

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT



Appendix VI

Compliance with Other Clean Air Act Requirements

2016 AIR QUALITY MANAGEMENT PLAN



March 2017

FINAL 2016 AQMP APPENDIX VI

COMPLIANCE WITH OTHER CLEAN AIR ACT REQUIREMENTS

MARCH 2017

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Federal Clean Air Act Requirements for Nonattainment Areas

For areas such as the Basin that are classified nonattainment for the PM_{2.5} and ozone NAAQS, Section 172 of Subpart 1 of the Clean Air Act (CAA) applies. Section 172(c)(1) of the CAA requires nonattainment areas to provide for implementation of all Reasonably Available Control Measures (RACM) as expeditiously as possible, including the adoption of reasonably available control technology (RACT). Section 172(c)(2) requires that nonattainment areas demonstrate Reasonable Further Progress (RFP). A comprehensive emission inventory is required under Section 172(c)(3). Nonattainment area SIPs must include control strategies (Section 172(c)(6)), contingency measures (Section 172(c)(9)), and provisions for making demonstrations of conformity (Section 176(c)). However, EPA's March 2015 ozone implementation rule provides that "extreme" areas with approved Section 182(e)(5) commitments only had to submit contingency measures under three years before the attainment date, and not the general CAA contingency measures. Section 172(c)(5) requires the implementation of a new source review program including the use of "lowest achievable emission rate" for major sources referred to under State law as "Best Available Control Technology" (BACT) for contributors to PM_{2.5} and precursor emissions (i.e., precursors of secondary particulates).

Subpart 2 provides additional provisions for ozone nonattainment areas. An attainment demonstration is required under Section 182(c)(2)(A) for areas classified as "serious" or above. Areas classified as "severe" or "extreme" nonattainment are required to demonstrate that sufficient transportation control strategies and transportation control measures have been identified to offset growth in emissions due to growth in vehicle miles traveled (VMT) under Section 182(d)(1)(A). Section 182(g) requires that each nonattainment area (other than an area classified as "marginal" or "moderate") achieve specific emission reduction targets in the applicable milestone years.

Additional provisions for PM nonattainment areas are listed in Subpart 4. Section 189 requires states with nonattainment areas to submit an attainment demonstration. Section 189(c) requires the submission of quantitative milestones every three years until the attainment date. Under Section 189(e), control requirements that apply to PM_{2.5} are also applicable to the precursors of PM, namely NO_x, SO₂, VOC and ammonia. Best Available Control Measures (BACM) are required for "serious" nonattainment areas under Section 189(b)(1)(B).

Chapter 6 describes how the 2016 AQMP demonstrates compliance with the federal CAA requirements (Tables 6-1 and 6-2). Specifically, appendices VI-A through G present the analyses / demonstrations that fulfill the CAA statutory requirements as listed in Table VI-1:

TABLE VI-1
Description of Appendices VI-A through VI-G

Appendix	Description
Appendix VI-A	The reasonably available control measures / reasonably available control technology (RACM/RACT) demonstration and the best available control measures / best available control technology (BACM/BACT) demonstration
Appendix VI-B	Impracticability demonstration for request for “serious” classification for 2012 annual PM2.5 standard
Appendix VI-C	RFP and milestone years
Appendix VI-D	General conformity and transportation conformity budget
Appendix VI-E	VMT offset demonstration
Appendix VI-F	PM precursor requirements
Appendix VI-G	New source review

**FINAL 2016 AQMP
APPENDIX VI-A**

**REASONABLY AVAILABLE CONTROL MEASURES
(RACM) / BEST AVAILABLE CONTROL MEASURES (BACM)
DEMONSTRATION**

MARCH 2017

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Introduction

The South Coast Air Basin (Basin) was classified as “moderate” nonattainment for the 2012 PM_{2.5} National Ambient Air Quality Standard (NAAQS) of 12 µg/m³ annual average on April 15, 2015. The federal Clean Air Act (CAA) Section 189(a)(2)(B) requires states to submit an attainment plan that meets “moderate” area plan requirements no later than 18 months after designation to address the attainment strategies for the 2012 annual PM_{2.5} standard. A Reasonably Available Control Measures (RACM) analysis is required as part of the attainment plan for nonattainment areas. The CAA, Section 172(c)(1), sets the overall framework for the RACM analysis. The CAA requires the nonattainment air districts to:

“Provide for the implementation of all reasonably available control measures as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology) and shall provide for attainment of the national primary ambient air quality standards.”

The U.S. EPA provided further guidance on RACM in the preamble and the final “Clean Air Fine Particle Implementation Rule” to implement the 1997 PM_{2.5} NAAQS which were published in the Federal Register in November 1, 2005 and April 25, 2007, respectively.^{1, 2} The U.S. EPA’s long-standing interpretation of the RACM provision stated in the 1997 PM_{2.5} Implementation Rule is that nonattainment air districts should consider all candidate measures that are available and technologically and economically feasible to implement within the nonattainment areas, including any measures that have been suggested; however, districts are not obligated to adopt all measures, but should demonstrate that there are no additional reasonable measures available that would advance the attainment date by at least one year or contribute to reasonable further progress (RFP) for the area. The PM_{2.5} Implementation Rule also requires that air districts establish RACM/RACT emission standards taking into consideration the condensable fraction of direct PM_{2.5} emissions after January 1, 2011. The SCAQMD has historically included condensable particulate emissions in its definition of particulate emissions. The SCAQMD’s Protocol requires measurement of both condensable and filterable PM in accordance with SCAQMD/EPA Test Methods. Hence, condensable particulates are already incorporated as part of the PM_{2.5} inventory, and are included in the SCAQMD’s evaluation of emission reduction opportunities for directly emitted PM_{2.5}.

