface Coating). Staff also added a definition for Solvent-Based Inorganic Zinc Coatings since it was missing from the current version of Rule 1106 - Marine Coatings Operations even though it is a listed coating under Paragraph (c)(1)

"VOC Content of Marine Coatings", and to be consistent with the U.S. EPA CTG. Staff also proposes to add the definition Marine Deck Sealant Primer to be consistent with other local AQMD/APCD definitions. Finally, staff proposes to add a new definition to the rule to define "Energy Curable Coatings" to provide clarity to energy curable marine and pleasure craft coating materials.

"(6) CLEAR WOOD COATINGS are clear and semi-transparent topcoats applied to wood substrates to provide a transparent or translucent film."

"(7) DISTRIBUTOR means any person to whom a ~~consumer~~ product is sold or supplied for the purposes of resale or distribution in commerce, except that manufacturers, retailers, and consumers are not distributors."

"(9) ENERGY CURABLE COATINGS are single-component reactive products that cure upon exposure to visible-light, ultra-violet light or to an electron beam. The VOC content of thin film Energy Curable Marine and Pleasure Craft Coatings may be determined by manufacturers using ASTM Test Method 7767-11 "Standard Test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers, and Blends and Thin Coatings Made from Them."

"(~~11~~12) FINISH PRIMER/SURFACER is any coating applied with a wet film thickness of less than 10 mils (one mil = 0.001 of an inch) and is applied prior to the application of a Marine or Pleasure Craft Coating for the purpose of providing corrosion resistance, adhesion for subsequent coatings, a moisture barrier, and promotes a uniform surface necessary for filling in surface imperfections."

"(~~13~~14) GRAMS OF VOC PER LITER OF MATERIAL, OR ACTUAL VOC, is the weight of VOC per volume of material and shall be calculated by the following equation:

$$\text{Grams of VOC per Liter of Material} = \frac{W_s - W_w - W_{es}}{V_m}$$

Where: W_s = weight of volatile compounds in grams
W_w = weight of water in grams
W_{es} = weight of exempt compounds in grams
V_m = volume of material in liters"

"(~~17~~18) HIGH BUILD PRIMER/SURFACER is any coating applied with a wet film thickness of 10 mils or more (one mil = 0.001 of an inch) prior to the application of a topcoat for purposes of providing corrosion resistance, adhesion of subsequent coatings, a

moisture barrier, or promoting a uniform surface necessary for filling in surface imperfections."

"(~~18~~19) HIGH-VOLUME, LOW-PRESSURE (HVLP) means spray application equipment designed to atomize 100 percent by air pressure only and is operated between 0.1 and 10 pounds per square inch~~,~~ gauge~~,~~ (psig), air atomizing pressure measured dynamically at the center of the air cap and at the air horns."

"(~~19~~20) INORGANIC ZINC COATING is a coating that contains 960 grams per liter or more elemental zinc incorporated into an inorganic silicate binder that is applied to steel to provide galvanic corrosion resistance."

"(~~21~~22) LOW-SOLIDS COATINGS are coatings containing one pound or less of solids per gallon of material."

"(~~23~~24) MARINE DECK SEALANT PRIMER is any sealant primer intended by the manufacturer to be applied to wooden marine decks. A sealant primer is any product intended by the manufacturer to be applied to a substrate, prior to the application of a sealant, to enhance the bonding surface."

"(~~25~~26) MIST COATING is any low viscosity, thin film, epoxy coating applied to an inorganic zinc primer that penetrates the porous zinc primer and allows the occluded air to escape through the film prior to curing."

"(~~27~~28) NONSKID COATING means any coating applied to the horizontal surface of a marine vessel for the specific purpose of providing slip resistance for personnel."

"(~~28~~29) ORGANIC ZINC COATING is a coating that contains 960 grams per liter or more elemental zinc incorporated into an organic silicate binder that is applied to steel to provide galvanic corrosion resistance."

"(~~29~~30) PLEASURE CRAFT are marine or fresh water vessels that are less than 20 meters in length and are manufactured or operated primarily for recreational purposes, or are leased, rented, or chartered to a person or business for recreational purposes. Vessels operated in amusement~~Amusement~~ theme parks ~~that operate vessels~~ in a fresh water environment solely for the purpose of an amusement park attraction shall be considered pleasure craft vessels regardless of their length. The owner or operator of a pleasure craft vessel shall be responsible for certifying that the intended use is for recreational purposes."

"(~~30~~31) PLEASURE CRAFT COATING is any marine coating, except unsaturated polyester resin (fiberglass) coatings, applied by brush, spray, roller, or other means to a pleasure craft. A pleasure craft coating that is sold, offered for sale, or solicited for use within the South Coast Air Quality Management District (SCAQMD) jurisdiction must be designated by the manufacturer as a pleasure craft coating by any sticker or label affixed on the container, or where it is indicated in any sales or advertising literature, that the coating may be used as, or is suitable for use as, a pleasure craft coating."

"(~~31~~32) PRETREATMENT WASH PRIMER is a coating which contains a minimum of 1/2 percent acid, by weight; applied directly to bare metal surfaces to provide necessary surface etching."

"(~~34~~35) SEALER is a coating applied to bare wood to seal surface pores to prevent subsequent coatings from being absorbed into the wood."

"(~~38~~39) TEAK PRIMER is a coating applied to teak wood or previously oiled teak wood decks in order to improve the adhesion of a seam sealer."

"(~~39~~40) TOPCOAT is any final coating applied to the interior or exterior of a marine or pleasure craft."

"(~~41~~42) TRANSFER EFFICIENCY means the amount of coating solids adhering to the object being coated divided by the total amount of coating solids sprayed; expressed as a percentage."

"(~~43~~44) VARNISHES are clear or pigmented wood topcoats formulated with various resins to dry by chemical reaction."

Staff proposes to make the following revisions to the existing definitions in Rule 1106 to clarify the intent of the definition and make the definitions consistent with other Regulation XI coating rules and the U.S. CTG.

"(1) AEROSOL COATING PRODUCT ~~is~~ means a pressurized coating product containing pigments, ~~or~~ resins, and/or other coating solids that ~~is dispensed~~dispenses product ingredients by means of a propellant, and is packaged in a disposable aerosol container~~can~~ for hand-held application~~, or for use in specialized equipment for ground marking and traffic/ marking applications~~."

"(2) AIR DRIED COATING is any coating that is formulated by the manufacturer to be cured at a temperature below 90 °~~o~~C (194 °~~o~~F)."

"(4) ~~ANTIFOULING~~ ANTIFOULANT COATING is any coating applied to the underwater portion of ~~a~~ boats, ships, and vessels, ~~vessel~~ or pleasure craft to prevent or reduce the attachment of biological organisms~~. An Antifoulant coating~~ and shall be registered with the ~~Environmental Protection Agency as a pesticide~~United States Environmental Protection Agency ("U.S. EPA") as a pesticide under the Federal Insecticide, Fungicide, and Rodenticide Act (7 United States Code Section 136). "

"(5) BAKED COATING is any coating that is formulated by the manufacturer to be cured at a temperature at or above 90 °~~o~~C (194 °~~o~~F)."

"(~~6~~8) ELASTOMERIC ADHESIVE is any adhesive containing natural or synthetic rubber."

"(~~79~~10) EXEMPT COMPOUNDS ~~are any of the following compounds:~~ (See Rule 102 - Definition of Terms).

~~(A) Group I (General)~~

~~trifluoromethane (HFC-23)~~

~~pentafluoroethane (HFC-125)~~

~~1,1,2,2-tetrafluoroethane (HFC-134)~~

~~tetrafluoroethane (HFC-134a)~~

~~1,1,1-trifluoroethane (HFC-143a)~~

~~1,1-difluoroethane (HFC-152a)~~

~~chlorodifluoromethane (HCFC-22)~~

~~dichlorotrifluoroethane (HCFC-123)~~

~~2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)~~

~~dichlorofluoroethane (HCFC-141b)~~

~~chlorodifluoroethane (HCFC-142b)~~

~~cyclic, branched, or linear, completely fluorinated alkanes~~

~~cyclic, branched, or linear, completely fluorinated ethers with no unsaturations~~

~~cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations~~

~~sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine~~

~~(B) Group II~~

~~Methylene chloride~~

~~1,1,1-trichloroethane (methyl chloroform)~~

~~trichlorotrifluoroethane (CFC-113)~~

~~dichlorodifluoromethane (CFC-12)~~

~~trichlorofluoromethane (CFC-11)~~
~~dichlorotetrafluoroethane (CFC-114)~~
~~chloropentafluoroethane (CFC-115)~~
~~The use of Group II compounds and/or carbon tetrachloride may be restricted in the future because they are toxic, potentially toxic, upper-atmosphere ozone depleters, or cause other environmental impacts. By January 1, 1996, production of chlorofluorocarbons (CFC), 1,1,1,-trichloroethane (methyl chloroform), and carbon tetrachloride will be phased out in accordance with the Code of Federal Regulation Title 40, Part 82 (December 10, 1993).~~"

"(~~8~~10~~10~~11) EXTREME HIGH GLOSS COATING is any coating which achieves at least 95 percent reflectance on a 60°~~o~~ meter when tested by ASTM Method D-523-14 - "Standard Test Method for Specular Gloss"."

"(~~9~~12~~12~~13) GRAMS OF VOC PER LITER OF COATING, LESS WATER AND LESS EXEMPT COMPOUNDS, OR REGULATORY VOC, is the weight of VOC per combined volume of VOC and coating solids and can be calculated by the following equation:

$$\text{Grams of VOC per Liter of Coating, Less Water and Less Exempt Compounds} = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where: W_s = weight of volatile compounds in grams
W_w = weight of water in grams
W_{es} = weight of exempt compounds in grams
V_m = volume of material in liters
V_w = volume of water in liters
V_{es} = volume of exempt compounds in liters"

"(~~10~~14~~14~~15) HEAT RESISTANT COATING is any coating which during normal use must withstand temperatures of at least 204 °~~o~~C (400 °~~o~~F)."

"(~~11~~15~~15~~16) HIGH GLOSS COATING is any coating which achieves at least 85 percent reflectance on a 60°~~o~~ meter when tested by ASTM Method D-523-14 ~~–~~"Standard Test Method for Specular Gloss".

"(~~12~~16~~16~~17) HIGH TEMPERATURE COATING is any coating that during normal use ~~which~~ must withstand temperatures of at least 426 °~~o~~C (800 °~~o~~F)."

"(~~13~~20~~21~~) LOW ACTIVATION INTERIOR COATING is any coating used on interior surfaces aboard ~~ships,~~ boats, ships, and vessels, to minimize the activation of pigments on painted surfaces within a radiation environment."

"(~~14~~22~~23~~) MARINE COATING is any coating, except unsaturated polyester resin (fiberglass) coatings, containing volatile organic materials and applied by any means to ~~ships,~~ boats, ships, and vessels, and their appurtenances, structures such as piers~~,~~ ~~and~~ docks~~,~~ ~~intended for exposure to a marine environment, and also to~~ buoys and oil drilling rigs~~,~~ intended for ~~the exposure to either a~~ marine or fresh water environment."

"(~~15~~24~~25~~) METALLIC HEAT RESISTANT COATING is any coating which contains more than 5 grams of metal particles per liter of coating as applied and which must withstand temperatures over 80 °~~o~~C (~~175~~176 °~~o~~F)."

"(~~16~~26~~27~~) NAVIGATIONAL AIDS COATING is any coating that is applied to ~~are~~ buoys or other Coast Guard waterway markers that are recoated aboard ship at their usage site and immediately returned to the water."

"(~~18~~32~~33~~) REPAIR AND MAINTENANCE THERMOPLASTIC COATING is any resin-bearing coating, such as vinyl, chlorinated rubber, or bituminous coatings, in which the resin becomes pliable with the application of heat, and is used to recoat portions of a previously coated substrate which has sustained damage to the coating following normal coating operations."

"(~~19~~33~~34~~) SEALANT FOR WIRE-SPRAYED ALUMINUM is any coating of up to one mil ~~(0.001 inch)~~ (one mil = 0.001 of an inch) in thickness of an epoxy material which is reduced for application with an equal part of an appropriate solvent (naphtha, or ethylene glycol monoethyl ether)."

"(~~20~~35~~36~~) SOLVENT CLEANING OPERATION is ~~the removal of loosely held uncured adhesives, uncured inks, uncured coatings, and contaminants from parts, products, tools, machinery, equipment, and general work areas. Contaminants include, but are not limited to, dirt, soil, and grease. In a cleaning process which consists of a series of cleaning methods, each distinct method shall constitute a separate solvent cleaning operation~~as defined in Rule 1171 - Solvent Cleaning Operations."

"(~~21~~36~~37~~) SPECIAL MARKING COATING is any coating used for items such as flight decks, ~~ships'~~ vessel identification numbers and other demarcations for safety~~/~~ or identification~~applications~~."

"(~~22~~37~~38~~38) TACK COAT is an epoxy coating of up to two mils ~~(0.002 inch)~~ (one mil = 0.001 of an inch) thick applied to an existing epoxy coating. The existing epoxy coating must have aged beyond the time limit specified by the manufacturer for application of the next coat."

"(~~23~~40~~41~~41) TOUCH-UP COATING is any coating operation incidental to the main coating process but necessary ~~used~~ to cover minor imperfections ~~prior to shipment appearing after the main coating operation~~or minor mechanical damage incurred prior to ~~intended~~ use."

"(~~24~~42~~43~~43) UNDERSEA WEAPONS SYSTEM COATING is any coating applied to any or all components of a weapons system intended for exposure to a marine environment and~~that is~~ intended to be launched or fired ~~underwater~~undersea."

"(~~25~~44~~45~~45) VOLATILE ORGANIC COMPOUND (VOC) is ~~any volatile compound which contains the element carbon, excluding methane, carbon dioxide, carbon monoxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds~~ as defined in Rule 102 - Definition of Terms."

"(~~26~~45~~46~~46) WIRE-SPRAYED ALUMINUM is any molten multi-aluminum coating applied to a steel substrate using oxygen fueled combustion spray ~~methods~~equipment."

Subdivision (d) Requirements

Paragraph (d)(1)

Staff proposes to amend Paragraph (d)(1) to enhance the clarity of the Paragraph and to introduce Table of Standards I for Marine Coating Operations. The edits are as follows:

"Except as otherwise provided in this rule, a person shall not apply a marine coating within the SCAQMD jurisdiction with a VOC content in excess of the following limits shown in the Table of Standards I, expressed as grams of VOC per liter of coating, as applied, less water and less exempt solvents:"

VOC Limit Compliance Table

The current version of Rule 1106 - Marine Coating Operations, contains a list of coating categories and their corresponding VOC content limits. This list is spread over two pages and because there are no line separations between the coating categories, determining the VOC limits for each of the coating categories may be difficult as one traces their finger from the coating category on the left side of the page to the VOC limits on the right side of the page. Staff proposes to create an easier to read Table of Standards I that will contain this list of coating categories and their corresponding VOC content limits in a much easier to read tabular format. Table of Standards I will contain just the coating categories and VOC limits for Marine Coating

Operations (Pleasure Craft Coating VOC limits will be in a subsequent table, Table of Standards II).

There are currently five coating categories in Table of Standards I that have VOC content limits in excess of other California APCDs/AQMDs and one coating category that is not in alignment with the U.S. EPA CTG. Staff proposes to update these five coating categories and make their VOC content limits consistent with the other local APCDs/AQMDs and the U.S. EPA CTG as shown in Table 2-3:

TABLE 2-3: FIVE COATING CATEGORIES IN RULE 1106 THAT NEED TO BE ADJUSTED FOR CONSISTENCY WITH THE U.S. EPA AND LOCAL APCDS/AQMDS

	SCAQMD RULE 1106		U.S. EPA CTG	BAAQMD	SDAPCD	VCAPCD
COATING CATEGORY	Current Limit (g/L)	Proposed Limit (g/L)	Current Limit (g/L)	Current Limit (g/L)	Current Limit (g/L)	Current Limit (g/L)
Antenna Coating	530	340	530	--	340	340
Pre-Treatment Wash Primer	780	420	780	420	420	780
Repair & Maintenance Thermoplastic Coating	550	340	550	340	550	340
Inorganic Zinc Coating	650	340	340	340	340	340
Special Marking Coating	490	420	490	490	420	420

The current version of Rule 1106 has an exemption for antifoulant coatings that are applied on aluminum substrates. The current version of Rule 1106.1 does not have an exemption for antifoulant coatings that are applied to aluminum substrates but instead has a 560 g/L VOC content limit. The Ventura County APCD has a 560 g/L VOC content limit for antifoulant coatings and no exemptions for aluminum substrates. Staff research found several antifoulant coatings that can be used on aluminum substrates that can be used on commercial vessels and the U.S. Coast Guard fleet and still meet the 560 g/L VOC content limit. Therefore, staff is proposing to eliminate the aluminum substrate exemption and incorporate a 560 g/L VOC content limit for antifoulant coatings that are applied to aluminum substrates in Table of Standards I.

Staff proposes to add three additional coating categories to Table of Standards I that are included in the U.S. EPA CTG (Table 2-4):

TABLE 2-4: THREE COATING CATEGORIES TO BE ADDED TO PROPOSED AMENDED RULE 1106 FOR CONSISTENCY WITH THE U.S. EPA AND LOCAL APCDS/AQMDS

	SCAQMD RULE 1106		U.S. EPA CTG	BAAQMD	SDAPCD	VCAPCD
COATING CATEGORY	Current Limit (g/L)	Proposed Limit (g/L)	Current Limit (g/L)	Current Limit (g/L)	Current Limit (g/L)	Current Limit (g/L)
Mist Coating	--	610	610	--	610	--
Nonskid Coating	--	340	340	--	--	--
Organic Zinc Coating	--	340	360	--	340	--

Table 2-5 shows the Table of Standards I for Proposed Amended Rule 1106 with the revised VOC limits for the five categories discussed above and the three additional coating categories added. The "General Coating" category in the current Rule 1106 is proposed to be renamed as "Any Other Coating Type" to be consistent with other Regulation XI rules and will include coating categories that are not listed in Table of Standards I such as bilge coatings and propeller coatings.

TABLE 2-5: PROPOSED TABLE OF STANDARDS FOR MARINE COATINGS:

TABLE OF STANDARDS I

MARINE COATING CATEGORIES	VOC LIMITS Less water and exempt compounds Grams per Liter (g/L)	
	BAKED	AIR DRIED
	CURRENT LIMIT	CURRENT LIMIT
Antenna Coating		340
Antifoulant Coatings:		
Aluminum Substrate		560
Other Substrate		400
Elastomeric Adhesives (with 15%, by Weight, Natural or Synthetic Rubber)		730
Inorganic Zinc Coating		340
Low Activation Interior Coating		420
Mist Coating		610
Navigational Aids Coating		340
Nonskid Coating		340
Organic Zinc Coating		340
Pre-Treatment Wash Primer	420	420
Repair and Maintenance Thermoplastic Coating		340
Sealant for Wire-Sprayed Aluminum		610

Special Marking Coating		420
Specialty Coatings:		420
Heat Resistant Coating	360	420
Metallic Heat Resistant Coating		530
High Temperature Coating		500
Tack Coating		610
Topcoats:		
Extreme High Gloss Coatings	420	490
High Gloss Coatings	275	340
Underwater Weapons Systems Coating	275	340
Any Other Coating Type	275	340

Paragraph (d)(2)

Staff proposes to add a new paragraph to Proposed Amended Rule 1106 to include the pleasure craft coating categories and VOC limits. The current version of Rule 1106.1 - Pleasure Craft Coating Operations, contains a list of coating categories and their corresponding VOC content limits. Similar to the VOC categories and VOC limits in the current version of Rule 1106, in this list it may be difficult to locate the proper VOC content limit for a coating category because there are no line separations between the coating categories and determining the VOC limits for each of the coating categories may be difficult as one traces their finger from the coating category on the left side of the page to the VOC limits on the right side of the page. Staff proposes to subsume Rule 1106.1 into PAR1106 and proposes to create an easier to read Table of Standards II that will contain this list of coating categories and the corresponding VOC content limits in a much easier to read tabular format. Table of Standards II will contain just the coating categories and VOC limits for Pleasure Craft Coating Operations. Table of Standards II contains all the original coating categories and VOC content limits that are currently shown in Rule 1106.1 but the list will be arranged in alphabetical order. There is only one addition to Table of Standards II and that is the inclusion of the Marine Deck Sealant Primer along with the corresponding 760 g/L VOC content limit. This coating category has been added to be consistent with another local APCD that also has a pleasure craft coating rule. Finally, the "Others" category in the current Rule 1106.1 is proposed to be renamed as "Any Other Coating Type" to be consistent with other Regulation XI rules and will include coating categories that are not listed in Table of Standards I such as bilge coatings and propeller coatings.

"(2) VOC Content of Pleasure Craft Coatings

Except as otherwise provided in this rule, a person shall not apply a pleasure craft coating within the SCAQMD jurisdiction with a VOC content in excess of the following limits shown in the Table of Standards II, expressed as grams of VOC per liter of coating, as applied, less water and less exempt solvents:"

TABLE 2-6 - PROPOSED TABLE OF STANDARDS FOR PLEASURE CRAFT COATINGS:

TABLE OF STANDARDS II

VOC LIMITS Less water and exempt compounds Grams per Liter (g/L)	
PLEASURE CRAFT COATING CATEGORIES	Current Limit
Antifoulant Coatings:	
Aluminum Substrate	560
Other Substrates	330
Clear Wood Finishes:	
Sealers	550
Varnishes	490
Primer Coatings:	
Finish Primer/Surfacer	420
High Build Primer Surfacer	340
Marine Deck Sealant Primer	760
Pretreatment Wash Primer	780
Teak Primer	775
Topcoats:	
Extreme High Gloss Coating	490
High Gloss Coating	420
Any Other Coating Type	420

Staff will also add a low-solids coating category for both marine and pleasure craft coatings. Low-solids marine and pleasure craft coatings will be limited to 120 grams per liter of VOC and will be classified as a low-solids coating if they have at least one pound of solids per gallon. Staff will add the following table to the proposed amended rule:

"(3) VOC Content of Low-Solids Coatings

Except as otherwise provided in this rule, a person shall not apply a marine coating or a pleasure craft coating within the SCAQMD jurisdiction with a VOC content in excess of the following limit shown in the Table of Standards III, expressed as grams of VOC per material of coating, as applied:"

TABLE 2-7: PROPOSED TABLE FOR LOW-SOLIDS COATINGS:

TABLE OF STANDARDS III

VOC LIMIT – MARINE & PLEASURE CRAFT COATINGS Grams per liter of material VOC	
COATING CATEGORY	CURRENT LIMIT
Low-Solids Coating	120

Paragraph (d)(4) - Most Restrictive VOC Limit

Staff proposes to include a provision in Proposed Amended Rule 1106 to address the most restrictive VOC limit. This provision is included in the other Regulation XI VOC rules and is now being proposed to be included in Proposed Amended Rule 1106 for consistency. In addition, there was some residual rulemaking language from the working group meeting that should have been removed (it's shown below in strike-out).

"(4) Most Restrictive VOC Limit

If any representation or information on the container of any coating subject to this rule, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature that indicates that the coating meets the definition of or is recommended for use for more than one of the marine coating categories listed in ~~sub~~paragraph (d)(1) or the pleasure craft coating categories listed in ~~sub~~paragraph (d)(2), or the low-solids coating category listed in ~~sub~~paragraph (d)(3), then the lowest VOC content limit shall apply." ~~anywhere on the container of any coating listed in either Table of Standards or label theretoor literatureany representation is made that the coating may be used as, or is suitable for use as, a for which a lower standard is specified in the table or in paragraph(d)(1) or (d)(2), standard~~

Paragraph (d)(5) - Approved Emission Control System

Staff proposes the following updates to the existing rule language to enhance clarity and consistency with other Regulation IX coating rules and renumber the paragraph.

"(~~2~~5) Approved Emission Control System

~~(A) Approved Emission Control System~~

~~Owners and/or operators may comply with the provisions of paragraphs (c)(1) by using an emission control system, which has been approved in writing by the Executive Officer, for reducing VOC emissions. The control system must achieve a minimum capture efficiency using USEPA, ARB, and District methods specified in subparagraph (e)(4)(A) and a destruction efficiency of at least 85 percent by weight, and,~~

~~(B) The approved system shall reduce the VOC emissions, when using non-compliant coatings, to an equivalent or greater level that would be achieved by the provisions in paragraph (c)(1)~~A person may comply with the provisions of paragraphs (d)(1), (d)(2) or (d)(3), by using an approved emission control system, consisting of a collection and control device, provided such emission control system is approved pursuant to Rule 203 - Permit to Operate, in writing, by the Executive Officer for reducing emissions of VOC. The Executive Officer shall

approve such emission control system only if the VOC emissions resulting from the use of non-compliant coatings will be reduced to a level equivalent to or lower than the limits specified in paragraphs (d)(1), (d)(2) or (d)(3), as applicable. The required efficiency of an emission control system at which an equivalent or greater level of VOC reduction will be achieved shall be calculated by the following equation:

$$C.E. = \left[1 - \left\{ \frac{(VOC_{LWc})}{(VOC_{LWn,Max})} \times \frac{1 - (VOC_{LWn,Max}/D_{n,Max})}{1 - (VOC_{LWc}/D_c)} \right\} \right] \times 100\%$$

Where: C.E. = Control Efficiency, expressed as a percentage

VOC_{LWc} = VOC Limit of Rule 1106, less water and less exempt compounds, pursuant to subdivision (~~c~~d).

$VOC_{LWn,Max}$ = Maximum VOC content of non-compliant coating used in conjunction with a control device, less water and less exempt compounds.

$D_{n,Max}$ = Density of solvent, reducer, or thinner contained in the non-compliant coating, containing the maximum VOC content of the multi-component coating.

D_c = Density of corresponding solvent, reducer, or thinner used in the compliant coating system = 880 g/L."

Paragraph (d)(6) - Alternative Emission Control Plan

Staff proposes the following updates to the existing rule language to enhance clarity and renumber the paragraph.

"(~~3~~6) Alternative Emission Control Plan

~~Owners and/or operators may achieve compliance with the requirements~~A person may comply with the provisions of paragraphs (d)(1), (d)(2) and (d)(3)~~paragraph (c)(1)~~ by means of an Alternative Emission Control Plan, pursuant to Rule 108 - Alternative Emissions Control Plans."

Paragraph (d)(7) - Exempt Compounds

Staff proposes the following updates to the existing rule language to maintain consistency with other Regulation XI coating rules and renumber the paragraph.

"(7) Exempt Compounds

A person shall not manufacture, sell, offer for sale, distribute for use in the SCAQMD jurisdiction, or apply any marine or pleasure craft coating which contains any Group II Exempt Compounds listed in Rule 102 - Definition of Terms, in quantities greater than 0.1 percent by weight. Cyclic, branched, or linear, completely methylated siloxanes (VMS) are not subject to this provision."

Paragraph (d)(8) - Carcinogenic Materials

Staff proposes the following updates to the existing rule language to maintain consistency with other Regulation XI coating rules and renumber the paragraph.

"(8) Carcinogenic Materials

A person shall not manufacture, sell, offer for sale, distribute for use in the SCAQMD jurisdiction, or apply any marine or pleasure craft coating which contains cadmium, nickel, lead or hexavalent chromium that was introduced as a pigment or as an agent to impart any property or characteristic to the marine or pleasure craft coatings during manufacturing, distribution, or use of the applicable marine or pleasure craft coatings."

Paragraph (d)(9) – Transfer Efficiency

Staff proposes to add new language for transfer efficiency to align this rule with other Regulation IX coating rules and renumber the paragraph.

"(9) Transfer Efficiency

(A) Effective April 1st, 2016 a person shall not apply any marine coating or pleasure craft coating unless one of the following methods of coating transfer is used:

(i) electrostatic application, or

(ii) high-volume, low-pressure (HVLP) spray, or

(iii) brush, dip, or roller, or

(iv) Spray gun application, provided the owner or operator demonstrates that the spray gun meets the HVLP definition in paragraph (c)(~~18~~19) in design and use. A satisfactory demonstration must be based on the manufacturer's published technical material on the design of the spray gun and by a demonstration of the operation of the spray gun using an air pressure tip gauge from the manufacturer of the spray gun.

(v) Any such other marine or pleasure craft coating application methods as demonstrated, in accordance with the provisions of paragraph (h)(~~4~~6), to be capable of achieving equivalent or better transfer efficiency than the

marine or pleasure craft coating application method listed in clause (d)(9)(A)(ii), provided written approval is obtained from the Executive Officer prior to use.

(B) A person shall not apply any marine coating or pleasure craft coating by any of the methods listed in subparagraph (d)(9)(A) unless such coating is applied with properly operating equipment, operated according to procedures recommended by the manufacturer and in compliance with applicable permit conditions, if any."

Paragraph (d)(10) - Solvent Cleaning Operations, Storage and Disposal of VOC-containing Materials

Staff proposes the following updates to the existing rule language in efforts to make this rule consistent with other Regulation XI coating rules and renumber the paragraph.

(410) Solvent Cleaning ~~Operations,~~ Storage and Disposal of VOC-containing Materials

~~All solvent~~Solvent cleaning ~~operations~~ of application equipment, parts, products, tools, machinery, equipment, general work areas, and the storage and disposal of VOC-containing materials used in solvent cleaning operations shall be carried out pursuant to SCAQMD Rule 1171 - Solvent Cleaning Operations.

~~(5) RecordkeepNotwithstanding the provisions of subdivision (g), records shall be maintained pursuant to Rule 109.~~"

Subdivision (e) - Prohibition of Possession, Specification and Sale

Staff is proposing to include possession and sale in the existing provision for Prohibition of Specification to be consistent with Rule 1151 - Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations. Staff found non-compliant marine and pleasure craft coatings on the shelves in the boatyards, shipyards and marinas that were visited. In addition, staff found multiple non-compliant marine and pleasure craft coatings offered for sale at many marine stores in the SCAQMD jurisdiction. Staff proposes the following rule language to prohibit possession and sales of non-compliant marine and pleasure craft coating products subject to Rule 1106.

~~"(d) Prohibition of Specification~~

~~(1) A person shall not solicit or require any other person to use, in the district, any coating or combination of coatings to be applied to any marine vessel or marine component subject to the provisions of this rule that does not meet the limits requirements of this rule or of an Alternate Emission Control Plan approved pursuant to the provisions of paragraph (e)(3) of this rule.~~

~~(2) The requirements of paragraph (d)(1) shall apply to all written or oral agreements executed or entered into after November 4, 1988.~~"

"(e) Prohibition of Possession, Specification and Sale

(1) For the purpose of this rule, no person shall ~~supply, sell, offer for sale, market, manufacture, blend, repackage, apply,~~ store at a worksite~~, or solicit the application of~~ any marine coating or pleasure craft coating subject to this rule within the SCAQMD jurisdiction that is not in compliance with the requirements shown in the Tables of Standards of paragraphs (d)(1), (d)(2), and (d)(3) unless one or more of the following conditions apply:

(A) The marine or pleasure craft coating is for use at a facility that utilizes an approved emission control device pursuant to ~~sub~~paragraph (d)(5) and the coating meets the limits specified in permit conditions.

(B) The marine or pleasure craft coating is for use at a facility that operates in compliance with an approved Alternative Emissions Control Plan pursuant to ~~sub~~paragraph (d)(6), and the marine or pleasure craft coating is specified in the plan.

Staff determined that the following subparagraph was superfluous for this particular paragraph and it was removed:

~~(C) The requirements of paragraphs (d)(7) and (d)(8).~~

(2) For the purpose of this rule, no person shall solicit from, specify, or require any other person to use in the SCAQMD jurisdiction any marine or pleasure craft coating which, does not meet the:

(A) Applicable VOC limits required by paragraph (d)(1), (d)(2) or (d)(3) for the specific application unless:

(i) The marine or pleasure craft coating is located at a facility that utilizes an approved emission control device pursuant to paragraph (d)(5), and the marine or pleasure craft coating meets the limits specified in permit conditions; or,

(ii) The marine or pleasure craft coating is located at a facility that operates in compliance with an approved Alternative Emissions Control Plan pursuant to paragraph (d)(6), and the marine or pleasure craft coating is specified in the plan.

(B) The requirements of paragraphs (d)(7) and (d)(8).

A person subject to this rule can meet the requirement in subparagraph (e)(3)(A) by choosing either clause (e)(3)(A)(i) or (e)(3)(A)(ii), and meeting (e)(3)(A)(iii). A person must meet the requirement in subclause (e)(3)(A)(iii) regardless of which option – (e)(3)(A)(i) or (e)(3)(A)(ii) – is chosen.

(3) For the purpose of this rule, no person shall supply, sell, offer for sale, market, blend, package, repackage or distribute any marine or pleasure craft coating for use within the SCAQMD jurisdiction subject to the provisions in this rule which, does not meet the:

(A) Applicable VOC limits required by paragraphs (d)(1), (d)(2) and (d)(3) for the specific application, unless:

(i) The marine or pleasure craft coating is for use at a facility that utilizes an approved emission control device pursuant to paragraph (d)(5), and the coating meets the limits specified in permit conditions; or,

(ii) The marine or pleasure craft coating is for use at a facility that operates in accordance with an approved Alternative Emissions Control Plan pursuant to paragraph (d)(6), and the marine or pleasure craft coating is specified in the plan; and,

(iii) The person that supplies, sells, offers for sale, markets, blends, packages, repackages or distributes the marine or pleasure craft coating keeps the following records for at least five years and makes them available to the Executive Officer upon request:

(I) Marine or pleasure craft coating name and manufacturer;

(II) VOC content of the marine or pleasure craft coating;

(III) Documentation such as manufacturer specification sheets, material safety data sheets, technical data sheets, or any other air quality data sheets that demonstrate that the material is intended for use as a marine or pleasure craft coating;

(B) The requirements of paragraphs (d)(7) and (d)(8).

(4) For the purpose of this rule, no person shall solicit from, specify, require, offer for sale, sell, or distribute to any other person for use in the District any marine or pleasure craft coating application equipment which does not meet the requirements of subparagraph (d)(9)(A).

(5) For the purpose of this rule, no person shall offer for sale, sell, supply, market, offer for sale or distribute an HVLP spray gun for use within the SCAQMD unless ~~the~~ said person ~~offering for sale, selling, marketing or distributing the HVLP spray gun for use within the SCAQMD~~ provides accurate information to the spray gun recipient. Such accurate information shall include ~~on~~ the maximum inlet air pressure to the spray gun which would result in a maximum air pressure of 10 pounds per square inch gauge (psig) air pressure measured dynamically at the center of the air cap and at the air horns based on the manufacturer's published technical material on the design of the spray application equipment and by a demonstration of the operation of the spray application equipment using an air pressure tip gauge from the manufacturer of the gun. The information shall either be permanently marked on the gun, or provided on the company's letterhead or in the form of technical literature which clearly identifies the spray gun manufacturer, the seller, or the distributor.

(6) Paragraphs (d)(1), (d)(2) and (d)(3) shall not apply to marine coatings or pleasure craft coatings that are sold, offered for sale, or solicited, for shipment or use outside of the SCAQMD jurisdiction, or for shipment to other manufacturers for repackaging provided such coatings are sold, offered for sale, or solicited, for shipment or use outside the SCAQMD jurisdiction.

Subdivision (f) - Recordkeeping Requirements for Marine and Pleasure Craft Coating Manufacturers

Staff proposes to add new language for Recordkeeping for VOC Emissions and Recordkeeping Requirements for Emission Control System to align this rule with other Regulation IX coating rules.

"(f) Recordkeeping Requirements

(1) Recordkeeping for VOC Emissions

Records of marine coating usage and pleasure craft coating usage, as applicable, shall be maintained pursuant to SCAQMD Rule 109 - Recordkeeping for Volatile Organic Compound Emissions, and shall be made available to the Executive Officer upon request. The records shall also include the following information:

(A) Material name and manufacturer;

(B) Application method;

(C) Marine coating and pleasure craft coating categories, as applicable, and mix ratio specific to the coating;

(D) Regulatory VOC, for the marine coating and pleasure craft coating, as applicable;

(E) Documentation such as manufacturer specification sheets, material safety data sheets, technical data sheets, or any other air quality data sheets that indicate the material is intended for use as a marine coating, pleasure craft coating or solvent, as applicable;

(F) Current manufacturer specification sheets, material safety data sheets, technical data sheets, or air quality data sheets, which list the actual VOC and regulatory VOC, for each marine coating and pleasure craft coating, as applicable and,

(2) Recordkeeping Requirements for Emission Control System

Any person using an emission control system shall maintain daily records of key system operating parameters which will demonstrate continuous operation and compliance of the emission control system during periods of VOC emission producing activities. "Key system operating parameters" are those parameters necessary to ensure or document compliance with subparagraph (h)(57)(A), including, but not limited to, temperatures, pressure drops, and air flow rates."

Subdivision (g) - Administrative Requirements for Marine and Pleasure Craft Coating Manufacturers

Staff proposes to add new language to require a Compliance Statement Requirement and Labeling Requirements, and align this rule with other Regulation IX coating rules.

"(g) Administrative Requirements for Marine Coating Manufacturers

(1) Compliance Statement Requirement

Effective April 1st, 2016 for each individual marine coating and pleasure craft coating, marine coating and pleasure craft coating component, and ready to spray mixtures (based on the manufacturers stated mix ratio) sold, offered for sale, for shipment or use within the SCAQMD jurisdiction, the manufacturer shall include the following information on a product data sheet, or an equivalent medium:

(A) The actual VOC and regulatory VOC for marine coating and pleasure craft coating, as applicable; and,

(B) The weight percentage of volatiles, water, and exempt compounds; and,

(C) The density of the material (in grams per liter).

(2) Labeling Requirements

(A) The manufacturer of marine coatings and pleasure craft coatings or marine coating and pleasure craft coating components shall include on all containers the regulatory VOC content, as supplied (in grams of VOC per liter of coating, less water and exempt compounds)."

Additionally, staff proposes to add new language to include a manufacturer's distributor list (MD) and a manufacturer's annual quantity emission report (AQER) to facilitate compliance with the VOC requirements of the rule and to inventory the Marine and Pleasure Craft Coatings that come into the SCAQMD jurisdiction.

"(3) Reporting Requirements

(A) Annual Quantity Emissions Reports (AQER)

Effective April 1st, 2016 for each calendar year (January 1 through December 31) beginning with 2015 and continuing with each subsequent calendar year until 2018, a marine coating or pleasure craft coating manufacturer or distributor shall submit to the District by April 1st of the following calendar year, an annual quantity and emissions report for products subject to the rule that were sold or distributed for sale within the District. The report format shall be approved by the Executive Officer, and shall include the annual sales or distribution volume and the regulatory VOC content of marine coatings and pleasure craft coatings sold or distributed within the District.

(B) List of Distributors

Effective April 1st, 2016 for each calendar year (January 1 through December 31) beginning with 2015 and continuing with each subsequent calendar year until 2018, each manufacturer or distributor of a marine coating or pleasure craft coating that were sold or distributed for sale within the district, shall submit to the District by April 1st a list of all U.S. distributors to whom they supply products that are subject to this rule, including but not limited to, private label marine coating or pleasure craft coatings, and toll manufactured marine coatings or pleasure craft coatings. The report format shall be approved by the Executive Officer and shall include the distributor's name, address, contact person and telephone number."

Paragraph (h)(1), (h)(2) and (h)(3) - Test Methods

Staff proposes the following updates to the existing rule language.

"(~~e~~h) Test Methods

(1) Determination of VOC Content:

The VOC content of coatings, subject to the provisions of this rule shall be determined by the following methods:

(A) ~~United States Environmental Protection Agency (~~U.S. EPA~~)~~ Reference Test Method 24 (Determination of Volatile Matter Content, Water Content, Volume Solids and Weight Solids of Surface Coatings, Code of Federal Regulations, Title 40, Part 60, Appendix A~~,~~). The exempt compounds' content shall be determined by South Coast Air Quality Management District (SCAQMD) Laboratory Test Method 303 (Determination of Exempt Compounds) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual; or,

(B) SCAQMD Method 304 [Determination of Volatile Organic Compounds (VOCs) in Various Materials] contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual~~.~~; or,

(C) SCAQMD Method 313 [Determination of Volatile Organic Compounds VOC by Gas Chromatography-Mass Spectrometry] in the SCAQMD's "Laboratory Methods of Analysis for Enforcement Samples" manual.

(~~BD~~2) VOC content determined to exceed the limits established by this rule through the use of any of the above-referenced test methods shall constitute a violation of this rule.

(~~CE~~3) Exempt Perfluorocarbon Compounds

The following classes of compounds:

cyclic, branched, or linear, completely fluorinated alkanes;

cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;

cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and

sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine,

~~will~~ shall be analyzed as exempt compounds for compliance with subdivision (~~e~~d), only ~~when~~ at such time as manufacturers specify which individual compounds are used in the ~~coating~~ formulation of the coatings subject to this rule. In addition, prior to any such analysis, the manufacturers shall also identify the test methods approved by the U.S. EPA, California Air Resources Board (CARB),

and the SCAQMD ~~approved test methods prior to such analysis shall~~ that will be used to quantify the amount of each exempt compound."

Paragraph (h)(~~2~~4) - Determination of Metal Content
Staff proposes the following updates to the existing rule language as follows:

"(~~2~~4) Determination of ~~Metal Content~~Iridescent Particles in Metallic/Iridescent Coatings
The metal and silicon content in metallic/iridescent coatings subject to the provisions of this rule shall be determined by the SCAQMD Method 311 (Determination~~Analysis~~ of Percent Metal in Metallic Coatings by Spectrographic Method) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual."

Paragraph (h)(3) - Determination of Acid Content
Staff proposes the following updates to the existing rule language as follows:

"(~~3~~5) Determination of Acid Content in Marine and Pleasure Craft Coatings
The acid content of any coating subject to the provisions of this rule shall be determined by ASTM D~~-~~1613-~~85~~ 06 (2012) (Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint~~.~~, Varnish, Lacquer, and Related Products) ~~contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual~~."

Paragraph (h)(~~4~~6) - Transfer Efficiency
Staff proposes to add new language for transfer efficiency test methods to align this rule with other Regulation IX coating rules as follows:

"(~~4~~6) Transfer Efficiency
The transfer efficiency of alternative marine coating and pleasure craft coating application methods, as defined by clause (d)(9)(A)(v), shall be determined in accordance with the SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989," and SCAQMD "Guidelines for Demonstrating Equivalency With District Approved Transfer Efficiency Spray Gun September 26, 2002".

Paragraph (h)(~~5~~7) - Determination of Efficiency of Emission Control System
Staff proposes to update the language in paragraph (h)(5) to make it consistent with other Regulation XI coating rules as follows:

"(~~45~~7) Determination of Efficiency of Emission Control System

(A) The efficiency of the collection device of the emission control system as specified in paragraph ~~(c)(2)~~ (d)(5) shall be determined by the ~~USEPA~~ methods specified ~~cited in 55 Federal Register 26865 (June 29, 1990), or any other method approved by the USEPA, the California Air Resources Board, and the SCAQMD~~below~~.~~:

(i) U.S. EPA method cited in 55 Federal Register (FR) 26865, June 29, 1990; or

(ii) SCAQMD's "Protocol for Determination of Volatile Organic Compounds (VOC) Capture Efficiency"; or

(iii) Any other method approved by the U.S. EPA, CARB, and the District Executive Officer.

(B) The efficiency of the control device of the emission control system as specified in paragraph (~~c~~d)(~~2~~5) and the VOC content in the control device exhaust gases, measured and calculated as carbon, shall be determined by U.S. EPA Test Methods 25, 25A, or SCAQMD Method 25.1 (Determination of Total Gaseous Non-Methane Organic Emissions as Carbon) as applicable. U.S. EPA Test Method 18, or CARB Method 422 shall be used to determine emissions of exempt compounds."

Paragraph (h)(~~6~~8) - Multiple Test Methods and paragraph (h)(9)

Staff proposes to relabel the following paragraphs to make the language consistent will the rule.

"(~~56~~8) Multiple Test Methods

When more than one test method or set of test methods are specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of the rule.

(~~67~~9) All test methods referenced in this section shall be the most recently approved version."

Subdivision (i) - Rule 442 Applicability

Staff proposes to add new rule language to include usage of solvents and make this rule consistent with other Regulation XI rules. The new rule language will be under subdivision (i) and will replace the exemptions subdivision (i). The new rule language is as follows:

"(~~h~~i) Rule 442 Applicability

Any ~~*marine coating operation*~~Marine Coating Operation or Pleasure Craft Coating Operation or any facility which is exempt pursuant to subdivision (j) from all or a portion of the VOC limits of subdivision (d) ~~this rule~~ shall comply with the provisions of Rule 442 - Usage of Solvents."

Subdivision (j) - Exemptions:

Staff proposes minor corrections and ~~one new paragraph to address sales and use outside the jurisdiction to subdivision (j)~~two new exemptions to subdivision (j) addressing coatings with viscosities greater than 650 centipoise and coatings that are intended for vessels that submerge to at least 500 feet below the surface of the water. Subdivision (j) is numbered as subdivision (i) in the current rule. Paragraphs (j)(1), (j)(2) and (j)(3) are editorial corrections. The language in paragraph (i)(3) of the current rule can be removed as the date January 1, 1992 has long since passed. The language in paragraph (i)(4) of the current rule can also be removed since the VOC content limit for aluminum hulls is now shown in the Table of Standards I and II.

"(~~i~~j) Exemptions:

The provisions of this rule shall not apply to:

(1) ~~marine~~Marine coatings applied to interior surfaces of potable water containers.

(2) ~~touch~~Touch-up coatings, as defined by paragraph (c)(~~40~~41) of this rule.

~~(3) marine coatings purchased before January 1, 1992, in containers of one quart or less and applied to pleasure craft.~~

~~(4) antifoulant coatings applied to aluminum hulls.~~

(~~5~~3) Any aerosol coating product~~s~~.

~~(4) Paragraphs (d)(1), (d)(2) and (d)(3) shall not apply to marine coatings or pleasure craft coatings that are sold, offered for sale, or solicited, for shipment or use outside of the SCAQMD jurisdiction, or for shipment to other manufacturers for repackaging provided such coatings are sold, offered for sale, or solicited, for shipment or use outside the SCAQMD jurisdiction.~~

(4) The provisions of paragraph (d)(9) shall not apply to Marine or Pleasure Craft coatings with a viscosity of 650 centipoise or greater, as applied.

(5) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to Marine coatings that are used for vessels that are intended to submerge to at least 500 feet below the surface of the water provided that the total combined usage of such coatings does not exceed one gallon per month and such coatings are in compliance with the VOC limits in the U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair (Surface Coatings).

RULE 1106 – MARINE AND PLEASURE CRAFT COATING OPERATIONS

CHAPTER 3: IMPACT ASSESSMENT OF PROPOSED AMENDED RULE 1106

- Emission Impact Assessment
- Cost Analysis
- Incremental Cost-Effectiveness
- California Environmental Quality Act (CEQA)
- Socioeconomic Impact Assessment
- Draft Findings under California Health and Safety Code 40727
- Comparative Analysis
- Draft Conclusions and Recommendations
- Public Comments and Responses

EMISSION IMPACT ASSESSMENT

Staff does not anticipate any real quantifiable emission reductions or increases, since Proposed Amended Rule 1106 seeks to align the VOC content limit for certain coating categories with the U.S. EPA CTG, and other California APCDs/AQMDs, and will not lead to reformulation of coatings; thus, Proposed Amended Rule 1106 will be administrative in nature.

COST ANALYSIS

The proposed amendment to Rule 1106 is not expected to have a net cost impact, since industry will be able to continue business as usual and operate their equipment subject to Proposed Amended Rule 1106 in a similar manner to the current rules. Staff determined ten manufacturers of marine and pleasure craft coatings will be required to provide annual reports. However, the cost burden is not substantial and the associated costs are expected to be minimal.

INCREMENTAL COST-EFFECTIVENESS

Under Health and Safety Code § 40920.6, the SCAQMD is required to perform an incremental cost analysis when adopting a Best Available Retrofit Control Technology (BARCT) rule or feasible measure required by the California Clean Air Act. To perform this analysis, the SCAQMD must (1) identify one or more control options achieving the emission reduction objectives for the proposed rule, (2) determine the cost effectiveness for each option, and (3) calculate the incremental cost effectiveness for each option. To determine incremental costs, the SCAQMD must "calculate the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option." Staff reviewed the current standards throughout the state and determined that PAR 1106 represents BARCT for Marine and Pleasure Craft Coating Operations because there are no other more stringent limits available. PAR 1106 will not result in emission reductions and therefore no incremental cost analysis is required under Health and Safety Code § 40920.6.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pursuant to the California Environmental Quality Act (CEQA) and the SCAQMD's Certified Regulatory Program (Rule 110), the SCAQMD will prepare appropriate CEQA documentation for Proposed Amended Rule 1106. Upon completion, the CEQA document will be released for public review and comment, and will be available at SCAQMD Headquarters, by calling the SCAQMD Public Information Center at (909) 396-2039, or by accessing SCAQMD's CEQA website at: www.aqmd.gov/ceqa.

SOCIOECONOMIC IMPACT ASSESSMENT

Proposed Amended Rule 1106 re-codifies existing requirements for Marine and Pleasure Craft Coating Operations found in current Rule 1106 and 1106.1. Since Proposed Amended Rule 1106 does not significantly affect air quality or emissions, no new significant cost burden is expected above and beyond what is currently required. Therefore, a socioeconomic assessment is not necessary or required. Additional reporting proposed for marine and pleasure craft coating manufacturers is not substantial and the associated costs are expected to be minimal.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE 40727

The draft findings include necessity, authority, clarity, consistency, non-duplication and reference, as defined in Health and Safety Code Section §40727. The draft findings are as follows:

Necessity - The SCAQMD Governing Board finds and determines that Proposed Amended Rule 1106, Marine and Pleasure Craft Coating Operations, is necessary to enhance readability and provide clarity of rule language.

Authority - The SCAQMD Governing Board obtains its authority to adopt, amend or repeal rules and regulations from Health and Safety Code §§ 39002, 40000, 40001, 40440, 40702, 40725 - 40728 and 41700.

Clarity - The SCAQMD Governing Board finds and determines that Proposed Amended Rule 1106 is written and displayed so that the meaning can be easily understood by persons directly affected by it.

Consistency – The SCAQMD Governing Board finds and determines that Proposed Amended Rule 1106 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or federal or state regulations.

Non-Duplication – The SCAQMD Governing Board has determined that Proposed Amended Rule 1106 does not impose the same requirement as any existing state or federal regulation, and the proposed amendment is necessary and proper to execute the powers and duties granted to, and imposed upon, the SCAQMD.

Reference - In adopting this Proposed Amended Rule 1106, the SCAQMD Governing Board references the following statutes which SCAQMD hereby implements, interprets or makes specific: Health and Safety Code Sections 40001, 40440, and 40702.

COMPARATIVE ANALYSIS

California Health and Safety Code Section 40727.2 requires the comparative analysis with any federal or other SCAQMD rules that apply to the same equipment or source type as the proposed amendment. The existing VOC limits in current Rule 1106 and Rule 1106.1 as well as the proposed VOC limits in Proposed Amended Rule 1106 are not in conflict with the current National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair Operations (Surface Coating), 40 CFR Part 63, dated June 18, 1996. The existing VOC limits in current Rule 1106 and Rule 1106.1 as well as the proposed VOC limits in Rule 1106 are not in conflict with the current U.S. EPA CTG, dated August 27, 1996. Proposed Amended Rule 1106 seeks to align the VOC limit for Inorganic Zinc Coating in current Rule 1106 from 650 g/L to 340 g/L to be consistent with the U.S. EPA VOC limit of 340 g/L.

The NESHAP for Shipbuilding and Ship Repair Operations (Surface Coating) sets forth Hazardous Air Pollutants ("HAP") emission limits for major source facilities that apply coatings used in volumes of 200 liters (52.8 gallons) or more. Affected sources under this NESHAP are Shipbuilding and Ship

Repair Operations (Surface Coating) operations that are major sources under federal law, or are coating operations located within the confines of a federal major source.

The CTG is intended to provide state and local air pollution authorities' information to assist them in determining RACT for VOCs for Shipbuilding and Ship Repair Operations (Surface Coating).

The proposed amendments to Rule 1106 are not expected to reduce or increase VOC emissions. Current Rules 1106 and 1106.1 and Proposed Amended Rule 1106 does not regulate Hazardous Air Pollutants (HAP) emissions directly. Therefore, the existing as well as the proposed VOC limits of Rule 1106 are not in conflict with federal regulations.

Table 3-1 has been prepared to show comparisons between SCAQMD Proposed Amended Rule 1106, the U.S. EPA CTG, and the NESHAP regulation.

TABLE 3-1: COMPARATIVE ANALYSIS

CATEGORY	SCAQMD RULE 1106 – Marine and Pleasure Craft Coating Operations	U.S.EPA CTG Control Techniques Guidelines for Shipbuilding and Ship Repair Operations (Surface Coating)	USEPA NESHAP 40 CFR Part 63 – NESHAP for HAP for Shipbuilding and Ship Repair Operations (Surface Coating)
Purpose	Reduces emissions of VOC and stratospheric ozone depleting and global warming compounds from Marine & Pleasure Craft Coating Operations.	Provides state and local air pollution authorities' information to assist them in determining RACT, to control VOCs from surface coating operations in the shipbuilding and ship repair industry.	Establishes National Emission Standards for Hazardous Air Pollutants for shipbuilding and ship repair (surface coating) facilities.
Applicability	Applies to local Marine and Pleasure Craft Coating Operations.	Applies to facilities that perform surface coating operations in the shipbuilding and ship repair industry. Does not include pleasure craft coating operations.	Applies to shipbuilding and ship repair (surface coating) operations at any facility that is a major source. Does not include pleasure craft coating operations.
Averaging Provisions	None.	None.	None.
Units	Mass/Volume: Grams/Liter or Pounds/gallon.	Mass/Volume: Grams/Liter.	Mass/Volume: Grams/Liter.
Operating Parameters	Has HVLP type transfer efficiency requirements for coating application equipment.	No HVLP type transfer efficiency requirements for application equipment.	Does not include the use of HVLP type transfer efficiency for application equipment.
Method to Determine VOC	U.S. EPA Method 24, or SCAQMD Method 304, or SCAQMD Method 313.	Does not mention U.S. EPA Methods for determining VOC.	U.S.EPA Method 24 of 40 CFR part 60, appendix A.
Capture Efficiency	U.S. EPA Method 55 or, SCAQMD's "Protocol for determining VOC capture efficiency.	Does not mention U.S. EPA Methods for capture efficiency.	Does not mention U.S.EPA Methods for capture efficiency.

CATEGORY	SCAQMD RULE 1106 – Marine and Pleasure Craft Coating Operations	U.S.EPA CTG Control Techniques Guidelines for Shipbuilding and Ship Repair Operations (Surface Coating)	USEPA NESHAP 40 CFR Part 63 – NESHAP for HAP for Shipbuilding and Ship Repair Operations (Surface Coating)
Control Device Efficiency	U.S.EPA Method 25 & 25A, or SCAQMD Method 25.1. Must use U.S. EPA Method 422 to determine emissions from exempt compounds	Does not mention U.S. EPA Methods for control device efficiency.	Does not mention U.S. EPA Methods for control device efficiency.
Work Practices	Defers to Rule 1171 for storage and disposal of VOC containing materials.	Does not contain any work practices recommendations.	VOC containing containers to be kept closed when not in use.
			Minimize spills of VOC containing materials.
Monitoring	None	None	None
Reporting	Annual Quantity Emissions Report and Annual Manufacturer's Distribution List required for reporting.	No mention for reporting	No mention for reporting
Recordkeeping	Defers recordkeeping to Rule 109, records to be kept annually.	No mention for recordkeeping.	Comprehensive records required annually to support compliance.
Other Elements	Prohibition of possession, specification and sale for non-compliant marine and pleasure craft coatings.	No mention of a prohibition of sale requirement.	No mention of a prohibition of sale requirement.
	Marine coatings applied to interior surfaces of potable water containers, touch-up coatings and aerosol containers.	No transfer efficiency requirements in the CTG.	Offers two exemptions: annual usage of less than 200 liters for an individual coating and aerosol containers.

DRAFT CONCLUSIONS AND RECOMMENDATIONS

Based on the foregoing, staff recommends the adoption of Proposed Amended Rule 1106 - Marine and Pleasure Craft Coating Operations.

PUBLIC COMMENTS AND RESPONSES

Staff held the public workshop for the rescinding of Rule 1106.1 - Pleasure Craft Coating Operations and the Proposed Amended Rule 1106 - Marine and Pleasure Craft Coating Operations on Wednesday, August 12, 2015. The following comments were made during the comment period, August 12 through August 31, 2015 and staff responses to those comments are shown below.

Stakeholder Comment #1 **American Coatings Association**

Under the section titled "Test Methods", we note that Method 313 shall be run to determine the VOC content of coatings. Also listed are other well-known and much more relevant methods such as Method 24. Setting aside the technical limitations and problems that still need to be resolved before Method 313 can deployed for compliance purposes, we are confused to why it would be included in the first place. Under the Scope and Application for Method 313 it states "Method 313 applies to materials such as paints, coatings, solvents, and other liquid/dispersed solid materials containing less than 150 g/L VOC material as measured by SCAQMD Method 304-91". Because all marine coatings categories in this rule are in excess of this limit and most likely not water based it is clear there is no technical requirement to introduce Method 313 and we strongly recommend SCAQMD remove this requirement from the proposed rule. We believe that Method 24 will be sufficient for determining VOC compliance and that Method 313 not only has outstanding technical issues that it must resolve, but simply is inappropriate because it is developed and intended only for water based coatings below 150 g/L.

Staff Response:
Staff has found marine and pleasure craft coatings that use water base chemistry and have regulatory VOC contents of 150 g/L. The material VOC would actually be even less than 150 g/L. Based on the existence of those marine and pleasure craft coatings and that SCAQMD Method 313 applies to coatings containing 150 g/L or less, staff finds it prudent to maintain SCAQMD Method 313.

Stakeholder Comment #2 **Disneyland Resort**

My primary concern is redefining the "Pleasure Craft: as it would move Disneyland's attraction vessels out of pleasure craft category. Disneyland attraction vessels (Mark Twain, Columbia, Jungle Cruise and etc.) are designed, operated as pleasure craft. Our coating system was mapped out of R1106.1 VOC standard table. As such I would suggest the District to add in the definition something like: "Pleasure craft also includes attraction vessels operated by amusement park", Can you please consider? I forgot to mention that our Mark Twain and Columbia attraction boats are greater than 20 meters long. Will this change your view? I hope not but just want to be sure we are covered.

Staff Response:
Staff realizes the need to include watercraft solely used for amusement park rides such as those at Disneyland, Knott's Berry Farm, Magic Mountain, and Raging Waters, in the pleasure craft coating category. Staff believes these types of watercraft can be captured under the pleasure craft definition by adding additional language to include them as follows:

"(29) PLEASURE CRAFT are marine or fresh water vessels that are less than 20 meters in length and are manufactured or operated primarily for recreational purposes, or are leased, rented, or chartered to a person or business for recreational purposes. Amusement theme parks that operate vessels in a fresh water environment solely for the purpose of an amusement park attraction shall be considered pleasure craft vessels regardless of their length. The owner or operator of a pleasure craft vessel shall be responsible for certifying that the intended use is for recreational purposes."

Stakeholder Comment #3 **VACCO**

VACCO greatly appreciates the opportunity to provide comments on the Proposed Rule 1106 and would like to request a provision in the proposed Rule 1106 for exemptions on United States Navy defense components. VACCO is the leading manufacturer of quiet and non -quiet air v valves and manifolds for use in naval ship applications. VACCO has thousands of active components on the U.S. Navy fleets. VACCO has contract agreements with U.S. Navy suppliers, such as Electric Boat and Bechtel, which include drawings and Military Specifications (MIL -SPEC) pe requirements. The chemicals/materials specified on drawings are based on approved standards from the U.S. Navy that cannot be replaced. VACCO supplies as many products to the U.S. Navy of which approximately 80% to 90% are installed on submarines and 10% to 20% are installed on Navy surface ships. To assure a lifetime of no corrosion, which is especially important for valves and manifolds in/near sea water, VACCO already has limited selections of materials to use in the manufacturing processes. The types of coating VACCO uses include, but not limited to, Pre -Treatment Primer, Special Marking Coating, Any Other Coating Type, etc. VACCO may contract other projects which may require different type of coatings in the future. Quantity of these types of coatings is minimal; no more than 3 gallons are used in a year yielding insignificant amount of emissions. VACCO is willing to work with the District addressing any concerns.

Currently VACCO has a few coatings specified on submarine component drawings that are used on valves; these coatings will then no longer be compliant due to the reduced VOC content limits. Alternate coatings with lower VOC contents would then be requested. Please acknowledge the difficulties of making changes on specifications from the U.S. Navy without performance testing & verification to their stringent standards. Although alternate coating that meets all product specifications and military specifications is an option, the U.S. Navy suppliers would need to propose and obtain final approval from the U.S. Navy. To ensure safety and consistency, changes on specifications are not preferred. It is important to manufacture products to the U.S. Navy specification to maintain the national defense system.

Staff Response:
Staff determined Pre-treatment Wash Primers and Special Marking Coatings that are intended to be used on submerged vessel (submarine) components require the use of these coatings per military specifications (Mil-Specs) and currently meet the VOC limits in Rule 1106 - Marine Coating Operations. However, these coatings will not meet the new aligned VOC limits in Proposed Amended Rule 1106, which seeks to align these VOC limits with other APCDs/AQMDs. Staff proposes to craft an exemption for this type of no more than 12 gallons per calendar year, of all products combined, for this type operation and will require that the products used will have to be in compliance with the U.S. EPA National Emission Standard for Shipbuilding and Ship Repair (Surface Coating) as provided in Part 63 of the Federal Register.

Stakeholder Comment #4 **Metropolitan Water District of Southern California**

As the nation's largest provider of treated drinking water, the Metropolitan Water District of Southern California (Metropolitan) owns, operates, and maintains numerous reservoirs, canals, water treatment plants, etc. Per the language in the Proposed Amended Rule (PAR) 1106, Marine Coatings, and the discussion provided in the August 2015 Preliminary Draft Staff Report, Metropolitan's watercraft operated at these locations are not subject to the rule as the locations would not be considered "marine

environments". However, for consistency with recent rulemaking activities for SCAQMD coating rules, we would like to recommend that PAR 1106 recognize the newer coating application technology utilized by the low-VOC high solids coatings that are available from the paint manufacturers. Specifically, the August 2015 PAR proposes the added requirements for Transfer Efficiency in (d)(9). For similar reasons discussed during the PAR 1107 rulemaking, the draft 7/10/2012 PAR 1107 (f)(8) language can also be used for PAR 1106 - the transfer efficiency requirements shall not apply to marine coatings with a viscosity of 650 centipoise or greater, as applied.

For various types of substrates and operations (e.g., metal parts, architectural, marine), application of the ultra-low VOC, high viscosity resin coatings (e.g., epoxy, polyurethane) can be facilitated by the ability to apply the coatings with specialized applicators such as heated plural component airless or air assisted spray guns, or unique cartridge gun systems. Incorporation of a requirement based on the coating viscosity will permit the use of the application equipment best suited for the material while retaining the benefits of using the low-VOC high solids coatings.

Staff Response:
Staff recalls the discussion of an exemption for transfer efficiency for metal parts and products coatings that were tested to have a viscosity of 650 or greater centipoise. The thought was that if a coating for a metal part or component was too thick to spray from an HVLP spray gun, the spray coating option would no longer be a viable application option. To spray such thick fluids, special plural type application equipment or very high pressures (greater than 1,000 psi) are necessary. Without the proposed exemption, shops forced to use HVLP equipment would otherwise have to thin the high solids coatings with VOC solvents to allow them to be sprayed, thus eliminating the benefit of the low-VOC high solids coatings. Rather than thin the coating in excess to spray it, a viable alternative would be to provide an exemption in the rule to allow a coating with 650 or more centipoise to be exempted from the transfer efficiency requirements.

Stakeholder Comment #5 **Radtech International**

RadTech International is pleased to comment on the proposed amendments to Rule 1106. We have over 800 members involved in UV/EB/LED technology. We recently provided literature to your staff related to the use of LED coatings in a Marine Coatings application by the United States Navy. We support the RadTech proposal to exempt UV/EB/LED processes from the rule in order to provide incentives for voluntary emission reductions.

Specifically, we have concerns over the extensive recordkeeping requirements in the rule because they would add an undue burden to our industry and would eliminate the current exemptions for UV/EB in Rule 109 which your board adopted several years ago. We also request the inclusion of a definition for energy curable materials in the rule and propose that ASTM D7767 (the test method for thin film UV/EB curable materials) be included in Section (h) Test Methods. Additionally, flexibility should be offered to UV/EB processes as related to the requirements for transfer efficiency in the rule. UV/EB materials not only meet but far exceed any proposed rule requirements and any added flexibility to companies that choose these pollution preventive processes will encourage voluntary emission reductions thereby furthering the district's mission.

Staff Response:
The recordkeeping requirements in Proposed Amended Rule 1106 paragraph (d)(1) state, in part, "Records of marine coating usage and pleasure craft coating usage, as applicable, shall be maintained pursuant to SCAQMD Rule 109- Recordkeeping for Volatile Organic Compound emissions, and shall be made available to the Executive Officer upon request…". Rule 109 provides an exemption from the provisions in the rule pertaining to recordkeeping for super compliant material(s) provided the facility can demonstrate that the total permitted facility VOC emissions do not exceed four tons in any calendar year. Rule 109 defines a super compliant material as any material containing 50 grams or less of VOC per liter of material. The exemption provided in Rule 109 as discussed above is also applicable to Proposed Amended Rule 1106. This has always been staff's intent with the amendment.

To address the concerns of the UV/EB curable coatings industry, staff has written a definition into the Proposed Amended Rule 1106 for UV/EB curable thin film marine and pleasure craft coatings. The definition includes a reference to ASTM D7767-11 "Standard Test Method to Measure Volatiles from Radiation Curable Monomers, Oligomers, and Blends and Thin Coatings Made from Them".

Even though there are coatings that are regulated by other Regulation XI coating rules that are also less than 50 g/L VOC content, they are not exempt from the transfer efficiency requirements. Transfer efficiency requirements are necessary to not only enhance paint transfer onto a substrate, but also, in the case of spray coating applications, reduce excessive overspray. For example, an overall exemption from transfer efficiency requirements could result in the use of a conventional spray gun that uses high volume, high pressure, to spray coat a surface. This in turn could result in greater overspray than the use of a High Volume Low Pressure (HVLP) type spray gun. The excessive overspray generated by conventional, and other types of spray equipment that do not meet transfer efficiency requirements, typically emit PM10 particulates beyond property boundaries and becomes a nuisance with other entities in the area which typically results in overspray complaints. In addition, there is also a concern for particle fall-out during the spray coating operation. Fall-out occurs when particles are propelled at the substrate under high pressure and the particles bounce back from the substrate and fall-out to the ground. The fall-out material can then be washed into the storm drains and channels thus presenting additional issues with water contamination of rivers and the ocean where these type applications typically occur.

There were also five additional comment letters submitted by DDU Enterprises Inc., EPMAR Corporation, Heraeus Noblelight America LLC, UV Specialties LLC, and Wave Front Technology that mirrored the comment letter submitted by Radtech International.

REFERENCES

SCAQMD Final Staff Report for proposed amendment to: 1106 - Marine Coating Operations, December 1994.

SCAQMD Final Staff Report, Proposed Amended Rule 1106.1 - Pleasure Craft Coating Operations, January 1999.

Websites:

http://en.wikipedia.org/wiki/Anti-fouling_paint

http://en.wikipedia.org/wiki/Ablation

http://www.cureuv.com/marine-uv-cure-wet-look-wood-finish-products.html

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Environmental Assessment:

Proposed Amended Rule 1106 – Marine and Pleasure Craft Coating Operations and Rescission of Rule 1106.1 – Pleasure Craft Coating Operations

September 2015

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PREFACE

This document constitutes the Final Environmental Assessment (EA) for Proposed Amended Rule 1106 – Marine and Pleasure Craft Coating Operations and Rescission of Rule 1106.1 – Pleasure Craft Coating Operations. The Draft EA was released for a 30-day public review and comment period from August 19, 2015 to September 18, 2015. No comment letters were received during the public review period. The environmental analysis in the Draft EA concluded that Proposed Amended Rule 1106 and Rescission of Rule 1106.1 would not generate any significant adverse environmental impacts.

Minor modifications were made to the Draft EA. To facilitate identifying modifications to the document, added and/or modified text is underlined. None of the modifications alter any conclusions reached in the Draft EA, nor provide new information of substantial importance relative to the draft document. As a result, these minor revisions do not require recirculation of the document pursuant to CEQA Guidelines §15088.5. Therefore, this document now constitutes the Final EA for Proposed Amended Rule 1106 and Rescission of Rule 1106.1.

C H A P T E R 1 - P R O J E C T D E S C R I P T I O N

Introduction

Affected Facilities

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Project Location

Project Objective

Project Background / Technology Overview

Project Description

INTRODUCTION

The California Legislature created the South Coast Air Quality Management District (SCAQMD) in 1977[1] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin and Mojave Desert Air Basin referred to herein as the District. By statute, the SCAQMD is required to adopt an Air Quality Management Plan (AQMP) demonstrating compliance with all federal and state ambient air quality standards for the District[2]. Furthermore, the SCAQMD must adopt rules and regulations that carry out the AQMP[3]. The Final 2012 AQMP concluded that reductions in emissions of particulate matter (PM), oxides of sulfur (SOx), oxides of nitrogen (NOx), and volatile organic compounds (VOC) are necessary to attain the current state and national ambient air quality standards for ozone, and particulate matter with an aerodynamic diameter of 2.5 microns or less (PM2.5). Ozone, a criteria pollutant that is formed when NOx and VOCs react in the atmosphere, has been shown to adversely affect human health.

The Basin is designated by the United States Environmental Protection Agency (U.S. EPA) as a non-attainment area for ozone and PM2.5 emissions because the federal ozone standard and the 2006 PM2.5 standard have been exceeded. For this reason, the SCAQMD is required to evaluate all feasible control measures in order to reduce direct ozone and PM2.5 emissions, including precursors, such as NOx and VOCs. The Final 2012 AQMP sets forth a comprehensive program for the Basin to comply with the federal 24-hour PM2.5 air quality standard, satisfy the planning requirements of the federal Clean Air Act, and provide an update to the Basin's commitments towards meeting the federal 8-hour ozone standard. In particular, the Final 2012 AQMP contains a multi-pollutant control strategy to achieve attainment with the federal 24-hour PM2.5 air quality standard. The 2012 AQMP also serves to satisfy the recent requirements promulgated by the EPA for a new attainment demonstration of the revoked 1-hour ozone standard, as well as to provide additional measures to partially fulfill long-term reduction obligations under the 2007 8-hour Ozone State Implementation Plan (SIP).

Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOCs because of interference with oxygen uptake. In general, ambient VOC concentrations in the atmosphere are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis, even at low concentrations. Some hydrocarbon compounds classified as VOC emissions are thought or known to be toxic air contaminants (TACs). With stationary and mobile sources being the major producers of VOCs, which contribute to ozone formation, reducing the quantity of VOCs in the district has been an on-going effort by the SCAQMD.

The California Clean Air Act (CCAA) requires districts to achieve and maintain state standards by the earliest practicable date and for extreme non-attainment areas, to include all feasible measures pursuant to Health and Safety Code §§40913, 40914, and 40920.5. The term "feasible" is defined in the Title 14 of the California Code of Regulations, §15364, as a measure "capable of being

[1] The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., ch 324 (codified at Health and Safety Code, §§40400-40540).
[2] Health and Safety Code, §40460 (a).
[3] Health and Safety Code, §40440 (a).

accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

AFFECTED FACILITIES

Rule 1106 (Marine Coating Operations) is applicable to all coating operations of boats, ships, and their appurtenances, and to buoys and oil drilling rigs intended for the marine environment. Currently, coating operations of vessels which are manufactured or operated primarily for recreational purposes are subject to the requirements of Rule 1106.1 (Pleasure Craft Coating Operations).

The current Rule 1106.1 is applicable to all coating operations of pleasure craft, as defined in paragraph (b)(10) of this rule, or their parts and components, for the purpose of refinishing, repairing, modification, or manufacturing such craft. This rule also applies to establishments engaged in activities described in the North American Industry Classification System (NAICS) codes 81149 – Other Personal and Household Goods Repair and Maintenance and 713930 - Marinas. Pleasure craft coating operations which are currently subject to the requirements of Rule 1106.1 are not subject to the requirements of Rule 1106. Descriptions of crafts utilizing the coatings affected by these rules as well as the types of paints can be found in the Project Background section.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

PAR 1106 is a discretionary action by a public agency, which has potential for resulting in direct or indirect changes to the environment and, therefore, is considered a "project" as defined by the California Environmental Quality Act (CEQA). SCAQMD is the lead agency for the proposed project and has prepared this Final environmental assessment (EA) with no significant adverse impacts pursuant to its Certified Regulatory Program and SCAQMD Rule 110. California Public Resources Code §21080.5 allows public agencies with regulatory programs to prepare a plan or other written document in lieu of an environmental impact report or negative declaration once the Secretary of the Resources Agency has certified the regulatory program. SCAQMD's regulatory program was certified by the Secretary of the Resources Agency on March 1, 1989, and is codified as SCAQMD Rule 110.

CEQA and Rule 110 require that potential adverse environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid significant adverse environmental impacts of these projects be identified. To fulfill the purpose and intent of CEQA, the SCAQMD has prepared this Final EA to address the potential adverse environmental impacts associated with the proposed project. The Final EA is a public disclosure document intended to: (a) provide the lead agency, responsible agencies, decision makers and the general public with information on the environmental effects of the proposed project; and, (b) be used as a tool by decision makers to facilitate decision making on the proposed project.

SCAQMD's review of the proposed project shows that the proposed project would not have a significant adverse effect on the environment. Therefore, pursuant to CEQA Guidelines §15252 and 15126.6(f), no alternatives are proposed to avoid or reduce any significant effects because there are no significant adverse impacts, and pursuant to CEQA Guidelines §15126.4(a)(3), mitigation measures are not required for effects not found to be significant. The analysis in the

form of the environmental checklist in Chapter 2 supports the conclusion of no significant adverse environmental impacts.

No comment letters were received on the Draft EA during the public comment period.

PROJECT LOCATION

The potentially affected facilities are located within the SCAQMD jurisdiction. The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Basin) (Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB) (Figure 1-1).

Figure 1-1
Boundaries of the South Coast Air Quality Management District

PROJECT OBJECTIVE

The specific objectives of PAR 1106 are to:

- Rescind Rule 1106.1 but maintain the requirements;
- revise VOC content limits for some coating categories in order to align limits with U.S. EPA Control Techniques Guidelines and other California APCD's/AQMD's;
- add new coating categories;
- add provisions for pollution prevention measures and enhanced enforceability,
- make minor revisions to the applicability subdivision and revise/add new definitions to the definitions subdivision; and
- include clarifications and editorial corrections.

PROJECT BACKGROUND / TECHNOLOGY OVERVIEW

Rule 1106 was adopted on November 4, 1988, and has been subsequently amended seven times. The most recent amendment was on January 13, 1995, which incorporated corrective action items in efforts to resolve deficiencies determined by U.S. EPA. The corrective action items in that amendment included an equation for control device equivalency, an applicability statement, test methods that were required to be specified, language regarding multiple test methods and the most recent test method added, an updated definition for aerosol coatings and exempt compounds, and a permanent exemption for aerosol containers was added to satisfy U.S. EPA requirements.

Rule 1106.1 was adopted on May 1, 1992, and has been subsequently amended three times. The most recent amendment was on February 12, 1999, which removed Pleasure Craft Coating Operations from existing Rule 1106 - Marine Coating Operations. Many of the existing coating categories in Rule 1106 at that time were not representative of the pleasure craft coating industry. Consequently, the SCAQMD adopted Rule 1106.1 with the intent of identifying the special categories of coatings applied on pleasure craft.

Coatings:

Ships, Yachts, Boats

Water going vessels, commonly referred to as ships, yachts, and boats have coatings specifically designed for the two main portions of a boat; top side and bottom side. The deciding factor is, with the boat at rest, anything above the water line is considered the top side and anything below the water line is considered bottom side.

Top Side

The top side of the ship, yacht or boat is the visual portion of the boat from the water-line up. These coatings not only have to perform well in protecting the substrate in a marine environment, but also have to look good as well. The substrates can include wood of many various types, fiberglass and composites, steel, stainless steel, aluminum, brass and bronze. These coatings can be applied by hand application, usually with a paint brush, or by atomized spray. There are several categories of top side coatings that are included in Rules 1106 and 1106.1, such as one-component, two-component, varnish, antenna coatings, pre-treatment wash primers etc.

Bottom Side

A boat that is docked or moored in both fresh water and sea water is susceptible to what the marine industry calls fouling. Fouling is typically broken down into hard growth, such as barnacles, mussels, or shipworms, and soft growth, such as marine plant growth like algae and grass which would if unabated, continue to grow and cause excessive drag on the boat during operation. Fouling could also cause severe damage to the hull substrate such as corrosion to steel and aluminum hulls and shipworms boring into wooden hulls. Fouling also poses a potential threat to the environment through transporting harmful marine organisms to other waterways. The solution to fouling comes by way of an antifoulant coating which is used to inhibit the growth of foulant from adhering to the bottom of the boat. There are two different types of antifoulant coatings- though there is aluminum substrate and "other", a hard bottom paint and an ablative bottom paint.

Hard Bottom Paint

Hard bottom paint is an epoxy type paint formulated with copper, oranotin (an organic compound with one or more tin atoms in its molecules) compounds and other biocides and pesticides to control marine growth from adhering to the hull. The copper is used for hard growth such as mussels and barnacles, and biocides and pesticides are used to control the soft growth such as algae and other marine organisms like ship worms. Hard bottom paints control marine growth by biocide and pesticide release which are released slowly from the pores of the paint while in water. Other types of hard bottom paint include Teflon and silicone which make the coating surface too slick for marine growth to adhere to. This type of coating is typically used for boats that spend long periods of time at rest in the water.

Ablative Bottom Paint

Ablative bottom paint is specially formulated to be a sacrificial coating designed to be slowly worn away during boat operation. For the marine environment, ablation is simply a wear away type coating where the coating continuously wears off at a slow rate during boat operation, thus exposing a new layer with fresh antifoulant compounds. However, there have been environmental concerns with the use of copper in these bottom paints and the toxic effects it has on marine life. The Port of San Diego continues to investigate how much copper can be reduced from copper-based antifoulant coatings and Washington State passed a law which may phase in a ban on copper antifoulant coatings on recreational vessels beginning in January 2018. Some innovative bottom paints that do not rely on copper or tin have been developed in response to the increasing scrutiny that copper-based ablative bottom paints have received as environmental pollutants.

Application:

High Volume Low Pressure (HVLP)

HVLP spray guns are the staple of spray guns and were created to meet the transfer efficiency requirements of governmental agencies, including the SCAQMD. HVLP spray guns can meet the high transfer efficiency requirement and operate at less than 10 pounds per square inch (psi) at the air cap. HVLP spray guns are used in the South Coast Air Basin to spray coatings for a multitude of categories including automotive coatings, metal coatings, wood coatings, industrial coatings and marine coatings.

Low Volume Low Pressure (LVLP)
LVLP spray guns are a subset of non-conventional spray guns and may be used in the spraying of marine or pleasure craft coatings, provided they meet the transfer efficiency requirements as identified in Rule 1106 clause (d)(8)(A)(v). LVLP offers an alternative to HVLP because they have less air flow requirements and can be used with a smaller compressor. This makes LVLP appealing for mobile painters and applicators that use a small air compressor. Manufacturers of LVLP spray guns state that LVLP can operate at less than 10 psi at the air cap and achieve transfer efficiencies equivalent to HVLP application. The working speed of LVLP is not as fast as HVLP spray guns.

Low Volume Medium Pressure (LVMP)
LVMP spray guns are a subset of the non-conventional spray guns and may also be used in the spraying of marine or pleasure craft coatings, provided the requirements in Rule 1106 clause (d)(8)(A)(v) for transfer efficiency are met, including achieving equivalent or better transfer efficiency to HVLP using the test method protocols prescribed in Rule 1106 to determine transfer efficiency, and obtaining written approval from the Executive Officer prior to use.

Reduced Pressure (RP)
RP spray guns are a subset of non-conventional spray guns and may be used in the spraying of marine or pleasure craft coatings provided the requirements in Rule 1106 clause (d)(8)(A)(v) for transfer efficiency are met, including achieving equivalent or better transfer efficiency to HVLP using the test method protocols prescribed in Rule 1106 to determine transfer efficiency, and obtaining written approval from the Executive Officer prior to use. RP spray guns also use smaller air compressors because they need less air flow requirements than HVLP spray guns, which makes RP attractive for mobile painters. RP can be an alternative to HVLP and has a fast working speed comparable to HVLP guns.

Pressure Fed (PF)
PF spray guns are unique as compared to the other types of spray guns in that they are equipped with auxiliary containers used for holding larger quantities of coating product. PF spray guns can be used in the spraying of marine or pleasure craft coatings provided all the requirements in Rule 1106 clause (d)(8)(A)(v) for transfer efficiency are met, including achieving equivalent or better transfer efficiency to HVLP using the test method protocols prescribed in Rule 1106 to determine transfer efficiency, and obtaining written approval from the Executive Officer prior to use.

New Conventional (NC)
Staff has identified an additional subset of conventional spray guns being marketed as New Conventional (NC). Manufacturers of such spray guns claim the NC spray guns offer the same wide pattern (spray) as the old conventional spray guns, but have better transfer efficiency and have the ability to spray thick fluids. This technology could be used for spraying marine or pleasure craft coatings, but only if the spray gun meets all the requirements in Rule 1106 clause (d)(8)(A)(v) for transfer efficiency, including achieving equivalent or better transfer efficiency to HVLP using the test method protocols prescribed in Rule 1106 to determine transfer efficiency, and obtaining written approval from the Executive Officer prior to use.

Transfer Efficiency Requirements

PAR 1106 incorporates similar transfer efficiency requirements found in Rule 1151 - Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations, for applying a marine or pleasure craft coating. The transfer efficiency requirement for spray application is use of electrostatic, HVLP spray equipment, and other spray guns that meet the HVLP definition of definition of paragraph (b)(18) in design and use. Demonstration must be based on the manufacturer's published technical material on the design of the spray gun and by demonstration of the operation of the spray gun using an air pressure tip gauge from the manufacturer of the spray gun [See clause (d)(8)(A)(v)].

Brush and roller coating are applied directly from the paint brush bristles or the roller to the substrate and have a very high coating to substrate transfer efficiency. Dip coatings are simply a container filled with paint where an object is dipped into the coating, which also provides a very high coating to substrate transfer efficiency. Brush, roller and dip coating processes are proposed to be included as compliant transfer efficiency processes as specified in clause (d)(8)(A)(iii) of the transfer efficiency requirements in order to be to be consistent with the Coating Application Methods provision in the state Suggested Control Measure.

In addition, PAR 1106 provides two test methods for spray guns that do not meet the HVLP definition in design and use to determine if such spray guns can meet the transfer efficiency requirements: SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989" and SCAQMD "Guidelines for Demonstrating Equivalency With District Approved Transfer Efficiency Spray Gun September 26, 2002" [See paragraph (h)(4) of PAR 1106 in Appendix A]. Any spray gun used in the SCAQMD jurisdiction must meet the criteria for these test methods to qualify as a compliant transfer efficient spray gun for use in the SCAQMD jurisdiction.

In addition to specifying the VOC limits for pleasure craft coating operations, the current Rule 1106.1 requires that coatings be applied either by hand or HVLP spray application equipment. HVLP spray equipment utilizes very low air pressure (i.e., less than 10 psi) to atomize the coating material and propel the atomized droplets at a low velocity and high volume to the surface being coated. The HVLP requirement in Rule 1106.1 affects only those coatings which are sprayed.

Subsequent to the release of the Draft EA, an exemption pertaining to high viscosity / high solids coatings for metal parts and products was included in PAR 1106:

> (4) The provisions of paragraph (d)(9) shall not apply to Marine or Pleasure Craft coatings with a viscosity of 650 centipoise or greater, as applied.

For various types of substrates and operations (e.g., metal parts, architectural, marine), application of the ultra-low VOC, high viscosity resin coatings (e.g., epoxy, polyurethane) can be facilitated by the ability to apply the coatings with specialized applicators such as heated plural component airless or air assisted spray guns, or unique cartridge gun systems. Incorporation of this exemption based on the coating viscosity will permit the use of the application equipment best suited for the material while retaining the benefits of using the low-VOC high solids coatings. Without the proposed exemption, facilities required to use HVLP equipment would otherwise have to thin the

high solids coatings with VOC-containing solvents to allow them to be sprayed, thus eliminating the benefit of the low-VOC high solids coatings. Therefore, a provision was added to the proposed rule to allow a coating with 650 or more centipoise to be exempted from the transfer efficiency requirements. This proposed exemption is not expected to cause any adverse environmental impacts because these high solids, high viscosity coatings already contain low levels of VOCs and are already currently being utilized in the marine coatings industry. Thus, it is not expected that additional facilities would begin using these products because of the proposed exemption.

An exemption was also included for pre-treatment wash primers and special marking coatings that are intended to be used on submerged vessel (submarine) components [(typically used per military specifications (Mil-Specs)] and currently meet the VOC limits in Rule 1106 - Marine Coating Operations. However, these coatings will not meet the new aligned VOC limits in PAR 1106, which seeks to align these VOC limits with other APCDs/AQMDs.

> (5) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to marine coatings that are used for vessels that are intended to submerge to at least 500 feet below the surface of the water provided that the total combined usage of such coatings do need exceed 12 gallons per calendar year and such coatings are in compliance with the VOC limits in the U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair (Surface Coatings).

The usage of these materials are required based on approved standards from the U.S. Navy that cannot be replaced. To assure a lifetime of no corrosion on these components, facilities already have limited selections of materials to use in these specific manufacturing processes. Therefore, an exemption for these types of coatings was included of no more than 12 gallons per calendar year, of all products combined, for this type of operation and will require that the products used will have to be in compliance with the U.S. EPA National Emission Standard for Shipbuilding and Ship Repair (Surface Coating) as provided in Part 63 of the Federal Register. This proposed exemption is not expected to cause any adverse environmental impacts because these products are utilized for a very specific type of application/industry, and therefore, very limited quantities are currently used or expected to be used in the future. Additionally, because of the limited, specialized usage/application of these products, it is not expected that additional facilities would begin using these coatings as result of the proposed exemption. Finally, this limited exemption will not encourage or allow additional usage of these higher VOC coatings beyond what is already in use in the existing setting.

A definition was also added to PAR 1106 for Ultraviolet/Electron Beam (UV/EB) curable thin film marine and pleasure craft coatings. The definition includes a reference to ASTM D7767-11 "Standard Test Method to Measure Volatiles from Radiation Curable Monomers, Oligomers, and Blends and Thin Coatings Made from Them".

> (9) ENERGY CURABLE COATINGS are single-component reactive products that cure upon exposure to visible-light, ultra-violet light or to an electron beam. The VOC content of thin film Energy Curable Marine and Pleasure Craft Coatings may be determined by manufacturers using ASTM Test Method 7767-11 "Standard Test

Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers, and Blends and Thin Coatings Made from Them".

The use of energy curable coatings is considered an alternative compliance technology. UV/EB curing refers to a process in which coatings and other materials may be cured or dried, rather than using traditional thermal methods (natural gas-fueled) which typically use more energy and generate greater emissions. The UV light spectrum in a UV lamp and the focused electrons in an EB interact with specially formulated chemistries to cure materials, typically more quickly, and using less energy than traditional dryers (see Appendix B[4]). UV/EB curing has some environmental benefits over traditional solvent-based coatings by significantly reducing the amount of solvents needed in the coating itself and by reducing the burning of fossil fuels to cure/dry the product[5].

PROJECT DESCRIPTION

PAR 1106 subsumes Rule 1106.1 within Rule 1106, adds a prohibition of possession and sale provision, adds transfer efficiency requirements (similar to other SCAQMD coatings rules), and includes various clarifications and administrative changes. Additionally, five new coating categories have been established, and the VOC limits for the following five specialty coatings categories are being lowered based on existing limits that several other air agencies already require [Ventura County Air Pollution Control District (VCAPCD), San Diego Air Pollution Control District (SDAPCD), and Bay Area Air Quality Management District (BAAQMD)] and to align limits with U.S. EPA Control Techniques Guidelines.

Amendment	Action
Prohibition elements	Add sales and possession specifications
Five new coatings categories	1) aluminum substrate antifoulant- 560 g/L 2) mist coating- 340 g/L 3) nonskid coating- 340 g/L 4) marine deck sealant primer- 420 g/L 5) organic zinc coating- 340 g/L
Five VOC limit revisions	1) pre-treatment wash primer- from 780 to 420 g/L 2) solvent-based inorganic zinc- 650 to 340 g/L 3) special marking- 490 to 420 g/L 4) antenna coating- 530 to 340 g/L 5) repair and maintenance thermoplastic coating- 550 to 340 g/L

The specific amendments of PAR 1106 are the following:

- Rescind Rule 1106.1 and subsume the requirements of Rule 1106.1 into PAR 1106 (which would regulate both marine and pleasure craft operations under one rule);
- revise VOC content limits for pretreatment wash primers, antenna, repair and maintenance thermoplastic, inorganic zinc, and specialty marking coatings in order to align limits with U.S. EPA Control Techniques Guidelines and other California APCD's/AQMD's;

4 *Sustainability Advantages of Ultraviolet and Electron Beam Curing*, 2008 – a UV/EB industry trade association publication

5 http://www.radtech.org

- add new categories for marine aluminum antifoulant, mist, nonskid and organic zinc coatings and marine deck primer sealant;
- add provisions for pollution prevention measures and enhanced enforceability,
- make minor revisions to the applicability subdivision and revise/add new definitions to the definitions subdivision;
- add two tables of standards that will contain VOC limits;
- include clarifications and editorial corrections to the entire rule as necessary.

The amendments to this rule are expected to provide enhanced compliance with the VOC limits through the proposed reporting, recordkeeping and the prohibition provisions requirements. The proposed amendment will include an Annual Quantity Emission Report (AQER) and a Manufacturer's Distribution List. The AQER will require manufacturers and distributors to report the VOC content limits and the volume of product for each marine and pleasure craft coating sold in the SCAQMD's jurisdiction. In addition, manufacturers will be required to submit to the SCAQMD an annual Manufacturer's Distribution List to show all distributors who distribute these types of products into the SCAQMD jurisdiction. Since local affected operations are expected to already comply with the proposed requirements, the proposed amendments are not expected to achieve additional VOC reductions.

Copies of PAR 1106 and rescinded Rule 1106.1 is included in Appendix A.

CHAPTER 2 - ENVIRONMENTAL CHECKLIST

Introduction

General Information

Environmental Factors Potentially Affected

Determination

Environmental Checklist and Discussion

INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's potential adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by the proposed project.

GENERAL INFORMATION

Project Title:	Final Environmental Assessment (EA) for Proposed Amended Rule (PAR) 1106 – Marine and Pleasure Craft Coating Operations and Rescission of Rule 1106.1 – Pleasure Craft Coating Operations
Lead Agency Name:	South Coast Air Quality Management District
Lead Agency Address:	21865 Copley Drive Diamond Bar, CA 91765
CEQA Contact Person:	Mr. Jeff Inabinet (909) 396-2453
PAR 1106 Contact Person	Mr. Don Hopps (909) 396-2334
Project Sponsor's Name:	South Coast Air Quality Management District
Project Sponsor's Address:	21865 Copley Drive Diamond Bar, CA 91765
General Plan Designation:	Not applicable
Zoning:	Not applicable
Description of Project:	PAR 1106 would subsume Rule 1106.1 (pleasure craft coating operations) within Rule 1106 (marine coating operations), add a prohibition of possession and sale provision, add transfer efficiency requirements (similar to other SCAQMD coatings rules), and include administrative changes. Additionally, five new coating categories have been established, and the volatile organic compound (VOC) limits for five specialty coatings categories are being lowered based on existing limits that several other air agencies already require (Ventura County Air Pollution Control District, San Diego Air Pollution Control District, and Bay Area Air Quality Management District) and to align limits with U.S. EPA Control Techniques Guidelines. Since affected facilities are already expected to be in compliance with the proposed requirements, no physical changes are expected to take place and no additional VOC reductions are expected because the lower VOC limits are already being met.
Surrounding Land Uses and Setting:	Not applicable
Other Public Agencies Whose Approval is Required:	Not applicable

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The following environmental impact areas have been assessed to determine their potential to be affected by the proposed project. As indicated by the checklist on the following pages, environmental topics marked with an "✓" may be adversely affected by the proposed project. An explanation relative to the determination of impacts can be found following the checklist for each area.

☐ Aesthetics	☐ Geology and Soils	☐ Population and Housing
☐ Agriculture and Forestry Resources	☐ Hazards and Hazardous Materials	☐ Public Services
☐ Air Quality and Greenhouse Gas Emissions	☐ Hydrology and Water Quality	☐ Recreation
☐ Biological Resources	☐ Land Use and Planning	☐ Solid/Hazardous Waste
☐ Cultural Resources	☐ Mineral Resources	☐ Transportation/Traffic
☐ Energy	☐ Noise	☐ Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

☑ I find the proposed project, in accordance with those findings made pursuant to CEQA Guideline §15252, COULD NOT have a significant effect on the environment, and that an ENVIRONMENTAL ASSESSMENT with no significant impacts has been prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will NOT be significant effects in this case because revisions in the project have been made by or agreed to by the project proponent. An ENVIRONMENTAL ASSESSMENT with no significant impacts will be prepared.

☐ I find that the proposed project MAY have a significant effect(s) on the environment, and an ENVIRONMENTAL ASSESSMENT will be prepared.

☐ I find that the proposed project MAY have a "potentially significant impact" on the environment, but at least one effect 1)has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL ASSESSMENT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL ASSESSMENT pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL ASSESSMENT, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Date: September 18, 2015 Signature: Jillian Wong

Jillian Wong, Ph.D.
Program Supervisor

ENVIRONMENTAL CHECKLIST AND DISCUSSION

As discussed in Chapter 1, the main focus of PAR 1106 is to bring VOC emission limits associated with marine and pleasure craft coating operations in line with other agencies and to collect usage data. The objectives of PAR 1106 are to:

- Rescind Rule 1106.1 and subsume the requirements of Rule 1106.1 into PAR 1106 (which would regulate both marine and pleasure craft operations under one rule);
- revise VOC content limits for pretreatment wash primers, antenna, repair and maintenance thermoplastic, inorganic zinc, and specialty marking coatings in order to align limits with U.S. EPA Control Techniques Guidelines and other California APCD's/AQMD's;
- add new categories for marine aluminum antifoulant, mist coating, nonskid and organic zinc coatings and marine deck primer sealant;
- add provisions for pollution prevention measures and enhanced enforceability,
- make minor revisions to the applicability subdivision and revise/add new definitions to the definitions subdivision;
- add three tables of standards that will contain VOC limits; and
- include clarifications and editorial corrections to the entire rule as necessary.

The proposed amendments to this rule are expected to provide enhanced compliance with the VOC limits through the proposed reporting, recordkeeping and the prohibition provisions requirements. The proposed amendments will include an Annual Quantity Emission Report (AQER) and a Manufacturer's Distribution List. The AQER will require manufacturers and distributors to report the VOC content limits and the volume of product for of each marine and pleasure craft coating sold in the SCAQMD's jurisdiction. In addition, manufacturers will be required to submit to the SCAQMD, an annual Manufacturer's Distribution List to show all distributors who distribute these types of products into the SCAQMD jurisdiction.

Since all of the affected facilities/operations are expected to already comply with the proposed requirements, the proposed amendments are not expected to achieve additional VOC reductions. Potential impacts from the proposed project are evaluated below in the appropriate environmental topic area.

Amendment	Action	Environmental Analysis
Prohibition elements	Add sales and possession specifications	Clarification of existing prohibition requirements; will result in benefit from eliminating VOC emissions from non-compliant usage.
Five new coatings categories	1) aluminum substrate antifoulant- 560 g/L 2) mist coating- 340 g/L 3) nonskid coating- 340 g/L 4) marine deck sealant primer- 420 g/L 5) organic zinc coating- 340 g/L	VOC limits set at current general or "other" limits; no change from current requirements.

Amendment	Action	Environmental Analysis
Five VOC limit revisions	1) pre-treatment wash primer- from 780 to 420 g/L 2) solvent-based inorganic zinc- 650 to 340 g/L 3) special marking- 490 to 420 g/L 4) antenna coating- 530 to 340 g/L 5) repair and maintenance thermoplastic coating- 550 to 340 g/L	Coatings are already formulated and available with lower VOC limits and are currently being used. Thus, no new coating reformulation is expected to be necessary to comply with amendments.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
I.	**AESTHETICS.** Would the project:				
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☑
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☑
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☑

Significance Criteria

The proposed project impacts on aesthetics will be considered significant if:

- The project will block views from a scenic highway or corridor.
- The project will adversely affect the visual continuity of the surrounding area.
- The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

Discussion

I. a), b), c) & d) Adoption of PAR 1106 would subsume Rule 1106.1 within Rule 1106, add a prohibition of possession, specification and sale provision, add transfer efficiency requirements (similar to other SCAQMD coatings rules), and include various clarifications and administrative changes. Additionally, the VOC limits for five specialty coatings categories are being lowered based on existing limits that several other agencies already require (VCAPCD, SDAPCD, and BAAQMD) and to align limits with U.S. EPA Control Techniques Guidelines. The proposed amendments are expected to provide enhanced compliance with the VOC limits through monitoring. Since local affected operations are expected to already comply with the proposed requirements, no physical changes are expected at affected facilities and no additional VOC reductions are expected since the VOC limits are already being met. The proposed project is

expected to affect facilities at existing locations. The proposed project does not require construction of new buildings or potential equipment replacement. Therefore, adoption of PAR 1106 would not require the construction of new buildings or other structures that would obstruct scenic resources or degrade the existing visual character of a site, including but not limited to, trees, rock outcroppings, or historic buildings. Further, PAR 1106 would not involve the demolition of any existing buildings or facilities, require any subsurface activities, require the acquisition of any new land or the surrendering of existing land, or the modification of any existing land use designations or zoning ordinances. Thus, the proposed project is not expected to degrade the visual character of any site where a facility is located or its surroundings, affect any scenic vista or damage scenic resources. By reducing VOC emissions, the aesthetic environment benefits from the reduction in environmental degradation. Since the proposed project does not require existing facilities to operate at night, it is not expected to create any new source of substantial light or glare.

Based upon these considerations, significant adverse aesthetics impacts are not anticipated and will not be further analyzed in this Final EA. Since no significant adverse aesthetics impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
II.	**AGRICULTURE AND FORESTRY RESOURCES.** Would the project:				
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland mapping and Monitoring Program of the California Resources Agency, to non- agricultural use?	☐	☐	☐	☑
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104 (g))?	☐	☐	☐	☑
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☑

Significance Criteria

Project-related impacts on agriculture and forestry resources will be considered significant if any of the following conditions are met:

- The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
- The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
- The proposed project conflicts with existing zoning for, or causes rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined in Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code § 51104 (g)).
- The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

Discussion

II. a), b), c) & d) The existing commercial businesses that may be affected by the adoption of PAR 1106 are primarily located within urbanized port areas that are typically designated as industrial or commercial and are not designed for agricultural purposes or where forests are located. The proposed project would not result in any new construction of buildings or other structures that would convert farmland to non-agricultural use or conflict with zoning for agricultural use or a Williamson Act contract. The proposed project would not require converting farmland to non-agricultural uses because the affected marine and pleasure craft coating operations are expected to occur completely within the confines of existing affected commercial and industrial facilities. For the same reasons, PAR 1106 would not result in the loss of forest land or conversion of forest land to non-forest use.

Based upon these considerations, significant adverse agricultural and forestry resource impacts are not anticipated and will not be further analyzed in this Final EA. Since no significant agriculture and forestry resource impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
III. AIR QUALITY AND GREENHOUSE GAS EMISSIONS. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☑
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☑
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☑
f) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	☐	☐	☐	☑
g) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☑
h) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☑

Air Quality Significance Criteria

To determine whether or not air quality impacts from adopting and implementing PAR 1106 are significant, impacts will be evaluated and compared to the criteria in Table 2-1. The project will be considered to have significant adverse air quality impacts if any one of the thresholds in Table 2-1 are equaled or exceeded.

To determine whether or not greenhouse gas emissions from the proposed project may be significant, impacts will be evaluated and compared to the 10,000 MT CO2eq./year threshold for industrial projects.

TABLE 2-1
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction [b]**	**Operation [c]**
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO2eq for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants [d]		
NO2 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hour average annual average	10.4 $\mu g/m^3$ (construction)[e] & 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$	
PM2.5 24-hour average	10.4 $\mu g/m^3$ (construction)[e] & 2.5 $\mu g/m^3$ (operation)	
SO2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 $\mu g/m^3$ (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month average	1.5 $\mu g/m^3$ (state) 0.15 $\mu g/m^3$ (federal)	

[a] Source: SCAQMD CEQA Handbook (SCAQMD, 1993)
[b] Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).
[c] For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
[d] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
[e] Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million $\mu g/m^3$ = microgram per cubic meter ≥ = greater than or equal to
MT/yr CO2eq = metric tons per year of CO2 equivalents > = greater than

III. a) The 2012 AQMP Control Measure CTS-02 – Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants and the Reasonably Available Control Measures (RACM) Demonstration (Appendix VI of 2012 AQMP), contains unspecified emission reduction goals for VOCs that apply to a variety of emission sources. This control measure seeks to reduce VOC emissions from miscellaneous coating, adhesive, solvent and lubricant categories by further limiting the allowable VOC content in formulations. Examples of the miscellaneous categories to be considered include, but are not limited to, coatings used in aerospace and marine applications; adhesives used in a variety of sealing applications; fountain solutions; solvents for graffiti abatement activities; and lubricants used as metalworking fluids to reduce heat and friction to prolong the life of the tool, improve product quality, and carry away debris. Based on the general emission reduction goals in the 2012 AQMP, PAR 1106 would partially implement Control Measure CTS-02 by aligning limits with U.S. EPA Control Techniques Guidelines and other California APCD's/AQMD's. Upon adoption, PAR 1106 will be forwarded to the California Air Resources Board (CARB) for approval and subsequent submittal to the U.S. EPA for inclusion into the State Implementation Plan (SIP).

PAR 1106 would affect marine and pleasure craft coating operations. Since affected facilities/operations are anticipated to already comply with the proposed requirements, the proposed amendments are not expected to achieve additional VOC reductions to be credited toward CTS-02.

Implementing PAR 1106 is not expected to conflict with or obstruct implementation of the applicable air quality control plan because the 2012 AQMP demonstrates that the effects of all existing rules, in combination with implementing all AQMP control measures (including "black box" measures not specifically described in the 2012 AQMP) would bring the District into attainment with all applicable national and state ambient air quality standards. Further, PAR 1106 is not expected to significantly conflict or obstruct implementation of the applicable air quality plan, but instead, would contribute to attaining and maintaining the ozone and PM standards by achieving VOC reductions.

For these reasons, implementation of all other SCAQMD VOC rules along with AQMP control measures, when considered together, is expected to reduce VOC emissions throughout the region overall by 2023. Therefore, implementing the proposed project will not conflict or obstruct implementation of the 2012 AQMP. Accordingly, this impact issue will not be further analyzed.

III. b) For a discussion of these items, refer to the following analysis:

Rule Objective and Facility Applicability
The objectives of PAR 1106 include the following:

- Rescind Rule 1106.1 but maintain the requirements;
- revise VOC content limits for some coating categories in order to align limits with U.S. EPA Control Techniques Guidelines and other California APCD's/AQMD's;
- add new coating categories;
- add provisions for pollution prevention measures and enhanced enforceability,
- make minor revisions to the applicability subdivision and revise/add new definitions to the definitions subdivision;

- include clarifications and editorial corrections.

Currently, Rule 1106 is applicable to all coating operations of boats, ships, and their appurtenances, and to buoys and oil drilling rigs intended for the marine environment, and Rule 1106.1 is applicable to all coating operations of pleasure craft, as defined in paragraph (b)(10) of this rule, or their parts and components, for the purpose of refinishing, repairing, modification, or manufacturing such craft. Staff believes the proposed project will provide enhanced compliance with the VOC limits through the proposed reporting, recordkeeping and the prohibition provisions requirements. The proposed amendments will include an Annual Quantity Emission Report (AQER) and a Manufacturer's Distribution List. The AQER will require manufacturers and distributors to report the VOC content limits and the volume of product for of each marine and pleasure craft coating sold in the SCAQMD's jurisdiction. In addition, manufacturers will be required to submit to the SCAQMD, an annual Manufacturer's Distribution List to show all distributors who distribute these types of products into the SCAQMD jurisdiction.

Construction Impacts

The proposed project is not expected to require any new construction activities since the affected industry are not expected to require any physical changes to comply with the proposed amendments, and operate their equipment subject to PAR 1106 in a similar manner to the current rules (Rules 1106 and 1106.1). Staff believes the proposed project will provide enhanced compliance with the VOC limits through monitoring. Therefore, no existing facilities are expected to be required to install any new equipment or new emission control devices. Additionally, the proposed project would not require any construction activities associated with the reformulation of any marine or pleasure craft coating products or any changes to the current usage of marine or pleasure craft coatings at the existing affected facilities.

Facilities that choose to use energy curable coatings would not likely require any major physical changes or modifications to install a UV/EB system. Further, there would be no additional emissions from the UV/EB coating process or additional vehicle trips.

As a result, there would be no significant adverse construction air quality impacts resulting from the proposed project for criteria pollutants.

Operational Impacts- Criteria Pollutants

PAR 1106 is expected to have a direct and beneficial reduction of VOC emissions. No other criteria pollutants are expected to be directly affected by PAR 1106 because of the narrow regulatory focus of Rules 1106 and 1106.1. Based on SCAQMD staff research, the affected coatings facilities should already use materials that are compliant with the proposed amendments. Therefore, there would be no change in operational emissions from the existing affected facilities. The proposed project is not expected to result in any significant adverse operational air quality impacts from the existing affected facilities.

Since the Draft EA was released for public review and comment, two exemptions were included in PAR 1106. A high viscosity / high solids coatings exemption was included for metal parts and products:

> (4) The provisions of paragraph (d)(9) shall not apply to Marine or Pleasure Craft coatings with a viscosity of 650 centipoise or greater, as applied.

For various types of substrates and operations (e.g., metal parts, architectural, marine), application of the ultra-low VOC, high viscosity resin coatings (e.g., epoxy, polyurethane) can be facilitated by the ability to apply the coatings with specialized applicators such as heated plural component airless or air assisted spray guns, or unique cartridge gun systems. Incorporation of this exemption based on the coating viscosity will permit the use of the application equipment best suited for the material while retaining the benefits of using the low-VOC high solids coatings. Without the proposed exemption, facilities required to use HVLP equipment would otherwise have to thin the high solids coatings with VOC-containing solvents to allow them to be sprayed, thus eliminating the benefit of the low-VOC high solids coatings. Therefore, a provision was added to the proposed rule to allow a coating with 650 or more centipoise to be exempted from the transfer efficiency requirements. This proposed exemption is not expected to cause any adverse environmental impacts because these high solids, high viscosity coatings already contain low levels of VOCs and are already currently being utilized in the marine coatings industry. Thus, it is not expected that additional facilities would begin using these products because of the proposed exemption.

An exemption was also included for pre-treatment wash primers and special marking coatings that are intended to be used on submerged vessel (submarine) components [(typically used per military specifications (Mil-Specs)] and currently meet the VOC limits in Rule 1106 - Marine Coating Operations. However, these coatings will not meet the new aligned VOC limits in PAR 1106, which seeks to align these VOC limits with other APCDs/AQMDs.

(5) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to marine coatings that are used for vessels that are intended to submerge to at least 500 feet below the surface of the water provided that the total combined usage of such coatings do need exceed 12 gallons per calendar year and such coatings are in compliance with the VOC limits in the U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair (Surface Coatings).

The usage of these materials are required based on approved standards from the U.S. Navy that cannot be replaced. To assure a lifetime of no corrosion on these components, facilities already have limited selections of materials to use in these specific manufacturing processes. Therefore, an exemption for these types of coatings was included of no more than 12 gallons per calendar year, of all products combined, for this type of operation and will require that the products used will have to be in compliance with the U.S. EPA National Emission Standard for Shipbuilding and Ship Repair (Surface Coating) as provided in Part 63 of the Federal Register. This proposed exemption is not expected to cause any adverse environmental impacts because these products are utilized for a very specific type of application/industry, and therefore, very limited quantities are currently used or expected to be used in the future. Additionally, because of the limited, specialized usage/application of these products, it is not expected that additional facilities would begin using these coatings as result of the proposed exemption. Finally, this limited exemption will not encourage or allow additional usage of these higher VOC coatings beyond what is already in use in the existing setting.

A definition was also added to PAR 1106 for Ultraviolet/Electron Beam (UV/EB) curable thin film marine and pleasure craft coatings. The definition includes a reference to ASTM D7767-11

"Standard Test Method to Measure Volatiles from Radiation Curable Monomers, Oligomers, and Blends and Thin Coatings Made from Them".

(9) ENERGY CURABLE COATINGS are single-component reactive products that cure upon exposure to visible-light, ultra-violet light or to an electron beam. The VOC content of thin film Energy Curable Marine and Pleasure Craft Coatings may be determined by manufacturers using ASTM Test Method 7767-11 "Standard Test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers, and Blends and Thin Coatings Made from Them".

The use of energy curable coatings is considered an alternative compliance technology. UV/EB curing refers to a process in which coatings and other materials may be cured or dried, rather than using traditional thermal methods (natural gas-fueled) which typically use more energy and generate greater emissions. The UV light spectrum in a UV lamp and the focused electrons in an EB interact with specially formulated chemistries to cure materials, typically more quickly, and using less energy than traditional dryers (see Appendix B[6]). UV/EB curing has some environmental benefits over traditional solvent-based coatings by significantly reducing the amount of solvents needed in the coating itself and by reducing the burning of fossil fuels to cure/dry the product[7].

Operational Impacts- Toxic Air Contaminants

In assessing potential impacts from the adoption of proposed rules and amendments, SCAQMD staff not only evaluates the potential air quality impacts, but also determines potential health risks associated with implementation of the proposed amendments.

As stated previously, the proposed project will provide enhanced compliance with VOC limits through monitoring lower VOC limits, and wording clarifications. The proposed amendments do not generate any additional toxic emissions at any of the affected facilities. Based on SCAQMD staff research, no changes are necessary in current marine and pleasure craft coating formulations that currently comply with the new lower VOC limits. Therefore, no changes in toxicity are expected. As a result, there will be no increase in toxic air contaminant emissions from the affected facilities due to the proposed rule amendments.

III. c) As Lead Agency, the SCAQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant[8].

This approach was upheld by the Court in *Citizens for Responsible Equitable Environmental Development v. City of Chula Vista* (2011) 197 Cal. App. 4th 327, 334. The Court determined that

6 *Sustainability Advantages of Ultraviolet and Electron Beam Curing*, 2008 – a UV/EB industry trade association publication

7 http://www.radtech.org

8 SCAQMD Cumulative Impacts Working Group White Paper on Potential Control Strategies to Address Cumulative Impacts From Air Pollution, August 2003, Appendix D, Cumulative Impact Analysis Requirements Pursuant to CEQA, at D-3, http://www.aqmd.gov/docs/default-source/Agendas/Environmental-Justice/cumulative-impacts-working-group/cumulative-impacts-white-paper-appendix.pdf?sfvrsn=4.

where it can be found that a project did not exceed the SDAPCD's established air quality significance thresholds, the City of Chula Vista properly concluded that the project would not cause a significant environmental effect, nor result in a cumulatively considerable increase in these pollutants. The court found this determination to be consistent with CEQA Guidelines §15064.7, stating, "The lead agency may rely on a threshold of significance standard to determine whether a project will cause a significant environmental effect." The court found that, "Although the project will contribute additional air pollutants to an existing nonattainment area, these increases are below the significance criteria…" "Thus, we conclude that no fair argument exists that the Project will cause a significant unavoidable cumulative contribution to an air quality impact." As in *Chula Vista*, here the District has demonstrated, when using accurate and appropriate data and assumptions, that the project will not exceed the established SCAQMD significance thresholds. See also, *Rialto Citizens for Responsible Growth v. City of Rialto* (2012) 208 Cal. App. 4th 899. Here again the court upheld the lead agency's approach to utilizing the established air quality significance thresholds to determine whether the impacts of a project would be cumulatively considerable. Thus, it may be concluded that the Project will not cause a significant unavoidable cumulative contribution to an air quality impact.

Based on the foregoing analysis, project-specific air quality impacts from implementing the proposed project would not exceed air quality significance thresholds (Table 2-1); therefore, based on the above discussion, cumulative impacts are not expected to be significant for air quality. Therefore, potential adverse impacts from the proposed project would not be "cumulatively considerable" as defined by CEQA Guidelines §15064(h)(1) for air quality impacts. Per CEQA Guidelines §15064(h)(4), the mere <u>existence</u> of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulative considerable.

III. d) Affected facilities are also not expected to increase exposure by sensitive receptors to substantial pollutant concentrations from the implementation of PAR 1106 for the following reasons: 1) the affected facilities are existing facilities located primarily in port commercial/industrial areas; 2) no construction and operational emission increases are associated with the proposed project. Therefore, no significant adverse air quality impacts to sensitive receptors are expected from implementing PAR 1106.

III. e) Odor problems depend on individual circumstances, materials involved, and individual odor sensitivities. For example, individuals can differ quite markedly from the population average in their sensitivity to odor due to any variety of innate, chronic or acute physiological conditions. This includes olfactory adaptation or smell fatigue (i.e., continuing exposure to an odor usually results in a gradual diminution or even disappearance of the smell sensation).

As already noted, the proposed project does not result in the use of construction equipment. As a result, no odor impacts associated with diesel exhaust from either on-road or off-road mobile sources are expected to occur. No change in marine and pleasure craft coating formulations currently utilized at the affected facilities is expected to occur. ~~It is expected that the proposed amendments would improve air quality, visibility, and reduce odors from reducing VOC emissions.~~ Therefore, the proposed project is not expected to create new significant adverse objectionable odors.

III. f) The affected facilities would continue to be required to comply with all applicable SCAQMD, CARB, and U.S. EPA rules and regulations. The proposed project is not in conflict or expected to diminish an existing air quality rule or future compliance requirements. Further, adopting and implementing the proposed project enhances existing air pollution control rules that are expected to assist the SCAQMD in its efforts to attain and maintain with a margin of safety the state and federal ambient air quality standards for ozone and PM2.5 because VOCs are considered to be precursor pollutants that contribute to the formation of ozone and PM2.5. Accordingly the proposed project would not diminish any air quality rules or regulations.

III. g) & h) Changes in global climate patterns have been associated with global warming, an average increase in the temperature of the atmosphere near the Earth's surface, recently attributed to accumulation of GHG emissions in the atmosphere. GHGs trap heat in the atmosphere, which in turn heats the surface of the Earth. Some GHGs occur naturally and are emitted to the atmosphere through natural processes, while others are created and emitted solely through human activities. The emission of GHGs through the combustion of fossil fuels (i.e., fuels containing carbon) in conjunction with other human activities, appears to be closely associated with global warming.[9] State law defines GHG to include the following: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6) (HSC §38505(g)). The most common GHG that results from human activity is CO2, followed by CH4 and N2O.

GHGs and other global warming pollutants are perceived as solely global in their impacts and that increasing emissions anywhere in the world contributes to climate change anywhere in the world. A study conducted on the health impacts of CO2 "domes" that form over urban areas cause increases in local temperatures and local criteria pollutants, which have adverse health effects.[10]

The analysis of GHGs is a much different analysis than the analysis of criteria pollutants for the following reasons. For criteria pollutants, the significance thresholds are based on daily emissions because attainment or non-attainment is primarily based on daily exceedances of applicable ambient air quality standards. Further, several ambient air quality standards are based on relatively short-term exposure effects on human health (e.g., one-hour and eight-hour standards). Since the half-life of CO2 is approximately 100 years, for example, the effects of GHGs occur over a longer term which means they affect the global climate over a relatively long time frame. As a result, the SCAQMD's current position is to evaluate the effects of GHGs over a longer timeframe than a single day (e.g., annual emissions). GHG emissions are typically considered to be cumulative impacts because they contribute to global climate effects.

On December 5, 2008, the SCAQMD adopted an interim CEQA GHG Significance Threshold for projects where SCAQMD is the lead agency (SCAQMD, 2008). This interim threshold is set at

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9 Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.). 2007. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007. Cambridge University Press. http://www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html

10 Jacobsen, Mark Z. "Enhancement of Local Air Pollution by Urban CO2 Domes," Environmental Science and Technology, as describe in Stanford University press release on March 16, 2010 available at: http://news.stanford.edu/news/2010/march/urban-carbon-domes-031610.html.

10,000 metric tons of CO2 equivalent emissions (MTCO2eq) per year. Projects with incremental increases below this threshold will not be cumulatively considerable.

The Program EIR for the 2012 AQMP concluded that implementing the control measures in the 2012 AQMP would provide a comprehensive ongoing regulatory program that would have the co-benefit of reducing overall GHGs emissions in the District. Specifically, PAR 1106 adds a prohibition of possession and sale provision, adds transfer efficiency requirements (similar to other SCAQMD coatings rules), and includes various clarifications and administrative changes. Additionally, five new coating categories have been established, and the VOC limits for five specialty coatings categories are being lowered based on existing limits that several other air agencies already require (VCAPCD, SDAPCD, and BAAQMD) and to align limits with U.S. EPA Control Techniques Guidelines. Thus, the proposed project does not introduce the need to emit GHG emissions, but rather ~~reduce~~ ensures that VOC emissions remain low from activities subject to this rule. Therefore, PAR 1106 is not expected to create significant cumulative adverse GHG emission impacts or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

Conclusion
Based on the preceding evaluation of potential air quality impacts from PAR 1106, SCAQMD staff has concluded that PAR 1106 does not have the potential to generate significant adverse air quality impacts. Since no significant adverse air quality and greenhouse gases impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
IV.	**BIOLOGICAL RESOURCES.** Would the project:				
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c)	Have a substantial adverse effect on federally protected wetlands as defined by §404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☑
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☑
e)	Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f)	Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

Significance Criteria

Impacts on biological resources will be considered significant if any of the following criteria apply:

- The project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies.
- The project interferes substantially with the movement of any resident or migratory wildlife species.
- The project adversely affects aquatic communities through construction or operation of the project.

Discussion

IV. a), b), c), & d) PAR 1106 would not require any new construction or require any major modifications to buildings or other structures to comply with the new requirements for marine and pleasure craft coating operations, thus, no grading activities or disruption of soil or plant life. As a result, PAR 1106 would not directly or indirectly affect any species identified as a candidate, sensitive or special status species, riparian habitat, federally protected wetlands, or migratory corridors. For this same reason, PAR 1106 is not expected to adversely affect special status plants, animals, or natural communities.

IV. e) & f) PAR 1106 would not conflict with local policies or ordinances protecting biological resources or local, regional, or state conservation plans because it would not cause new development. Additionally, PAR 1106 would not conflict with any Habitat Conservation Plan, Natural Community Conservation Plan, or any other relevant habitat conservation plan for the same reason identified in Item IV. a), b), c), and d) above. Likewise, the proposed project would not in any way impact wildlife or wildlife habitat.

Based upon these considerations, significant adverse biological resources impacts are not anticipated and will not be further analyzed in this Final EA. Since no significant adverse biological resources impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
V.	**CULTURAL RESOURCES.** Would the project:				
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☑
b)	Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☐	☐	☑
c)	Directly or indirectly destroy a unique paleontological resource, site, or feature?	☐	☐	☐	☑
d)	Disturb any human remains, including those interred outside formal cemeteries?	☐	☐	☐	☑
e)	Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code §21074?	☐	☐	☐	☑

Significance Criteria

Impacts to cultural resources will be considered significant if:

- The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group.
- Unique paleontological resources are present that could be disturbed by construction of the proposed project.
- The project would disturb human remains.

Discussion

V. a), b), c), & d) PAR 1106 does not require construction of new facilities, increasing the floor space of existing facilities, or any other construction activities that would require disturbing soil that may contain cultural resources. Since no construction-related activities requiring soil disturbance would be associated with the implementation of PAR 1106, no impacts to historical or cultural resources are anticipated to occur. Further, PAR 1106 is not expected to require any physical changes to the environment, which may disturb paleontological or archaeological resources or disturb human remains interred outside of formal cemeteries.

V. e) The proposed project is not expected to require physical changes to a site, feature, place, cultural landscape, sacred place or object with cultural value to a California Native American Tribe. Furthermore, the proposed project is not expected to result in a physical change to a resource determined to be eligible for inclusion or listed in the California Register of Historical Resources or included in a local register of historical resources. For these reasons, the proposed project is not expected to cause any substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code §21074.

It is important to note that as part of releasing this CEQA document for public review and comment, the SCAQMD also provided a formal notice of the proposed project to all California Native American Tribes (Tribes) that requested to be on the Native American Heritage Commission's (NAHC) notification list per Public Resources Code §21080.3.1 (b)(1). The NAHC notification list provides a 30-day period during which a Tribe may respond to the formal notice, in writing, requesting consultation on the proposed project.

In the event that a Tribe submits a written request for consultation during this 30-day period, the SCAQMD will initiate a consultation with the Tribe within 30 days of receiving the request in accordance with Public Resources Code §21080.3.1 (b). Consultation ends when either: 1) both parties agree to measures to avoid or mitigate a significant effect on a Tribal Cultural Resource and agreed upon mitigation measures shall be recommended for inclusion in the environmental document [see Public Resources Code §21082.3 (a)]; or, 2) either party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached [see Public Resources Code §21080.3.2 (b)(1)-(2) and §21080.3.1 (b)(1)].

Based upon these considerations, significant adverse cultural resources impacts are not expected from implementing the proposed project and will not be further assessed in this Final EA. Since no significant cultural resources impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VI.	**ENERGY.** Would the project:				
a)	Conflict with adopted energy conservation plans?	☐	☐	☐	☑
b)	Result in the need for new or substantially altered power or natural gas utility systems?	☐	☐	☐	☑
c)	Create any significant effects on local or regional energy supplies and on requirements for additional energy?	☐	☐	☐	☑
d)	Create any significant effects on peak and base period demands for electricity and other forms of energy?	☐	☐	☐	☑
e)	Comply with existing energy standards?	☐	☐	☐	☑

Significance Criteria

Impacts to energy and mineral resources will be considered significant if any of the following criteria are met:

- The project conflicts with adopted energy conservation plans or standards.
- The project results in substantial depletion of existing energy resource supplies.
- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
- The project uses non-renewable resources in a wasteful and/or inefficient manner.

Discussion

VI. a) & e) Adoption of PAR 1106 would subsume Rule 1106.1 within Rule 1106, add a prohibition of possession and sale provision, add transfer efficiency requirements (similar to other SCAQMD coatings rules), and include various clarifications and administrative changes. Additionally, five new coating categories have been established, and the VOC limits for five specialty coatings categories are being lowered based on existing limits that several other air agencies already require (VCAPCD, SDAPCD, and BAAQMD) and to align limits with U.S. EPA Control Techniques Guidelines. The proposed amendments are expected to provide enhanced compliance with the VOC limits through monitoring. The proposed project also adds a definition for energy curable coatings. UV/EB applications typically cure materials more quickly, using less energy than traditional dryers. The proposed amendments are not expected to create any additional demand for energy at any of the affected facilities. Since it is unlikely that the affected facilities would require new equipment or modifications at existing facilities, current energy demand requirements would not change. As a result, PAR 1106 would not conflict with energy conservation plans, use non-renewable resources in a wasteful manner, or result in the need for new or substantially altered power or natural gas systems. Since PAR 1106 would affect primarily existing facilities, it will not conflict with adopted energy conservation plans because existing facilities would be expected to continue implementing any existing energy conservation plans. Additionally, operators of affected facilities are expected to implement existing energy

conservation plans or comply with energy standards to minimize operating costs. Accordingly these impact issues will not be further analyzed in the Final EA.

VI. b), c) & d) The proposed project adds a definition for energy curable coatings. Energy cured materials typically dry/cure more quickly, using less energy than conventional drying methods, which typically use natural gas as a fuel source (see Appendix B[11]). The proposed amendments are not expected to increase any electricity or natural gas demand in any way and would not create any significant effects on peak and base period demands for electricity and other forms of energy because no new physical changes to the affected facilities is anticipated. The adoption of PAR 1106 will not create any significant effects on local or regional energy supplies, create any significant effects on peak and base period demands for electricity and other forms of energy, or result in the need for new or substantially altered power or natural gas utility systems since the affected industry will be able to continue business as usual and operate their equipment subject to PAR 1106 in a similar manner to existing practices.

PAR 1106 is not expected to generate significant adverse energy resources impacts and will not be discussed further in this Final EA. Since no significant energy impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☑
• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☐	☑
• Strong seismic ground shaking?	☐	☐	☐	☑
• Seismic–related ground failure, including liquefaction?	☐	☐	☐	☑

[11] *Sustainability Advantages of Ultraviolet and Electron Beam Curing*, 2008 – a UV/EB industry trade association publication

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☑
c)	Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☑
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☑
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☑

Significance Criteria

Impacts on the geological environment will be considered significant if any of the following criteria apply:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.
- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

Discussion

VII. a) Southern California is an area of known seismic activity. Structures must be designed to comply with the Uniform Building Code Zone 4 requirements if they are located in a seismically active area. The local city or county is responsible for assuring that a proposed project complies with the Uniform Building Code as part of the issuance of the building permits and can conduct inspections to ensure compliance. The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage but with some non-structural damage; and 3) resist major earthquakes without collapse but with some structural and non-structural damage.

The Uniform Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The Uniform Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site. Accordingly, buildings and equipment at existing affected facilities are likely to conform with the Uniform Building Code and all other applicable state codes in effect at the time they were constructed.

No new buildings or structures are expected to be constructed in response to the proposed project, so no change in geological existing setting is expected. Additionally, no modification to existing equipment would be necessary. Therefore, PAR 1106 is not expected to affect a facility's ability to continue to comply with any applicable Uniform Building Code requirements. Consequently, PAR 1106 is not expected to expose persons or property to geological hazards such as earthquakes, landslides, mudslides, ground failure, or other natural hazards. As a result, substantial exposure of people or structure to the risk of loss, injury, or death involving seismic-related activities is not anticipated and will not be further analyzed in this Final EA.

VII. b), c), d) & e) Since PAR 1106 would affect primarily existing facilities, it is expected that the soil types present at the affected facilities that are susceptible to expansion or liquefaction would be considered part of the existing setting. New subsidence impacts are not anticipated since no excavation, grading, or fill activities will occur at affected facilities. Further, the proposed project does not involve drilling or removal of underground products (e.g., water, crude oil, et cetera) that could produce new, or make worse existing subsidence effects. Additionally, the affected areas are not envisioned to be prone to new risks from landslides or have unique geologic features, since the affected facilities are primarily located in ports or marinas in industrial or commercial areas where such features have already been altered or removed. Finally, since adoption of PAR 1106 would be expected to affect operations at primarily existing facilities, the proposed project is not expected to alter or make worse any existing potential for subsidence, liquefaction, etc.

Based on the above discussion, the proposed project is not expected to have an adverse impact on geology or soils. Since no significant adverse impacts are anticipated, this environmental topic will not be further analyzed in the Final EA. No mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VIII.	**HAZARDS AND HAZARDOUS MATERIALS.** Would the project:				
a)	Create a significant hazard to the public or the environment through the routine transport, use, and disposal of hazardous materials?	☐	☐	☐	☑
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☑
c)	Emit hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☑
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment?	☐	☐	☐	☑
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
g)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☑
h)	Significantly increased fire hazard in areas with flammable materials?	☐	☐	☐	☑

Significance Criteria

Impacts associated with hazards will be considered significant if any of the following occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

Discussion

VIII. a, b) & c) The proposed project will not create a significant hazard to the public or the environment through the routine transport, use, and disposal of hazardous materials, due to the fact that the proposed amendments do not require the transport, use, and disposal of hazardous materials beyond current operations. Based on the fact that the proposed rules do not require the transport, use and disposal of hazardous materials, PAR 1106 will not create a significant hazard to the public or environment through a reasonably foreseeable release of these materials into the environment.

No additional formulation is anticipated, thus, there is little likelihood that affected facilities will emit new hazardous emissions or handle hazardous materials, substances or waste within one-quarter mile of an existing or proposed school as a result of implementing the proposed project. The affected facilities are typically located in port/marina areas, but the proposed project does not introduce any hazardous materials, so the existing setting does not change. Further, PAR 1106 is intended to ensure the reduction of overall VOC emissions in the District. It is expected that the proposed amendments would improve air quality, visibility and reduce odors surrounding existing facilities and, would do likewise for any existing or proposed schools within one-quarter mile of affected facilities.

VIII. d) Government Code §65962.5 typically refers to a list of facilities that may be subject to Resource Conservation and Recovery Act (RCRA) permits. For any facilities affected by the proposed project that are on the Government Code §65962.5 list, it is anticipated that they would continue to manage any and all hazardous materials and hazardous waste, in accordance with federal, state and local regulations.

VIII. e) Since PAR 1106 would incorporate new requirements for marine and pleasure craft coating operations, implementation of PAR 1106 is not expected to increase or create any new hazardous emissions in general, which could adversely affect public/private airports located in close proximity to the affected sites. Implementation of PAR 1106 is not expected to create any additional safety hazards for people residing or working in the project area.

VIII. f) The proposed project will not impair implementation of, or physically interfere with any adopted emergency response plan or emergency evacuation plan. Any existing facilities affected by the proposed project will typically have their own emergency response plans. Any new facilities will be required to prepare emergency response and evacuation plans as part of the land use permit review and approval process conducted by local jurisdictions for new development. Emergency response plans are typically prepared in coordination with the local city or county emergency plans to ensure the safety of not only the public (surrounding local communities), but

the facility employees as well. Since the proposed project does not involve the change in current uses of any hazardous materials, or generate any new hazardous waste, no changes to emergency response plans are anticipated.

Health and Safety Code §25506 specifically requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in the emergency release or threatened release of a hazardous material. Business emergency response plans generally require the following:

1. Identification of individuals who are responsible for various actions, including reporting, assisting emergency response personnel and establishing an emergency response team;
2. Procedures to notify the administering agency, the appropriate local emergency rescue personnel, and the California Office of Emergency Services;
3. Procedures to mitigate a release or threatened release to minimize any potential harm or damage to persons, property or the environment;
4. Procedures to notify the necessary persons who can respond to an emergency within the facility;
5. Details of evacuation plans and procedures;
6. Descriptions of the emergency equipment available in the facility;
7. Identification of local emergency medical assistance; and
8. Training (initial and refresher) programs for employees in:
    a. The safe handling of hazardous materials used by the business;
    b. Methods of working with the local public emergency response agencies;
    c. The use of emergency response resources under control of the handler; and
    d. Other procedures and resources that will increase public safety and prevent or mitigate a release of hazardous materials.

In general, every county or city and all facilities using a minimum amount of hazardous materials are required to formulate detailed contingency plans to eliminate, or at least minimize, the possibility and effect of fires, explosion, or spills. In conjunction with the California Office of Emergency Services, local jurisdictions have enacted ordinances that set standards for area and business emergency response plans. These requirements include immediate notification, mitigation of an actual or threatened release of a hazardous material, and evacuation of the emergency area. Adopting PAR 1106 is not expected to hinder in any way with the above business emergency response plan requirements.

VIII. g) Since the affected facilities are primarily located in port/marina areas where wildlands are typically not prevalent, risk of loss or injury associated with wildland fires is not expected as a result of implementing PAR 1106.

VIII. h) Affected marine and pleasure craft coating facilities must comply with all local and county requirements for fire prevention and safety. The proposed project does not require any

activities which would be in conflict with fire prevention and safety requirements, and thus would not create or increase fire hazards at these existing facilities.

PAR 1106 is intended to ensure the reduction of VOC emissions at marine and pleasure craft coating facilities. Typically, these facilities use and store flammable materials. Pursuant to local and county fire prevention and safety requirements, facilities are required to maintain appropriate site management practices to prevent fire hazards. PAR 1106 will not interfere with fire prevention practices.

In conclusion, potentially significant adverse hazard or hazardous material impacts resulting from adopting and implementing PAR 1106 are not expected and will not be considered further. No mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
IX.	**HYDROLOGY AND WATER QUALITY.** Would the project:				
a)	Violate any water quality standards, waste discharge requirements, exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, or otherwise substantially degrade water quality?	☐	☐	☐	☑
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☑
c)	Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in substantial erosion or siltation on- or off-site or flooding on- or off-site?	☐	☐	☐	☑

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
d)	Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☑
e)	Place housing or other structures within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, which would impede or redirect flood flows?	☐	☐	☐	☑
f)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑
g)	Require or result in the construction of new water or wastewater treatment facilities or new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
h)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☑
i)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☑

Significance Criteria

Potential impacts on water resources will be considered significant if any of the following criteria apply:

Water Demand:

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.

- The project increases demand for total water by more than five million gallons per day.

Water Quality:
- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

Discussion

IX. a), b), c), d) & g) Adoption of PAR 1106 would subsume Rule 1106.1 within Rule 1106, add a prohibition of possession and sale provision, add transfer efficiency requirements (similar to other SCAQMD coatings rules), and include various clarifications and administrative changes. Additionally, five new coating categories have been established, and the VOC limits for five specialty coatings categories are being lowered based on existing limits that several other air agencies already require (VCAPCD, SDAPCD, and BAAQMD) and to align limits with U.S. EPA Control Techniques Guidelines. The proposed amendments are expected to provide enhanced compliance with the VOC limits through monitoring. The proposed amendments would not result in increased water usage because no new reformulations are anticipated to comply with the lower VOC content limit for the five specialty coatings categories, as these coating categories already meet the proposed lower VOC limits. Additional water usage will not result from the proposed project.

No additional wastewater generation is expected to result from the proposed project. Further, PAR 1106 has no provision that would require the construction of additional water resource facilities, increase the need for new or expanded water entitlements, or alter existing drainage patterns. The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. PAR 1106 would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Further, the adoption of PAR 1106 would not create a change in the current volume of existing wastewater streams from the affected facilities. In addition, the proposed project is not expected to require additional wastewater disposal capacity, violate any water quality standard or wastewater discharge requirements, or otherwise substantially degrade water quality.

Adoption of PAR 1106 could affect future operations at existing facilities that are typically located in industrial or commercial areas that are already paved and have drainage infrastructures in place. However, due to the fact that current operations already comply with the proposed lower VOC limits, no new major construction is anticipated. Based on the current affected facility inventory in the District, implementation of PAR 1106 is not expected to involve major construction activities including site preparation, grading, etc., so no changes to storm water runoff, drainage

patterns, groundwater characteristics, or flow are expected. Therefore, these impact areas are not expected to be affected by PAR 1106.

PAR 1106 is not expected to have significant adverse water demand or water quality impacts for the following reasons:

- The proposed project does not increase demand for water by more than 5,000,000 gallons per day.
- The proposed project does not require construction of new water conveyance infrastructure.
- The proposed project does not create a substantial increase in mass inflow of effluents to public wastewater treatment facilities.
- The proposed project does not result in a substantial degradation of surface water or groundwater quality.
- The proposed project does not result in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The proposed project does not result in alterations to the course or flow of floodwaters.

IX. i) The proposed project is not expected to change existing operations at affected facilities, nor would it result in the generation of increased volumes of wastewater, because no increased water usage is expected due to the proposed project. As a result, there are no potential changes in wastewater volume expected from facilities as a result of the adoption of PAR 1106. It is expected that facilities and operations will continue to handle wastewater generated in a similar manner and with the same equipment as the wastewater that is currently generated. Further, PAR 1106 is not expected to cause affected facilities to violate any water quality standard or wastewater discharge requirements since there would be no additional wastewater volumes generated as a result of adopting PAR 1106.

IX. e), f) & h) The proposed project would incorporate new requirements for marine and pleasure craft coating operations. As a result, PAR 1106 would not require construction of new housing, contribute to the construction of new building structures, or require major modifications or changes to existing structures. Further, PAR 1106 is not expected to require additional workers at affected facilities because the proposed project does not affect how equipment is operated. Therefore, PAR 1106 is not expected to generate construction of any new structures in 100-year flood areas as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood delineation map. As a result, PAR 1106 is not expected to expose people or structures to significant new flooding risks, or make worse any existing flooding risks. Because PAR 1106 would not require construction of new structures or the addition of new employees, the proposed project will not affect in any way any potential flood hazards inundation by seiche, tsunami, or mud flow that may already exist relative to existing facilities or create new hazards at existing facilities. Additionally, since PAR 1106 does not require additional water usage or demand, sufficient water supplies are expected to be available to serve the project from existing entitlements and resources, and no new or expanded entitlements would be needed.

Based upon these considerations, significant hydrology and water quality impacts are not expected from the adoption of PAR 1106 and will not be further analyzed in this Final EA. Since no significant hydrology and water quality impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
X.	**LAND USE AND PLANNING.** Would the project:				
a)	Physically divide an established community?	☐	☐	☐	☑
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑

Significance Criteria

Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by local jurisdictions.

Discussion

X. a) PAR 1106 would not require any new construction or require major modifications to buildings or other structures to comply with the new requirements for marine and pleasure craft coating operations at any of the currently existing facilities. Therefore, PAR 1106 does not include any components that would require physically dividing an established community.

X. b) There are no provisions in PAR 1106 that would affect land use plans, policies, or regulations beyond what is currently required from affected sources, such as prohibition of use. Land use and other planning considerations are determined by local governments and no land use or planning requirements would be altered by the new requirements for marine and pleasure craft coating operations. Therefore, as already noted in the discussion under "Biological Resources," PAR 1106 would not affect in any habitat conservation or natural community conservation plans, agricultural resources or operations, and would not create divisions in any existing communities. Present or planned land uses in the region would not be significantly adversely affected as a result of implementing the proposed project.

Based upon these considerations, significant adverse land use and planning impacts are not expected from the implementation of PAR 1106 and will not be further analyzed in this Final EA. Since no significant land use and planning impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XI.	**MINERAL RESOURCES.** Would the project:				
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☑

Significance Criteria

Project-related impacts on mineral resources will be considered significant if any of the following conditions are met:

- The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Discussion

XI. a) & b) There are no provisions in PAR 1106 that would result in the loss of availability of a known mineral resource of value to the region and the residents of the state, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Some examples of mineral resources are gravel, asphalt, bauxite, and gypsum, which are commonly used for construction activities or industrial processes. Since the proposed project only affects coating formulations at marine and pleasure craft coating operations, PAR 1106 does not require and would not have any effects on the use of important minerals, such as those described above. Therefore, no new demand for mineral resources is expected to occur and significant adverse mineral resources impacts from implementing PAR 1106 are not anticipated.

Based upon these aforementioned considerations, significant mineral resources impacts are not expected from the implementation of PAR 1106. Since no significant mineral resources impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XII.	**NOISE.** Would the project result in:				
a)	Exposure of persons to or generation of permanent noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☑
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☑
c)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☑
d)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

Significance Criteria

Noise impact will be considered significant if:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Discussion

XII. a) PAR 1106 would incorporate new requirements and VOC content limits for marine and pleasure craft coating operations that do not generate noise. PAR 1106 would not require any new construction or require major modifications to buildings or other structures to comply with the proposed amended rule at any of the currently existing facilities. All of the affected activities occur within existing facilities. Compliance with the new requirements for marine and pleasure craft coating operations are not expected to adversely affect operations at affected facilities because the existing facilities are expected to already meet the currently proposed requirements. Thus, the proposed project is not expected to expose persons to the generation of excessive noise

levels above current facility levels because no change in current operations is expected to occur as a result of the proposed project. It is expected that any facility affected by PAR 1106 would continue complying with all existing local noise control laws or ordinances.

In commercial environments, Occupational Safety and Health Administration (OSHA) and California-OSHA have established noise standards to protect worker health. It is expected that operators at affected facilities will continue complying with applicable OSHA or Cal/OSHA noise standards, which would limit noise impacts to workers, patrons and neighbors.

XII. b) PAR 1106 is not anticipated to expose people to, or generate excessive groundborne vibration or groundborne noise levels since complying with PAR 1106 is not expected to alter operations at affected facilities. Therefore, any existing noise or vibration levels at affected facilities are not expected to change as a result of implementing PAR 1106. Since existing operations are not expected to generate excessive groundborne vibration or noise levels, and PAR 1106 is not expected to alter physical operations, no groundborne vibrations or noise levels are expected from the proposed project.

XII. c) No increase in periodic or temporary ambient noise levels in the vicinity of affected facilities above levels existing prior to implementing PAR 1106 is anticipated because the proposed project would not require heavy-duty diesel-fueled construction-related activities nor would it change the existing activities currently performed by marine and pleasure craft coating operations. See also the response to items XII.a) and XII.b).

XII. d) Even if an affected facility is located near a public/private airport, there are no new noise impacts expected from any of the existing facilities as a result of complying with the proposed project. Similarly, any existing noise levels at affected facilities are not expected to increase appreciably. Thus, PAR 1106 is not expected to expose people residing or working in the vicinities of public airports to excessive noise levels.

Based upon these considerations, significant adverse noise impacts are not expected from the implementation of PAR 1106 and are not further evaluated in this Final EA. Since no significant noise impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING. Would the project:				
a) Induce substantial growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	☐	☐	☐	☑
b) Displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

Significance Criteria

Impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:

- The demand for temporary or permanent housing exceeds the existing supply.
- The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.

Discussion

XIII. a) The proposed project is not anticipated to generate any significant adverse effects, either direct or indirect, on the district's population or population distribution as no additional workers are anticipated to be required for affected facilities to comply with the proposed amendments. Human population within the jurisdiction of the SCAQMD is anticipated to grow regardless of implementing PAR 1106. As such, PAR 1106 would not result in changes in population densities or induce significant growth in population.

XIII. b) Because the proposed project affects marine and pleasure craft coating facilities but does not require additional employees, PAR 1106 is not expected to result in the creation of any new industry that would affect population growth, directly or indirectly, induce the construction of single- or multiple-family units, or require the displacement of people elsewhere. Since the proposed project does not require any construction activities or any additional employees, it would not warrant any new or replacement housing.

Based upon these considerations, significant adverse population and housing impacts are not expected from the implementation of PAR 1106 and are not further evaluated in this Final EA. Since no significant population and housing impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES. Would the proposal result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
a) Fire protection?	☐	☐	☐	☑
b) Police protection?	☐	☐	☐	☑
c) Schools?	☐	☐	☐	☑
d) Parks?	☐	☐	☐	☑
e) Other public facilities?	☐	☐	☐	☑

Significance Criteria

Impacts on public services will be considered significant if the project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives.

Discussion

XIV. a) & b) PAR 1106 would incorporate new requirements and VOC content limits for marine and pleasure craft coating operations that would have no effect on public services, as no new physical changes at affected facilities are expected. The proposed project does not require any action which would alter and, thereby, adversely affect existing public services, or require an increase in governmental facilities or services to support the affected existing facilities. Current fire, police and emergency services are adequate to serve existing facilities, and the proposed project will not result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives because no change in operations is expected to occur at affected facilities.

Because the proposed project does not require or involve the use of new hazardous materials or generate new hazardous waste, it will not generate an emergency situation that would require additional fire or police protection, or impact acceptable service ratios or response times.

XIV. c) & d) As indicated in discussion under item XIII. Population and Housing, implementing PAR 1106 would not induce population growth or dispersion because no additional workers are

expected to be needed at the existing affected facilities. Therefore, with no increase in local population anticipated as a result of adopting and implementing PAR 1106, additional demand for new or expanded schools or parks is also not anticipated. As a result, no significant adverse impacts are expected to local schools or parks.

Based upon these considerations, significant adverse public services impacts are not expected from the implementation of PAR 1106 and are not further evaluated in this Final EA. Since no significant public services impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XV. RECREATION.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment or recreational services?	☐	☐	☐	☑

Significance Criteria

Impacts to recreation will be considered significant if:

- The project results in an increased demand for neighborhood or regional parks or other recreational facilities.
- The project adversely affects existing recreational opportunities.

Discussion

XV. a) & b) As discussed under "Land Use and Planning" above, there are no provisions in PAR 1106 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments. No land use or planning requirements would be altered by the adoption of PAR 1106, which only affect marine and pleasure craft coating operations. Further, PAR 1106 would not affect in any way district population growth or distribution (see Section XIII), in ways that could increase the demand for or use of existing neighborhood and regional parks or other recreational facilities, or require the construction of new or expansion of existing recreational facilities that might have an adverse physical effect on the environment because it would not directly or indirectly increase or redistribute population.

Based upon these considerations, significant recreation impacts are not expected from the implementation of PAR 1106. Since no significant recreation impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVI. SOLID/HAZARDOUS WASTE. Would the project:				
a) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☑
b) Comply with federal, state, and local statutes and regulations related to solid and hazardous waste?	☐	☐	☐	☑

Significance Criteria

The proposed project impacts on solid/hazardous waste will be considered significant if the following occurs:

- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

Discussion

XVI. a) & b) Adoption of PAR 1106 would subsume Rule 1106.1 within Rule 1106, add a prohibition of possession and sale provision, add transfer efficiency requirements (similar to other SCAQMD coatings rules), and include various clarifications and administrative changes. Additionally, five new coating categories have been established, and the VOC limits for five specialty coatings categories are being lowered based on existing limits that several other air agencies already require (VCAPCD, SDAPCD, and BAAQMD) and to align limits with U.S. EPA Control Techniques Guidelines. The proposed amendments are expected to provide enhanced compliance with the VOC limits through monitoring.

PAR 1106 is not expected to require the replacement of equipment at affected facilities, and therefore, no new solid or hazardous waste impacts specifically associated with PAR 1106 are expected. The affected facilities are expected to be currently in compliance with the proposed amendments, and as a result, no substantial change in the amount of solid or hazardous waste streams is expected to occur. The character of solid or hazardous waste streams are not expected to occur as a result of the adoption of PAR 1106, as no physical change at affected facilities are expected. PAR 1106 is not expected to increase the volume of solid or hazardous wastes from affected facilities, require additional waste disposal capacity, or generate waste that does not meet applicable local, state, or federal regulations. With regard to potential wastewater impacts, please see the discussion under item IX., "Hydrology and Water Quality."

Based upon these considerations, PAR 1106 is not expected to increase the volume of solid or hazardous wastes that cannot be handled by existing municipal or hazardous waste disposal facilities, or require additional waste disposal capacity. Further, adopting PAR 1106 is not expected to interfere with any affected facility's ability to comply with applicable local, state, or federal waste disposal regulations. Since no solid/hazardous waste impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION/TRAFFIC. Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☑
b) Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☑
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑
d) Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☐	☑

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
e)	Result in inadequate emergency access?	☐	☐	☐	☑
f)	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☑

Significance Criteria

Impacts on transportation/traffic will be considered significant if any of the following criteria apply:

- Peak period levels on major arterials are disrupted to a point where level of service (LOS) is reduced to D, E or F for more than one month.
- An intersection's volume to capacity ratio increase by 0.02 (two percent) or more when the LOS is already D, E or F.
- A major roadway is closed to all through traffic, and no alternate route is available.
- The project conflicts with applicable policies, plans or programs establishing measures of effectiveness, thereby decreasing the performance or safety of any mode of transportation.
- There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- The demand for parking facilities is substantially increased.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.
- The need for more than 350 employees
- An increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round trips per day
- Increase customer traffic by more than 700 visits per day.

Discussion

XVII. a) & b) Adoption of PAR 1106 would subsume Rule 1106.1 within Rule 1106, add a prohibition of possession and sale provision, add transfer efficiency requirements (similar to other SCAQMD coatings rules), and include various clarifications and administrative changes. Additionally, five new coating categories have been established, and the VOC limits for five specialty coatings categories are being lowered based on existing limits that several other air agencies already require (VCAPCD, SDAPCD, and BAAQMD) and to align limits with U.S. EPA Control Techniques Guidelines. The proposed amendments are expected to provide enhanced compliance with the VOC limits through monitoring. The adoption of PAR 1106 would not change or cause additional transportation demands or services because no physical change in operations at affected facilities is expected to occur. Therefore, the proposed project would not increase traffic or adversely impact the existing traffic load and capacity of the street system, as the amount of product to be delivered is not anticipated to change nor generate additional services to affect transportation demand. Because the current existing marine and pleasure craft coating

facilities are expected to be in compliance with the proposed amendments, no increase in material delivery trips is expected as a result of the proposed project.

Since no construction-related trips and no additional operational-related trips per facility are anticipated, the adoption of PAR 1106 is not expected to significantly adversely affect circulation patterns on local roadways or the level of service at intersections near affected facilities. Since no construction is required, no significant construction traffic impacts are anticipated.

XVII. c) PAR 1106 will not require operators of existing facilities to construct buildings or other structures or change the height and appearance of the existing structures, such that they could interfere with flight patterns. Therefore, adoption of PAR 1106 is not expected to adversely affect air traffic patterns. Further, PAR 1106 will not affect in any way air traffic in the region because it will not require transport of any PAR 1106 materials by air.

XVII. d) No physical modifications are expected to occur by adopting PAR 1106 at the affected facilities. Additionally, no offsite modifications to roadways are anticipated for the proposed project that would result in an additional design hazard or incompatible uses.

XVII. e) Equipment replacements or retrofits associated with adopting PAR 1106 are not expected to occur at the potentially affected existing facilities. Therefore, no changes to emergency access at or in the vicinity of the affected facilities would be expected. As a result, PAR 1106 is not expected to adversely impact emergency access.

XVII. f) No changes to the parking capacity at or in the vicinity of the affected facilities are expected with adopting PAR 1106. Adoption of PAR 1106 does not change existing operations, so no new workers at affected facilities or area sources are expected to be necessary to comply with the proposed amendments. Since adoption of PAR 1106 is not expected to require additional workers, no traffic impacts are expected to occur and additional parking capacity will not be required. Therefore, PAR 1106 is not expected to adversely impact on- or off-site parking capacity. PAR 1106 has no provisions that would conflict with alternative transportation, such as bus turnouts, bicycle racks, et cetera.

Based upon these considerations, PAR 1106 is not expected to generate significant adverse project-specific or cumulative transportation/traffic impacts and, therefore, this topic will not be considered further. Since no significant transportation/traffic impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☑
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☐	☐	☑
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☑

XVIII. a) As discussed in the "Biological Resources" section, PAR 1106 is not expected to significantly adversely affect plant or animal species or the habitat on which they rely because PAR 1106 implements new requirements for marine and pleasure craft coating operations, which will primarily be conducted at existing affected facilities. All of the currently affected facilities are located at sites that have already been greatly disturbed and that currently do not support such habitats. PAR 1106 is not expected to induce construction of any new land use projects that could affect biological resources.

XVIII. b) Based on the foregoing analyses, cumulative impacts in conjunction with other projects that may occur concurrently with or subsequent to the proposed project are not expected to adversely impact any environmental topic. Related projects to the currently proposed project include existing and proposed amended rules and regulations, as well as AQMP control measures, which produce emission reductions from most industrial and commercial sectors. Furthermore, because PAR 1106 does not generate project-specific impacts, cumulative impacts are not

considered to be "cumulatively considerable" as defined by CEQA guidelines §15065(a)(3). For example, the environmental topics checked 'No Impact' (e.g., aesthetics, agriculture resources, air quality, biological resources, cultural resources energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, solid/hazardous waste and transportation and traffic) would not be expected to make any contribution to potential cumulative impacts. Also, in the case of air quality impacts, the net effect of implementing the proposed project with other proposed amended rules and regulations, and AQMP control measures is an overall reduction in District-wide emissions, thus, contributing to the attainment of state and national ambient air quality standards. Therefore, it is concluded that PAR 1106 has no potential for significant cumulative or cumulatively considerable impacts in any environmental areas.

XVIII. c) Based on the foregoing analyses, PAR 1106 is not expected to cause significant adverse effects to human beings. Significant adverse air quality impacts are not expected from the implementation of PAR 1106. Based on the preceding analyses, no significant adverse impacts to aesthetics, agriculture resources, biological resources, cultural resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, solid/hazardous waste and transportation and traffic are expected as a result of the implementation of PAR 1106.

As discussed in items I through XVIII above, the proposed project would have no potential to cause significant adverse environmental effects.

APPENDIX A

PROPOSED AMENDED RULE 1106 AND PROPOSED RESCINDED RULE 1106.1

(Adopted November 4, 1988)(Amended May 5, 1989)(Amended June 2, 1989)
(Amended March 2, 1990)(Amended November 2, 1990)(Amended December 7, 1990)
(Amended August 2, 1991)(Amended January 13, 1995)
(Proposed Amended Rule 1106 October 2015)

PROPOSED AMENDED RULE 1106. MARINE AND PLEASURE CRAFT COATING OPERATIONS

(a) Purpose

The purpose of this rule is to reduce emissions of volatile organic compounds (VOC) and stratospheric ozone depleting and global warming compounds from Marine and Pleasure Craft Coating Operations.

(~~a~~b) Applicability

This rule applies to:

(1) MARINE COATING OPERATIONS:

~~This rule applies to~~Which means all coating operations of boats, ships, and vessels, and their appurtenances, including but not limited to structures, such as piers, docks ~~and~~, ~~to~~buoys and oil drilling rigs, intended for exposure to either a marine or fresh water environment.~~Coating operations of vessels which are manufactured or operated primarily for recreational purposes are subject to the requirements of Rule 1106.1 – Pleasure Craft Coating Operations.~~

(2) PLEASURE CRAFT COATING OPERATIONS:

Which means all coating operations for purposes of refinishing, repairing, modifying, or manufacturing of pleasure craft as defined in paragraph (c)(~~29~~30) of this rule, and to their parts and components.

(~~b~~c) Definitions

For the purpose of this rule the following definitions shall apply:

(1) AEROSOL COATING PRODUCT ~~is~~ means a pressurized coating product containing pigments, ~~or~~ resins, and/or other coating solids that ~~is dispensed~~dispenses product ingredients by means of a propellant, and is packaged in a disposable aerosol container~~can~~ for hand-held application~~, or for use in specialized equipment for ground marking and traffic marking applications~~.

(2) AIR DRIED COATING is any coating that is formulated by the manufacturer to be cured at a temperature below 90 °~~o~~C (194 °~~o~~F).

(3) ANTENNA COATING is any coating applied to equipment and associated structural appurtenances which are used to receive or transmit electromagnetic signals.

(4) ~~ANTIFOULING~~ ANTIFOULANT COATING is any coating applied to the underwater portion of ~~a~~ boats, ships, vessels, ~~vessel~~ or pleasure craft to prevent or reduce the attachment of biological organisms~~. An antifouling coating~~ and shall be registered with the ~~Environmental Protection Agency (EPA) as a pesticide~~United States Environmental Protection Agency ("U.S. EPA") as a pesticide under the Federal Insecticide, Fungicide, and Rodenticide Act (7 United States Code Section 136).

(5) BAKED COATING is any coating that is formulated by the manufacturer to be cured at a temperature at or above 90 °~~o~~C (194 °~~o~~F).

(6) CLEAR WOOD COATINGS are clear and semi-transparent topcoats applied to wood substrates to provide a transparent or translucent film.

(7) DISTRIBUTOR means any person to whom a ~~consumer~~ product is sold or supplied for the purposes of resale or distribution in commerce, except that manufacturers, retailers, and consumers are not distributors.

(~~6~~8) ELASTOMERIC ADHESIVE is any adhesive containing natural or synthetic rubber.

(9) ENERGY CURABLE COATINGS are single-component reactive products that cure upon exposure to visible-light, ultra-violet light or to an electron beam. The VOC content of thin film Energy Curable Marine and Pleasure Craft Coatings may be determined by manufacturers using ASTM Test Method 7767-11 "Standard Test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers, and Blends and Thin Coatings Made from Them".

(~~7~~910) EXEMPT COMPOUNDS ~~are any of the following compounds:~~(See Rule 102 - Definition of Terms).

~~(A) Group I (General)~~

~~trifluoromethane (HFC-23)~~

~~pentafluoroethane (HFC-125)~~

~~1,1,2,2-tetrafluoroethane (HFC-134)~~

~~tetrafluoroethane (HFC-134a)~~

~~1,1,1-trifluoroethane (HFC-143a)~~

~~1,1-difluoroethane (HFC-152a)~~

~~chlorodifluoromethane (HCFC-22)~~

~~dichlorotrifluoroethane (HCFC-123)~~

~~2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)~~

~~dichlorofluoroethane (HCFC-141b)~~

~~chlorodifluoroethane (HCFC-142b)~~

~~cyclic, branched, or linear, completely fluorinated alkanes~~

~~cyclic, branched, or linear, completely fluorinated ethers with no unsaturations~~

~~cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations~~

~~sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine~~

~~(B) Group II~~

~~methylene chloride~~

~~1,1,1-trichloroethane (methyl chloroform)~~

~~trichlorotrifluoroethane (CFC-113)~~

~~dichlorodifluoromethane (CFC-12)~~

~~trichlorofluoromethane (CFC-11)~~

~~dichlorotetrafluoroethane (CFC-114)~~

~~chloropentafluoroethane (CFC-115)~~

~~The use of Group II compounds and/or carbon tetrachloride may be restricted in the future because they are toxic, potentially toxic, upper-atmosphere ozone depleters, or cause other environmental impacts. By January 1, 1996, production of chlorofluorocarbons (CFC), 1,1,1,-trichloroethane (methyl chloroform), and carbon tetrachloride will be phased out in accordance with the Code of Federal Regulation Title 40, Part 82 (December 10, 1993).~~

(~~8~~10~~11~~) EXTREME HIGH GLOSS COATING is any coating which achieves at least 95 percent reflectance on a 60°~~o~~ meter when tested by ASTM Test Method D-523-14 ~~—~~"Standard Test Method for Specular Gloss".

(~~11~~12) FINISH PRIMER/SURFACER is any coating applied with a wet film thickness of less than 10 mils (one mil = 0.001 of an inch) and is applied prior to the application of a Marine or Pleasure Craft Coating for the purpose of providing corrosion resistance, adhesion for subsequent coatings, a moisture barrier, and promotes a uniform surface necessary for filling in surface imperfections.

(~~9~~12~~13~~) GRAMS OF VOC PER LITER OF COATING, LESS WATER AND LESS EXEMPT COMPOUNDS, OR REGULATORY VOC, is the weight of VOC per combined volume of VOC and coating solids and can be calculated by the following equation:

Grams of VOC per Liter of Coating, Less Water and Less Exempt Compounds = $\frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$

Where: W_s = weight of volatile compounds in grams
W_w = weight of water in grams
W_{es} = weight of exempt compounds in grams
V_m = volume of material in liters
V_w = volume of water in liters
V_{es} = volume of exempt compounds in liters

(~~13~~14) GRAMS OF VOC PER LITER OF MATERIAL, OR ACTUAL VOC, is the weight of VOC per volume of material and shall be calculated by the following equation:

Grams of VOC per Liter of Material = $\frac{W_s - W_w - W_{es}}{V_m}$

Where: W_s = weight of volatile compounds in grams
W_w = weight of water in grams
W_{es} = weight of exempt compounds in grams
V_m = volume of material in liters

(~~10~~14~~15~~) HEAT RESISTANT COATING is any coating which during normal use must withstand temperatures of at least 204 °~~o~~C (400 °~~o~~F).

(~~11~~15~~16~~) HIGH GLOSS COATING is any coating which achieves at least 85 percent reflectance on a 60°~~o~~ meter when tested by ASTM Method D-523-14 –"Standard Test Method for Specular Gloss".

(~~12~~16~~17~~) HIGH TEMPERATURE COATING is any coating that during normal use ~~which~~ must withstand temperatures of at least 426 °~~o~~C (800 °~~o~~F).

(~~17~~18) HIGH BUILD PRIMER/SURFACER is any coating applied with a wet film thickness of 10 mils or more (one mil = 0.001 of an inch) prior to the application of a topcoat for purposes of providing corrosion resistance, adhesion of subsequent coatings, a moisture barrier, or promoting a uniform surface necessary for filling in surface imperfections.

(~~18~~19) HIGH-VOLUME, LOW-PRESSURE (HVLP) means spray application equipment designed to atomize 100 percent by air pressure only and is

operated between 0.1 and 10 pounds per square inch~~,~~ gauge~~,~~ (psig)~~,~~ air atomizing pressure measured dynamically at the center of the air cap and at the air horns.

(~~19~~20) INORGANIC ZINC COATING is a coating that contains 960 grams per liter or more elemental zinc incorporated into an inorganic silicate binder that is applied to steel to provide galvanic corrosion resistance.

(~~13~~20~~0~~21) LOW ACTIVATION INTERIOR COATING is any coating used on interior surfaces aboard ~~ships~~ boats, ships, and vessels, to minimize the activation of pigments on painted surfaces within a radiation environment.

(~~21~~22) LOW-SOLIDS COATINGS are coatings containing one pound or less of solids per gallon of material.

(~~14~~22~~2~~23) MARINE COATING is any coating, except unsaturated polyester resin (fiberglass) coatings, containing volatile organic materials and applied by any means to ~~ships,~~ boats, ships, and vessels, and their appurtenances, structures such as piers~~,~~ ~~and~~ docks~~,~~ ~~intended for exposure to a marine environment, and also to~~ buoys and oil drilling rigs~~,~~ intended for ~~the~~ exposure to either a marine or fresh water environment.

(~~23~~24) MARINE DECK SEALANT PRIMER is any sealant primer intended by the manufacturer to be applied to wooden marine decks. A sealant primer is any product intended by the manufacturer to be applied to a substrate, prior to the application of a sealant, to enhance the bonding surface.

(~~15~~24~~2~~25) METALLIC HEAT RESISTANT COATING is any coating which contains more than 5 grams of metal particles per liter of coating as applied and which must withstand temperatures over 80 °~~o~~C (~~175~~176 °~~o~~F).

(~~25~~26) MIST COATING is any low viscosity, thin film, epoxy coating applied to an inorganic zinc primer that penetrates the porous zinc primer and allows the occluded air to escape through the film prior to curing.

(~~16~~26~~2~~27) NAVIGATIONAL AIDS COATING is any coating that is applied to ~~are~~ buoys or other Coast Guard waterway markers that are recoated aboard ship at their usage site and immediately returned to the water.

(~~27~~28) NONSKID COATING means any coating applied to the horizontal surface of a marine vessel for the specific purpose of providing slip resistance for personnel.

(~~28~~29) ORGANIC ZINC COATING is a coating that contains 960 grams per liter or more elemental zinc incorporated into an organic silicate binder that is applied to steel to provide galvanic corrosion resistance.

~~(17) PRETREATMENT WASH PRIMER is any coating which contains at least 1/2 percent acids, by weight, to provide surface etching and is applied directly to metal surfaces to provide corrosion resistance, adhesion, and ease of stripping.~~

(~~29~~30) PLEASURE CRAFT are marine or fresh water vessels that are less than 20 meters in length and are manufactured or operated primarily for recreational purposes, or are leased, rented, or chartered to a person or business for recreational purposes. Vessels operated in amusement~~Amusement~~ theme parks ~~that operate vessels~~ in a fresh water environment solely for the purpose of an amusement park attraction shall be considered pleasure craft vessels regardless of their length. The owner or operator of a pleasure craft vessel shall be responsible for certifying that the intended use is for recreational purposes.

(~~30~~31) PLEASURE CRAFT COATING is any marine coating, except unsaturated polyester resin (fiberglass) coatings, applied by brush, spray, roller, or other means to a pleasure craft. A pleasure craft coating that is sold, offered for sale, or solicited for use within the South Coast Air Quality Management District (SCAQMD) jurisdiction must be designated by the manufacturer as a pleasure craft coating by any sticker or label affixed on the container, or where it is indicated in any sales or advertising literature, that the coating may be used as, or is suitable for use as, a pleasure craft coating.

(~~31~~32) PRETREATMENT WASH PRIMER is a coating which contains a minimum of 1/2 percent acid, by weight, applied directly to bare metal surfaces to provide necessary surface etching.

(~~1832~~33) REPAIR AND MAINTENANCE THERMOPLASTIC COATING is any resin-bearing coating, such as vinyl, chlorinated rubber, or bituminous coatings, in which the resin becomes pliable with the application of heat, and is used to recoat portions of a previously coated substrate which has sustained damage to the coating following normal coating operations.

(~~1933~~34) SEALANT FOR WIRE-SPRAYED ALUMINUM is any coating of up to one mil (one mil = 0.001 of an inch) in thickness of an epoxy material which is reduced for application with an equal part of an appropriate solvent (naphtha, or ethylene glycol monoethyl ether).

(~~34~~35) SEALER is a coating applied to bare wood to seal surface pores to prevent subsequent coatings from being absorbed into the wood.

(~~20~~35~~36~~) SOLVENT CLEANING OPERATION is ~~the removal of loosely held uncured adhesives, uncured inks, uncured coatings, and contaminants from parts, products, tools, machinery, equipment, and general work areas. Contaminants include, but are not limited to, dirt, soil, and grease. In a cleaning process which consists of a series of cleaning methods, each distinct method shall constitute a separate solvent cleaning operation~~as defined in Rule 1171 - Solvent Cleaning Operations.

(~~21~~36~~37~~) SPECIAL MARKING COATING is any coating used for items such as flight decks, ~~ships'~~ vessel identification numbers~~,~~ and other demarcations for safety~~/~~ or identification~~applications~~.

(~~223~~738) TACK COAT is an epoxy coating of up to two mils ~~(0.002 inch)~~ (one mil = 0.001 of an inch) thick applied to an existing epoxy coating. The existing epoxy coating must have aged beyond the time limit specified by the manufacturer for application of the next coat.

(~~38~~39) TEAK PRIMER is a coating applied to teak wood or previously oiled teak wood decks in order to improve the adhesion of a seam sealer.

(~~39~~40) TOPCOAT is any final coating applied to the interior or exterior of a marine or pleasure craft.

(~~234~~041) TOUCH-UP COATING is any coating operation incidental to the main coating process but necessary ~~used~~ to cover minor imperfections ~~prior to shipment appearing after the main coating operation~~or minor mechanical damage incurred prior to ~~intended~~ use.

(~~41~~42) TRANSFER EFFICIENCY means the amount of coating solids adhering to the object being coated divided by the total amount of coating solids sprayed; expressed as a percentage.

(~~244~~243) UNDERSEA WEAPONS SYSTEM COATING is any coating applied to any or all components of a weapons system intended for exposure to a marine environment and~~that is~~ intended to be launched or fired ~~underwater~~undersea.

(~~43~~44) VARNISHES are clear or pigmented wood topcoats formulated with various resins to dry by chemical reaction.

(~~254~~445) VOLATILE ORGANIC COMPOUND (VOC) is ~~any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds~~as defined in Rule 102 - Definition of Terms.

(~~264~~546) WIRE-SPRAYED ALUMINUM is any molten multi-aluminum coating applied to a steel substrate using oxygen fueled combustion spray ~~methods~~equipment.

(~~e~~d) Requirements

(1) VOC Content of Marine Coatings

Except as otherwise provided in this rule, a person shall not apply a marine coating within the SCAQMD jurisdiction with a VOC content in excess of the following limits shown in the Table of Standards I, expressed as grams of VOC per liter of coating, as applied, less water and less exempt solvents:

	~~Baked~~	~~Air Dried~~
~~General Coating~~	~~275 g/L~~	~~340 g/L~~
~~Specialty Coating~~		
~~Heat Resistant~~	~~360~~	~~420~~
~~Metallic Heat Resistant~~		~~530~~
~~High Temperature~~		~~500~~
~~Pre-Treatment Wash Primer~~	~~780~~	~~780~~
~~Underwater Weapons Systems~~	~~275~~	~~340~~
~~Elastomeric Adhesives with 15%, by Weight, Natural or Synthetic Rubber~~		~~730~~
~~Solvent-Based Inorganic Zinc~~		~~650~~
~~Navigational Aids~~		~~340~~
~~Sealant for Wire-Sprayed Aluminum~~		~~610~~
~~Special Marking~~		~~490~~
~~Tack Coat~~		~~610~~
~~Low Activation Interior Coating~~		~~420~~
~~Repair and Maintenance Thermoplastic~~		~~550~~
~~Extreme High-Gloss Coating~~	~~420~~	~~490~~
~~Antenna Coating~~		~~530~~
~~Antifoulant~~		~~400~~
~~High Gloss~~	~~275~~	~~340~~

TABLE OF STANDARDS I

MARINE COATING CATEGORY	VOC LIMITS Less water and exempt compounds Grams per Liter (g/L)	
	BAKED	AIR DRIED
	CURRENT LIMIT	CURRENT LIMIT
Antenna Coating		340
Antifoulant Coatings:		
Aluminum Substrates		560
Other Substrates		400
Elastomeric Adhesives (with 15%, by Weight, Natural or Synthetic Rubber)		730
Inorganic Zinc Coating		340
Low Activation Interior Coating		420
Mist Coating		610
Navigational Aids Coating		340
Nonskid Coating		340
Organic Zinc Coating		340
Pre-Treatment Wash Primer	420	420
Repair and Maintenance Thermoplastic Coating		340
Sealant for Wire-Sprayed Aluminum		610
Special Marking Coating		420
Specialty Coatings:		
Heat Resistant Coating	360	420
Metallic Heat Resistant Coating		530
High Temperature Coating		500
Tack Coating		610
Topcoats:		
Extreme High-Gloss Coating	420	490
High Gloss Coating	275	340
Underwater Weapons Systems Coating	275	340
Any Other Coating Type	275	340

(2) VOC Content of Pleasure Craft Coatings

Except as otherwise provided in this rule, a person shall not apply a pleasure craft coating within the SCAQMD jurisdiction with a VOC content in excess of the following limits shown in the Table of Standards II, expressed as grams of VOC per liter of coating, as applied, less water and less exempt solvents:

TABLE OF STANDARDS II

VOC LIMITS

Less water and exempt compounds Grams per Liter (g/L)	
PLEASURE CRAFT COATING CATEGORY	CURRENT LIMIT
Antifoulant Coatings:	
Aluminum Substrate	560
Other Substrate	330
Clear Wood Coatings:	
Sealers	550
Varnishes	490
Primer Coatings:	
Finish Primer/Surfacer	420
High Build Primer/Surfacer	340
Marine Deck Sealant Primer	760
Pretreatment Wash Primer	780
Teak Primer	775
Topcoats:	
Extreme High Gloss Coating	490
High Gloss Coating	420
Any Other Coating Type	420

(3) VOC Content of Low-Solids Coatings

Except as otherwise provided in this rule, a person shall not apply a marine coating or a pleasure craft coating within the SCAQMD jurisdiction with a VOC content in excess of the following limit shown in the Table of Standards III, expressed as grams of VOC per material of coating, as applied:

TABLE OF STANDARDS III

VOC LIMIT – MARINE & PLEASURE CRAFT COATINGS Grams per liter of material VOC	
COATING CATEGORY	CURRENT LIMIT
Low-Solids Coating	120

(4) Most Restrictive VOC Limit

If any representation or information on the container of any coating subject to this rule, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature that indicates that the coating meets the definition of or is recommended for use for more than one of the marine

coating categories listed in ~~sub~~paragraph (d)(1) or the pleasure craft coating categories listed in ~~sub~~paragraph (d)(2), or the low-solids coating category listed in ~~sub~~paragraph (d)(3), then the lowest VOC content limit shall apply. ~~anywhere on the container of any coating listed in either Table of Standards or label theretoor literatureany representation is made that the coating may be used as, or is suitable for use as, a for which a lower standard is specified in the table or in paragraph(d)(1) or (d)(2), standard~~

(~~2~~5) Approved Emission Control System

~~(A) Approved Emission Control System~~

~~Owners and/or operators may comply with the provisions of paragraph (c)(1) by using an emission control system, which has been approved in writing by the Executive Officer, for reducing VOC emissions. The control system must achieve a minimum capture efficiency using USEPA, ARB, and District methods specified in subparagraph (e)(4)(A) and a destruction efficiency of at least 85 percent by weight, and,~~

~~(B) The approved system shall reduce the VOC emissions, when using non-compliant coatings, to an equivalent or greater level that would be achieved by the provisions in paragraph (c)(1)~~A person may comply with the provisions of paragraphs (d)(1), (d)(2) or (d)(3), by using an approved emission control system, consisting of a collection and control device, provided such emission control system is approved pursuant to Rule 203 - Permit to Operate, in writing, by the Executive Officer for reducing emissions of VOC. The Executive Officer shall approve such emission control system only if the VOC emissions resulting from the use of non-compliant coatings will be reduced to a level equivalent to or lower than the limits specified in paragraphs (d)(1), (d)(2) or (d)(3), as applicable. The required efficiency of an emission control system at which an equivalent or greater level of VOC reduction will be achieved shall be calculated by the following equation:

$$C.E. = \left[1 - \left\{ \frac{(VOC_{LWc})}{(VOC_{LWn,Max})} \times \frac{1 - (VOC_{LWn,Max}/D_{n,Max})}{1 - (VOC_{LWc}/D_c)} \right\} \right] \times 100\%$$

Where: C.E. = Control Efficiency, expressed as a percentage

VOC_{LWc} = VOC Limit of Rule 1106, less water and less exempt compounds, pursuant to subdivision (ed).

$VOC_{LWn,Max}$ = Maximum VOC content of non-compliant coating used in conjunction with a control device, less water and less exempt compounds.

$D_{n,Max}$ = Density of solvent, reducer, or thinner contained in the non-compliant coating, containing the maximum VOC content of the multi-component coating.

D_c = Density of corresponding solvent, reducer, or thinner used in the compliant coating system = 880 g/L.

(~~3~~6) Alternative Emission Control Plan

~~Owners and/or operators may achieve compliance with the requirements~~A person may comply with the provisions of paragraphs (d)(1), (d)(2) and (d)(3)~~paragraph (e)(1)~~ by means of an Alternative Emission Control Plan, pursuant to Rule 108 - Alternative Emissions Control Plans.

(7) Exempt Compounds

A person shall not manufacture, sell, offer for sale, distribute for use in the SCAQMD jurisdiction, or apply any marine or pleasure craft coating which contains any Group II Exempt Compounds listed in Rule 102 - Definition of Terms, in quantities greater than 0.1 percent by weight. Cyclic, branched, or linear, completely methylated siloxanes (VMS) are not subject to this provision.

(8) Carcinogenic Materials

A person shall not manufacture, sell, offer for sale, distribute for use in the SCAQMD jurisdiction, or apply any marine or pleasure craft coating which contains cadmium, nickel, lead or hexavalent chromium that was introduced as a pigment or as an agent to impart any property or characteristic to the marine or pleasure craft coatings during manufacturing, distribution, or use of the applicable marine or pleasure craft coatings.

(9) Transfer Efficiency

(A) Effective April 1st, 2016 a person shall not apply any marine coating or pleasure craft coating unless one of the following methods of coating transfer is used:

(i) electrostatic application, or

(ii) high-volume, low-pressure (HVLP) spray, or

(iii) brush, dip, or roller, or

(iv) Spray gun application, provided the owner or operator demonstrates that the spray gun meets the HVLP definition in paragraph (c)(~~18~~19) in design and use. A satisfactory demonstration must be based on the manufacturer's published technical material on the design of the spray gun and by a demonstration of the operation of the spray gun using an air pressure tip gauge from the manufacturer of the spray gun.

(v) Any such other marine coating or pleasure craft coating application methods as demonstrated, in accordance with the provisions of paragraph (h)(46), to be capable of achieving equivalent or better transfer efficiency than the marine coating or pleasure craft coating application method listed in clause (d)(9)(A)(ii), provided written approval is obtained from the Executive Officer prior to use.

(B) A person shall not apply any marine coating or pleasure craft coating by any of the methods listed in subparagraph (d)(9)(A) unless such coating is applied with properly operating equipment, operated according to procedures recommended by the manufacturer and in compliance with applicable permit conditions, if any.

(410) Solvent Cleaning ~~Operations;~~ Storage and Disposal of VOC-containing Materials

~~All solvent~~Solvent cleaning ~~operations~~ of application equipment, parts, products, tools, machinery, equipment, general work areas, and the storage and disposal of VOC-containing materials used in solvent cleaning operations shall be carried out pursuant to SCAQMD Rule 1171 - Solvent Cleaning Operations.

~~(5) RecordkeepNotwithstanding the provisions of subdivision (g), records shall be maintained pursuant to Rule 109.~~

~~(d) Prohibition of Specification~~

~~(1) A person shall not solicit or require any other person to use, in the district, any coating or combination of coatings to be applied to any marine vessel or marine component subject to the provisions of this rule that does not meet the limits requirements of this rule or of an Alternative Emission Control Plan approved pursuant to the provisions of paragraph (c)(3) of this rule.~~

~~(2) The requirements of paragraph (d)(1) shall apply to all written or oral agreements executed or entered into after November 4, 1988.~~

(e) Prohibition of Possession, Specification and Sale

(1) For the purpose of this rule, no person shall ~~supply, sell, offer for sale, market, manufacture, blend, repackage, apply,~~ store at a worksite, ~~or solicit the application of~~ any marine coating or pleasure craft coating subject to this rule within the SCAQMD jurisdiction that is not in compliance with the requirements shown in the Tables of Standards of paragraphs (d)(1), (d)(2), and (d)(3) unless one or more of the following conditions apply:

(A) The marine or pleasure craft coating is for use at a facility that utilizes an approved emission control device pursuant to ~~sub~~paragraph (d)(5) and the coating meets the limits specified in permit conditions.

(B) The marine or pleasure craft coating is for use at a facility that operates in compliance with an approved Alternative Emissions Control Plan pursuant to subparagraph (d)(6), and the marine or pleasure craft coating is specified in the plan.

~~(C) The requirements of paragraphs (d)(7) and (d)(8).~~

(2) For the purpose of this rule, no person shall solicit from, specify, or require any other person to use in the SCAQMD jurisdiction any marine or pleasure craft coating which, does not meet the:

(A) Applicable VOC limits required by paragraph (d)(1), (d)(2) or (d)(3) for the specific application unless:

(i) The marine or pleasure craft coating is located at a facility that utilizes an approved emission control device pursuant to paragraph (d)(5), and the marine or pleasure craft coating meets the limits specified in permit conditions; or,

(ii) The marine or pleasure craft coating is located at a facility that operates in compliance with an approved Alternative

Emissions Control Plan pursuant to paragraph (d)(6), and the marine or pleasure craft coating is specified in the plan.

(B) The requirements of paragraphs (d)(7) and (d)(8).

(3) For the purpose of this rule, no person shall supply, sell, offer for sale, market, blend, package, repackage or distribute any marine or pleasure craft coating for use within the SCAQMD jurisdiction subject to the provisions in this rule which, does not meet the:

(A) Applicable VOC limits required by paragraphs (d)(1), (d)(2) and (d)(3) for the specific application, unless:

(i) The marine or pleasure craft coating is for use at a facility that utilizes an approved emission control device pursuant to paragraph (d)(5), and the coating meets the limits specified in permit conditions; or,

(ii) The marine or pleasure craft coating is for use at a facility that operates in accordance with an approved Alternative Emissions Control Plan pursuant to paragraph (d)(6), and the marine or pleasure craft coating is specified in the plan; and,

(iii) The person that supplies, sells, offers for sale, markets, blends, packages, repackages or distributes the marine or pleasure craft coating keeps the following records for at least five years and makes them available to the Executive Officer upon request:

(I) Marine or pleasure craft coating name and manufacturer;

(II) VOC content of the marine or pleasure craft coating;

(III) Documentation such as manufacturer specification sheets, material safety data sheets, technical data sheets, or any other air quality data sheets that demonstrate that the material is intended for use as a marine or pleasure craft coating;

(B) The requirements of paragraphs (d)(7) and (d)(8).

(4) For the purpose of this rule, no person shall solicit from, specify, require, offer for sale, sell, or distribute to any other person for use in the SCAQMD jurisdiction any marine or pleasure craft coating application equipment which does not meet the requirements of subparagraph (d)(9)(A).

(5) For the purpose of this rule, no person shall offer for sale, sell, supply, market, offer for sale or distribute an HVLP spray gun for use within the SCAQMD unless ~~the~~ said person ~~offering for sale, selling, marketing or distributing the HVLP spray gun for use within the SCAQMD~~ provides accurate information to the spray gun recipient. Such accurate information shall include ~~on~~ the maximum inlet air pressure to the spray gun which would result in a maximum air pressure of 10 pounds per square inch gauge (psig) air pressure, measured dynamically at the center of the air cap and at the air horns, based on the manufacturer's published technical material on the design of the spray application equipment, and by a demonstration of the operation of the spray application equipment using an air pressure tip gauge from the manufacturer of the gun. The information shall either be permanently marked on the gun, or provided on the company's letterhead or in the form of technical literature which clearly identifies the spray gun manufacturer, the seller, or the distributor.

(6) Paragraphs (d)(1), (d)(2) and (d)(3) shall not apply to marine coatings or pleasure craft coatings that are sold, offered for sale, or solicited, for shipment or use outside of the SCAQMD jurisdiction, or for shipment to other manufacturers for repackaging provided such coatings are sold, offered for sale, or solicited, for shipment or use outside the SCAQMD jurisdiction.

(f) Recordkeeping Requirements

(1) Recordkeeping for VOC Emissions

Records of marine coating usage and pleasure craft coating usage, as applicable, shall be maintained pursuant to SCAQMD Rule 109 - Recordkeeping for Volatile Organic Compound Emissions, and shall be made available to the Executive Officer upon request. The records shall also include the following information:

(A) Material name and manufacturer;

(B) Application method;

(C) Marine coating and pleasure craft coating categories, as applicable, and mix ratio specific to the coating;

(D) Regulatory VOC, for the marine coating and pleasure craft coating, as applicable;

(E) Documentation such as manufacturer specification sheets, material safety data sheets, technical data sheets, or any other air quality data sheets that indicate the material is intended for use as a marine coating, pleasure craft coating or solvent, as applicable;

(F) Current manufacturer specification sheets, material safety data sheets, or technical data sheets, which list the actual VOC and regulatory VOC, for each marine and pleasure craft coating, as applicable; and,

(2) Recordkeeping Requirements for Emission Control System

Any person using an emission control system shall maintain daily records of key system operating parameters which will demonstrate continuous operation and compliance of the emission control system during periods of VOC emission producing activities. "Key system operating parameters" are those parameters necessary to ensure or document compliance with subparagraph (h)(~~5~~7)(A), including, but not limited to, temperatures, pressure drops, and air flow rates. These records shall be made available to the Executive Officer upon request.

(g) Administrative Requirements for Marine Coating Manufacturers

(1) Compliance Statement Requirement

Effective April 1st, 2016 for each individual marine coating and pleasure craft coating, marine coating and pleasure craft coating component, and ready to spray mixture**s** (based on the manufacturers stated mix ratio) sold, offered for sale, for shipment or use within the SCAQMD jurisdiction, the manufacturer shall include the following information on a product data sheet, or an equivalent medium:

(A) The actual VOC and regulatory VOC for marine coating and pleasure craft coating, as applicable; and,

(B) The weight percentage of volatiles, water, and exempt compounds; and,

(C) The density of the material (in grams per liter).

(2) Labeling Requirements

(A) The manufacturer of marine coatings and pleasure craft coatings or marine coating and pleasure craft coating components shall include on all containers the regulatory VOC content, as supplied (in grams of VOC per liter of coating less water and exempt compounds).

(3) Reporting Requirements

(A) Annual Quantity Emissions Reports (AQER)

Effective April 1st, 2016 and thereafter, for each calendar year (January 1 through December 31) beginning with 2015 and continuing with each subsequent calendar year until 2018, a marine coating or pleasure craft coating manufacturer or distributor shall submit to the SCAQMD by April 1st of the following calendar year, an annual quantity and emissions report for products subject to the rule that were sold or distributed for sale within the SCAQMD jurisdiction. The report format shall be approved by the Executive Officer, and shall include the annual sales or distribution volume and the regulatory VOC content of marine coatings and pleasure craft coatings sold or distributed within the SCAQMD jurisdiction.

(B) List of Distributors

Effective April 1st, 2016 and thereafter, for each calendar year (January 1 through December 31) beginning with 2015 and continuing with each subsequent calendar year until 2018, each manufacturer or distributor of a marine coating or pleasure craft coating that were sold or distributed for sale within the SCAQMD jurisdiction, shall submit to the SCAQMD by April 1st a list of all U.S. distributors to whom they supply products that are subject to this rule, including but not limited to, private label marine coating or pleasure craft coatings, and toll manufactured marine coatings or pleasure craft coatings. The report format shall be approved by the Executive Officer and shall include the distributor's name, address, contact person and telephone number.

(~~e~~h) Test Methods

(1) Determination of VOC Content:

The VOC content of coatings, subject to the provisions of this rule shall be determined by the following methods:

(A) ~~United States Environmental Protection Agency (~~U.S. EPA~~)~~ Reference Test Method 24 (Determination of Volatile Matter Content, Water Content, Volume Solids and Weight Solids of Surface Coatings, Code of Federal Regulations, Title 40, Part 60, Appendix A~~,~~). The exempt compounds' content shall be determined

by South Coast Air Quality Management District (SCAQMD) Laboratory Test Method 303 (Determination of Exempt Compounds) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual; or,

(B) SCAQMD Method 304 [Determination of Volatile Organic Compounds (VOCs) in Various Materials] contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual~~.~~; or,

(C) SCAQMD Method 313 [Determination of Volatile Organic Compounds VOC by Gas Chromatography-Mass Spectrometry] in the SCAQMD's "Laboratory Methods of Analysis for Enforcement Samples" manual.

(~~B~~D2) VOC content determined to exceed the limits established by this rule through the use of any of the above-referenced test methods shall constitute a violation of this rule.

(~~C~~E3) Exempt Perfluorocarbon Compounds

The following classes of compounds:

cyclic, branched, or linear, completely fluorinated alkanes;

cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;

cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and

sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine,

~~will~~ shall be analyzed as exempt compounds for compliance with subdivision (~~c~~d), only ~~when~~ at such time as manufacturers specify which individual compounds are used in the ~~coating~~ formulation of the coatings subject to this rule. In addition, prior to any such analysis, the manufacturers shall also identify the test methods approved by the U.S. EPA, California Air Resources Board (CARB), and the SCAQMD ~~approved test methods prior to any such analysis shall~~ that will be used to quantify the amount of each exempt compound.

(~~2~~4) Determination of ~~Metal Content~~Iridescent Particles in Metallic/Iridescent Coatings

The metal and silicon content in metallic/iridescent coatings subject to the provisions of this rule shall be determined by the SCAQMD Method 311 (Determination~~Analysis~~ of Percent Metal in Metallic Coatings by Spectrographic Method) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual.

(~~3~~5) Determination of Acid Content in Marine and Pleasure Craft Coatings

The acid content of any coating subject to the provisions of this rule shall be determined by ASTM D-1613-~~85~~ 06 (2012) (Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint~~.~~, Varnish, Lacquer, and Related Products)~~ contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual~~.

(46) Transfer Efficiency

The transfer efficiency of alternative marine coating and pleasure craft coating application methods, as defined by clause (d)(9)(A)(v), shall be determined in accordance with the SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989," and SCAQMD "Guidelines for Demonstrating Equivalency With SCAQMD Approved Transfer Efficiency Spray Gun September 26, 2002".

(~~4~~57) Determination of Efficiency of Emission Control System

(A) The efficiency of the collection device of the emission control system as specified in paragraph ~~(c)(2)~~(d)(5) shall be determined by the ~~USEPA~~ methods specified ~~cited in 55 Federal Register 26865 (June 29, 1990), or any other method approved by the USEPA, the California Air Resources Board, and the SCAQMD~~below~~.~~:

(i) U.S. EPA method cited in 55 Federal Register (FR) 26865, June 29, 1990; or

(ii) SCAQMD's "Protocol for Determination of Volatile Organic Compounds (VOC) Capture Efficiency"; or

(iii) Any other method approved by the U.S. EPA, CARB, and the SCAQMD Executive Officer.

(B) The efficiency of the control device of the emission control system as specified in paragraph (~~c~~d)(~~2~~5) and the VOC content in the control device exhaust gases, measured and calculated as carbon,

shall be determined by U.S. EPA Test Methods 25, 25A, or SCAQMD Method 25.1 (Determination of Total Gaseous Non-Methane Organic Emissions as Carbon) as applicable. U.S. EPA Test Method 18, or CARB Method 422 shall be used to determine emissions of exempt compounds.

(~~5~~6~~8~~) Multiple Test Methods

When more than one test method or set of test methods are specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of the rule.

(~~6~~7~~9~~) All test methods referenced in this section shall be the most recently approved version.

(~~h~~i) Rule 442 Applicability

Any ~~*marine coating operation*~~Marine Coating Operation or Pleasure Craft Coating Operation or any facility which is exempt pursuant to subdivision (j) from all or a portion of the VOC limits of subdivision (d) ~~this rule~~ shall comply with the provisions of Rule 442 - Usage of Solvents.

(~~i~~j) Exemptions

The provisions of this rule shall not apply to:

(1) ~~marine~~Marine coatings applied to interior surfaces of potable water containers.

(2) ~~touch~~Touch-up coatings, as defined by paragraph (c)(~~40~~41) of this rule.

~~(3) marine coatings purchased before January 1, l992, in containers of one quart or less and applied to pleasure craft.~~

~~(4) antifoulant coatings applied to aluminum hulls.~~

(~~5~~3) Any aerosol coating product~~s~~.

(4) The provisions of paragraph (d)(9) shall not apply to Marine or Pleasure Craft coatings with a viscosity of 650 centipoise or greater, as applied.

(5) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to marine coatings that are used for vessels that are intended to submerge to at least 500 feet below the surface of the water provided that the total combined usage of such coatings does not exceed 12 gallons per calendar year and such coatings are in compliance with the VOC limits in the U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair (Surface Coatings).

(Adopted May 1, 1992)(Amended March 8, 1996)
(Amended June 13, 1997)(Amended February 12, 1999)
(Proposed Rescinded Rule 1106.1 October 2, 2015)

Proposed Rescinded Rule 1106.1. PLEASURE CRAFT COATING OPERATIONS

Rescinded by the South Coast Air Quality Management District Board on October 2, 2015.

APPENDIX B

SUSTAINABILITY ADVANTAGES OF ULTRAVIOLET AND ELECTRON BEAM (UV/ EB) CURING

(a UV/EB industry trade association publication)

Sustainability Advantages of Ultraviolet and Electron Beam Curing

By Ronald Golden

Consumers and suppliers of consumer products are taking an increasingly active interest in environmental issues and "sustainable development." A number of RadTech members have been approached by their customers with requests to provide information on the contributions that their products can make to the sustainability initiative. In some cases, sustainability may be considered as a criterion in purchasing decisions.

Sustainability Advantages of Ultraviolet and Electron Beam Curing

Ultraviolet (UV) and electron beam (EB) curing offer several significant "sustainability" features compared to conventional thermal curing processes:

- Reduced use of solvents, lower VOC and HAPS.
- Reduced energy usage.
- Reduced fossil fuel usage.
- Lower greenhouse gas emissions.
- Reduced or eliminated "end-of-pipe" pollution controls.
- Reduced transportation requirements.
- UV and EB inks, coatings and adhesives do not dry out by evaporation…
  - — That makes it easier to recover and recycle printing and coating materials.
  - — That means they require less solvent to clean up.
- UV and EB printed/coated packaging materials are recyclable and repulpable.
- UV/EB curing materials have very low vapor pressures (reduced worker exposure).

These features have been confirmed by studies that consistently demonstrated that UV and EB curing enable reduced energy usage and greenhouse gas emissions, primarily because of their very high applied solids, and because UV or EB energy is used instead of heat for curing. Thermal curing must heat large volumes of air and/or generate radiant infrared energy to:

- Maintain the thermal curing oven at temperature;
- Evaporate and remove water and/or solvent;

TABLE 1

Pressure-sensitive adhesive application parameters

		Technology		
	Units	UV-Cured acResin	Solvent	WB Dispersion
Coating Weight	g/m^2	20	20	20
Coating Solids	%	99	47	55
Line Speed	m/min	200	167	100
Web Width	m/min	0.8	0.8	0.8
Production Rate	m^2/hr	9,600	8,016	4,800
Annual Production Time	hr/yr	8,000	8,000	8,000
Annual Production	m^2/yr	76,800,000	64,128,000	38,400,000

TABLE 2

Electrical energy consumption for web coating pressure-sensitive adhesive

		Technology		
	Units	UV-Cured acResin	Solvent	W/B Dispersion
Electricity Consumption				
Adhesive Preparation	kWh/m²	0.008	0.008	
Coating Application	kWh/m²	0.009	0.011	
Curing	kWh/m²	0.028	0.013	
Finishing	kWh/m²	0.006	0.001	
Solvent Incineration	kWh/m²	0	0.01	
Electricity Subtotal	kWh/m²	0.051	0.04	0.14
Annual Electricity Consumption	kWh	3,916,800	2,757,504	5,376,000
Average Cost of Electricity to Industrial Users[5]	$/kWh	0.062	0.062	0.062
Annual Electricity Cost		242,842	170,965	333,312
Normalized Electricity Cost	$/million m²	3,162	2,666	8,680

- Stay below the lower explosive limit when solvents are present;
- Heat the substrate to the curing temperature; and
- Cure the ink and/or coating.

Moreover, any volatile organic solvent emissions from thermal curing ovens require "end-of-pipe" controls (incineration or solvent capture). Both processes require additional energy input and generate corresponding greenhouse gases.

In contrast, with UV or EB curing processes, reactive monomers replace all or most of the diluting medium and become part of the cured polymer so little if any added volatile solvent or water is needed in the formulation, and effective applied solids can approach 100 percent. Curing is initiated by UV or EB radiation and is almost instantaneous, the substrate remains cool, and air circulation is mainly for equipment and substrate cooling, and evacuation of any volatiles.

Previous analyses comparing UV/EB processes to competitive solvent and waterborne technologies have also shown substantial reductions in pollution and hazardous waste associated with spent solvent-borne materials and cleanup, as well as significant improvements in product performance and productivity, often at an overall lower net cost.[1]

RadTech Sustainability Task Force

RadTech International North America has formed a Sustainability Task Force—comprising a group of raw material suppliers; ink, coatings and adhesives formulators; equipment manufacturers; end-use converters; and packaging manufacturers—to study and quantify these sustainability characteristics. Specifically, the RadTech Sustainability Task Force has established the following goals:

- Develop comprehensive life cycle analyses for all applicable technology options.
- Develop quantitative comparisons of energy, emissions and resource use of UV/EB processes versus conventional thermal curing alternatives.
- Develop a model to help decision-makers to quantify sustainability factors when evaluating technology options.

Pressure-Sensitive Adhesive Case Study

The most complete published quantitative analysis comparing ultraviolet and waterborne technologies was a 1997 study of the conversion to UV curing from thermal curing of waterborne inks and coatings for exterior aluminum can decoration and coating at Coors Brewing Company.[2] A previous *RadTech Report* article[3] reported how the conversion resulted in a reduction of up to 80 percent in total energy usage in Btu, including electrical power and natural gas. Greenhouse gas emissions showed a corresponding reduction of up to 67 percent. Moreover, these benefits were achieved at a lower net cost for the finished product.

The RadTech Sustainability Task Force was seeking a more recent study to develop a similar comparison using current energy and emissions factors. BASF Corporation generously provided RadTech with the raw data from their ecoefficiency evaluation of water-borne, solvent and UV web-applied pressure sensitive adhesives[4] as the

TABLE 3

Natural gas consumption for web coating pressure-sensitive adhesive

	Technology			
	Units	UV-Cured acResin	Solvent	W/B Dispersion
Natural Gas Subtotal	1000 ft3/m^2	0	0.0033	0.003
Curing	1000 ft^3/yr	0	147,494	115,200
Solvent Incineration	1000 ft^3/yr	0	64,128	0
Annual Natural Gas Demand	1000 ft^3	0	211,622	115,200
Normalized Natural Gas Consumption	1000 ft^3/ million m^2	0	3,300	3,000
Natural Gas Price to Industrial Users[6]	$/1000 ft^3	N/A	8.00	8.00
Annual Natural Gas Cost		0	1,693,000	922,000

basis for the following quantitative analysis. Table 1 shows the application parameters. Tables 2, 3 and 4 show a comparison of the energy demand components for each coating technology.

The higher solids of the UV coating also means reduced energy required to transport the coating from the formulator to the application site. Table 4 shows the transportation energy required to deliver enough of each type of coating to cover 76,800,000 square meters at an applied coat weight of 20 g/m^2.

Table 5 shows a comparison of the total energy requirements of each of the three technologies, normalized to Btu/square meter of coated surface. Conversion of electrical energy MWh to Btu is based on an average heat rate of 9.713 million Btu/MWh; conversion of natural gas usage to Btu is based on 1,031 Btu per cubic foot.

On a normalized basis (Btu per square meter of coated substrate) the UV-cured resin requires up to 89 percent less energy, compared to solvent and waterborne systems.

TABLE 4

Transportation energy requirements on an equal coverage basis

	Technology			
	Units	UV-Cured acResin	Solvent	W/B Dispersion
Normalized Annual Coating				
Solids	MT	1,538	1,538	1,538
Liquid Annual Coating				
Volume	MT	1,553	3,272	2,796
Net Truckload	MT	20	20	20
Truckloads/Year		76	160	137
Diesel Fuel Usage*	gal/yr	6,781	14,365	12,275
Energy Consumption**	Million Btu/yr	943	1,997	1,706

*Based on an average 500-mile delivery trip and fuel mileage of 5.7 mpg[7]

**Based on 139,000 Btu per gallon of diesel fuel[8]

Greenhouse Gas Emissions

Both generation of electrical energy and combustion of natural gas generate corresponding greenhouse gas emissions (Table 6).

Factors for conversion of electrical MWh and combustion of various fuels to greenhouse gas emissions are based on data published by the U.S. Energy Information Administration and the U.S. Environmental Protection Agency (EPA).[9] On a normalized basis (MT CO2 per million square meters of coated substrate), the UV-cured resin generates up to 87 percent less carbon dioxide, compared to thermal curing solvent and waterborne systems.

UV-Cured Products Are Recyclable

Trials at Beloit Corporation confirmed that UV/EB inks and coatings repulp easily.[10] Mill scale trials show that UV/EB-coated waste can be incorporated into standard furnish with no detrimental effects on product quality. The study concluded that UV- and EB-printed and coated

TABLE 5

Overall energy requirements on an equal coverage basis

		Technology		
	Units	UV-Cured acResin	Solvent	W/B Dispersion
Electricity Consumption	MWh/yr	3,917	2,758	5,376
Natural Gas-Curing	kft^3/yr	0	147,494	115,200
Natural Gas-VOC Incineration	kft^3/yr	0	64,128	
Transportation	Million Btu/yr	943	1,997	1,706
Total Energy Demand	Million Btu/yr	38,986	246,963	172,695
Normalized Total Annual Energy Demand	$Btu/m^2/yr$	508	3,851	4,497

paper can be recycled into tissue and/or fine paper grades using commercially available equipment.

Moreover, the high gloss and abrasion resistance of UV- and EB-cured coatings in some cases, can enable replacement of laminated structures with printed inks and coatings. Laminated paper and plastics are difficult to recycle due to problems with separating two incompatible types of materials. UV/EB printed inks and coatings break down under recycling process conditions, permitting effective recycling of both paper and plastic structures that formerly were intractable in laminated form.

Summary

In summary, UV and EB curing have numerous "sustainability" characteristics:

- Substantial reductions in energy demand.
- Substantial reductions in fossil fuel usage.
- Substantial reductions in greenhouse gas emissions.
- Reduced transportation costs and emissions.
- Safer workplace.
- Recyclable inks, coatings and product wastes.
- Positive performance advantages and economic returns.

Where Do We Go From Here?

The RadTech Sustainability Task Force has already developed "cradle-to-grave-to-cradle" life cycle analyses for the various coating and printing technologies, including energy usage, carbon footprint, transportation, emissions controls, waste, recyclability and more at each stage of production of raw materials and finished products, as well as the end use of the products and their disposal and recycling. Current plans include working with industry, academic and government partners on demonstration projects to develop additional data and practical insights. The resulting data will be used to develop additional quantitative analyses, as well as a working model for technology comparison, including economic factors. ◗

TABLE 6

Greenhouse gas (CO_2) emissions

		Technology		
	Units	UV-Cured acResin	Solvent	W/B Dispersion
Transportation	MT/yr	70	146	125
Electricity Consumption	MT/yr	2,389	1,682	3,279
Natural Gas	MT/yr	-	11,600	6,315
Total	MT/yr	2,459	13,429	9,719
Normalized Greenhouse Emissions	MT CO_2/ million m^2	32	209	253

References

1. (a) Electric Power Research Institute (EPRI), *UV Curable Coatings for Wood Meet Manufacturer's Challenges,* Report TA-112685 (1999); *www.epri.com*; (b) Commonwealth of Massachusetts Executive Office of Environmental Affairs, Office of Technical Assistance, New Coatings Technologies Provide Big Payoffs For Kidde-Fenwall, Inc., Toxics Use Reduction Case Study No. 43, (1996); *www.magnet.state.ma.us/ota*; (c) Northeast Waste Management Official's Association (NEWMOA), Northeast States for Coordinated Air Use Management (NESCAUM), Wood Furniture Finishing, Ultraviolet Radiation Cured Coatings and Aqueous-Based Coatings, Hussey Seating Company of North Berwick, Maine, Pollution Prevention Case Study (1997); *www.newmoa.com*; (d) Wood Furniture Coatings Case Study, Artistic Finishes, Inc., Roseville, MN, The Minnesota Technical Assistance Program, *www.mntap.umn.edu/paint/Case%20Studies%20article%202.doc*
2. Robert Brady et al., Evaluation of UV-Curable Coatings for Aluminum Can Production, National Industrial Competitiveness through Efficiency, Environment and economics (NICE3) Project #DE-FG48-93R810499, June 9, 1997
3. Ronald Golden, "Low-Emission Technologies: A Path to Greener Industry," *RadTech Report,* May/June 2005, p 14
4. "Measuring Success," Dr. B. Jesse E. Reich et al., *Adhesives & Sealants Industry Magazine*, November, 2006
5. US Energy Information Administration, Electric Power Annual 2006
6. US Energy Information Administration *(http://tonto.eia.doe.gov/dnav/ng/ng_pri_sum_dcu_nus_m.htm)*
7. US Energy Information Administration Annual Energy Outlook 2007 Table D3. Key Results for Transportation Sector Technology Cases; Supplemental Tables to the Annual Energy Outlook 2007, Table 57. Freight Transportation Energy Use *http://www.eia.doe.gov/oiaf/aeo/supplement/pdf/suptab_57.pdf*
8. US Energy Information Administration
9. (a) US Energy Information Administration Energy Emission Coefficients *www.eia.doe.gov/oiaf/1605/factors.html*; Energy Information Administration/Electric Power Annual 2006 *www.eia.doe.gov/cneaf/electricity/epa/epa_sum.html*; (c) USA EPA 2008 Inventory of U.S. Greenhouse Gas Emissions and Sinks *http://www.epa.gov/climatechange/emissions/usinventoryreport.html*
10. David J. Korn, "Recyclability of UV and EB Printed and Coated Paper," *RadTech Report,* May/June 2005, p. 47

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BOARD MEETING DATE: October 2, 2015 AGENDA NO. 35

PROPOSAL: Recognize Revenue to Develop and Demonstrate Catenary Zero-Emission Goods Movement System

SYNOPSIS: The Board previously awarded a $13.5 million contract to Siemens Industry Inc. to develop and demonstrate the overhead catenary system technology. The Board recognized $11 million in anticipated revenue from funding partners and transferred $13.5 million from the Clean Fuels Fund (31) into the Advanced Technology Goods Movement Fund (61) to cover the entire project including SCAQMD's $2.5 million cost-share. To date, $5 million has been received from funding partners. This action is to recognize $2 million in cofunding revenue from the Los Angeles County Metropolitan Transportation Authority.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:
Recognize, upon receipt, up to $2 million in revenue from the Los Angeles County Metropolitan Transportation Authority (Metro) into the Clean Fuels Fund (31) as cofunding for the Siemens project to develop and demonstrate overhead catenary system technology.

Barry R. Wallerstein, D.Env.
Executive Officer

MMM:FM:NB:JFI

Background
The SCAQMD has identified the development and deployment of zero-emission goods movement transportation systems as one of the agency's top priorities in order to attain federal air quality standards. On April 5, 2013, the Board awarded a $13.5 million contract to Siemens Industry Inc. to construct a one-mile catenary system and develop and demonstrate a diesel catenary hybrid electric class 8 truck. The Board recognized $11 million in anticipated revenue from funding partners for the Siemens contract and

transferred $13.5 million from the Clean Fuels Fund (31) into the Advanced Technology Goods Movement Fund (61) for SCAQMD's $2.5 million cost-share portion with the balance as a loan until receipt of revenue from other funding partners was received.

On February 7, 2014, the Board removed a contingency and authorized executing the contract with Siemens, noting that if funding from other partners could not be secured, staff would update the Board with alternative funding recommendations, including but not limited to, increasing SCAQMD's cost-share and/or recognizing support from other organizations. Staff has been notified by the Port of Los Angeles (POLA) that its $2 million in cofunding is not available but that the additional $4 million from the China Shipping Settlement funds is still under consideration.

Proposal

In April 2014, the Los Angeles County Metropolitan Transportation Authority (Metro) Board authorized $2 million in funding for SCAQMD's overhead catenary system project. Staff is in the process of finalizing an agreement with Metro to transfer the monies to SCAQMD. This action is to recognize, upon receipt, up to $2 million in revenue from Metro as cofunding for the Siemens project to develop and demonstrate the overhead catenary system technology.

In addition, staff has reached an agreement with the Natural Resources Defense Council (NRDC) on behalf of the China Shipping litigants and the Los Angeles City Attorney to secure $4 million in cofunding from the China Shipping Settlement Fund. The agreement, however, must still be approved by the POLA Board of Harbor Commissioners. Staff will continue to work with the NRDC and the POLA to secure this cofunding revenue.

Sole Source Justification

Section VIII.B.2 of the Procurement Policy and Procedure identifies four major provisions under which a sole source award may be justified when project funding does not come from federal monies. For the Siemens contract, a sole source recommendation is made under provision B.2.d.: Other circumstances exist which in the determination of the Executive Officer require such waiver in the best interest of the SCAQMD. Specifically, these circumstances are: B.2.d.(1): Project involving cost sharing by multiple sponsors. The multiple sponsors contributing to the Siemens project include CEC and anticipated cofunding from other entities, pending decisions by their governing boards. Additional circumstances are B.2.c.(1): the unique experience and capabilities of the proposed contractor or contractor team; and B.2.c.(2) the project involves the use of proprietary technology.

Benefits to SCAQMD
SCAQMD's Clean Fuels Program has been active in funding the development and demonstration of zero-emission and near zero-emission electric transportation and goods movement technologies. The SCAQMD has also supported a number of activities directed to the commercialization of electric vehicles and associated infrastructure. This proposed project is included in the *Technology Advancement Office Clean Fuels Program 2015 Plan Update* under "Electric/Hybrid Technologies & Infrastructure."

Resource Impacts
The total cost for the Siemens contract shall not exceed $13.5 million. SCAQMD's previously approved cost-share is $2.5 million, which was transferred from the Clean Fuels Fund (31) to the Advanced Technology Goods Movement Fund (61). In addition, $5 million has already been received from funding partners. This proposed request is to recognize $2 million from Metro.

The funding sources and amounts for this project are identified in the table below:

Funding Source	**Amount**	**Percent**
CEC	$3,000,000	22%
Port of Long Beach	$2,000,000	15%
SCAQMD *(approved)*	$2,500,000	18%
Metro	$2,000,000	15%
China Shipping Settlement *(pending)*	$4,000,000*	44%
Total	**$13,500,000**	**100%**

*The $4 million from China Shipping Settlement is not yet approved by the Harbor Commissioner; all other funds are approved.

Sufficient funds for the proposed project have been transferred from the Clean Fuels Fund (31) into the Advanced Technology Goods Movement Fund (61) as part of the previous Board action. The Clean Fuels Fund (31) was established as a special revenue fund resulting from the state-mandated Clean Fuels Program. The Clean Fuels Program, under Health and Safety Code Sections 40448.5 and 40512 and Vehicle Code Section 9250.11, establishes mechanisms to collect revenues from mobile sources to support projects to increase the utilization of clean fuels, including the development of the necessary advanced enabling technologies. Funds collected from motor vehicles are restricted, by statute, to be used for projects and program activities related to mobile sources that support the objectives of the Clean Fuels Program. The Advanced Technology Goods Movement Fund (61) was established to facilitate the development and deployment of low- and zero-emission goods movement technologies. When funds are received from the Ports, they will be recognized into the Advanced Technology Goods Movement Fund (61) and at the end of the project unused funds will be returned to the Clean Fuels Fund (31).