In addition, the U.S. EPA recognizes that each nonattainment area has its own profile of emission sources, and thus does not require specific RACM/RACT to be implemented in every nonattainment area and does not include a specific source size threshold for the RACM/RACT analysis.

In regards to economic feasibility, the U.S. EPA did not propose a fixed dollar per ton cost threshold, but recommended that air districts include health benefits in the cost analysis. As indicated in the preamble of the 1997 PM_{2.5} Implementation Rule:

“In regard to economic feasibility, U.S. EPA is not proposing a fixed dollar per ton cost threshold for RACM, just as it is not doing so for RACT...Where the severity of the nonattainment problem makes reductions more imperative or where essential reductions are more difficult to achieve, the acceptable cost of achieving those reductions could increase. In addition, we believe that in determining what are economically feasible emission reduction levels, the States should also consider the collective health benefits that can be realized in the area due to projected improvements.”

States have until 2021 to meet the new 2012 annual PM_{2.5} standard for “moderate” nonattainment areas, and if necessary, up to four additional years (2025), if the area is re-classified as “serious” nonattainment. SCAQMD’s modeling analysis, as discussed in more detail in Chapter 5 and Appendix V, demonstrates that the SCAQMD cannot practically attain the 2012 annual PM_{2.5} standard by December 31, 2021. Acknowledging the challenges in meeting the standard, including the feasibility of proposed measures, uncertainties in drought conditions, and the potential inability to credit all ozone strategy reductions towards PM_{2.5} attainment if approved under CAA Section 182(e)(5), SCAQMD is requesting a voluntary bump up to the “serious” category. Modeling analysis supporting the request for reclassification is summarized in Appendices V and VI. This action will necessitate the development of a “serious” area SIP for the annual PM_{2.5} NAAQS, which is included as a component of the 2016 AQMP. An attainment demonstration presenting how the Basin will achieve the 2012 annual PM_{2.5} NAAQS as early as practicable but no later than December 31, 2025 can be found in Chapter 5 and Appendix V. A BACM/BACT demonstration is included in the following sections of this Appendix.

Regarding the 2006 24-Hour PM_{2.5} NAAQS, the Basin was designated as “moderate” nonattainment on December 14, 2009, with an attainment date of December 31, 2015. In accordance with the April 25, 2014 final rule *“Identification of Nonattainment Classification and Deadlines for Submission of State Implementation Plan (SIP) Provisions for the 1997 Fine Particle (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) and 2006 PM_{2.5} NAAQS”* (79 FR 31566), areas classified as “moderate” nonattainment or higher have to develop and submit a demonstration that their current air pollution rules fulfill the 24-hour PM_{2.5} RACT assessment. In February 2015, a RACT assessment update was submitted to U.S. EPA as a supplement to the 2012 AQMP.

In July 2015, the SCAQMD submitted a formal request to the U.S. EPA to reclassify the Basin as a “serious” nonattainment area for the 2006 24-hour PM_{2.5} NAAQS, based on the monitoring data indicating attainment is not practicable by December 31, 2015. Subsequently, EPA reclassified the Basin as “serious” nonattainment for the 2006 24-hour standard effective February 12, 2016 with an attainment date of December 31, 2019. Table VI-A-1 provides a list of nonattainment areas in California and the attainment years for meeting the standards.

TABLE VI-A-1

PM2.5 NAAQS Non-Attainment Status and Attainment Deadline

NONATTAINMENT AREA	2006 24-hour PM2.5 STANDARD		2012 Annual PM2.5 STANDARD	
	Classification	Attainment Year	Classification	Attainment Year
Los Angeles South Coast Air Basin, CA	Serious	2019	Moderate	2021
San Joaquin Valley, CA	Serious	2019	Moderate	2021
Imperial County, CA	Moderate	2015	Moderate	2021
Plumas County, CA	N/A	N/A	Moderate	2021
Chico, CA	Moderate	2015	N/A	N/A
Sacramento, CA	Moderate	2015	N/A	N/A
San Francisco Bay Area, CA	Moderate	2015	N/A	N/A

Particulate Matter (PM_{2.5}) Nonattainment Areas, as of 1/30/2015, are posted in www.epa.gov/airquality/greenbook/rnc.html.

Under CAA Subpart 4 Section 189(b)(1)(B), a “serious” nonattainment area attainment plan has to demonstrate provisions to assure that the Best Available Control Measures (BACM), including Best Available Control Technology (BACT) for stationary sources is implemented no later than four years after the designation (or reclassification) with the exception of source categories that U.S. EPA has determined to not contribute significantly to the levels that exceed the standard in the area. In the “*Addendum to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990*” issued by U.S. EPA in 1994 (59 FR 41998, 42010), BACM is defined as:

“The maximum degree of emission reduction achievable from a source or source category which is determined on a case-by-case basis, considering energy, economic and environmental impacts and other costs.”

The SCAQMD has prepared comparative analyses to evaluate the technical and economic feasibility of potential BACM and to identify feasible measures. The results of this work are provided in the following sections of this Appendix. Based on the comparative analysis and technological and economic feasibility, the SCAQMD has made certain conclusions regarding BACM. When the SCAQMD’s rule or level of control meets the BACM/BACT definition, no further analysis was required. When a regulation or control measure from another air basin or from EPA guidance was identified as more stringent than the SCAQMD’s current regulation, the measure was analyzed for technological and economic feasibility. The SCAQMD is not required to adopt a measure just because it was adopted in another region, but the SCAQMD must provide the rationale for rejecting such measures. Measures that are found to be feasible are added to the 2016 AQMP as control measures listed in Chapter 4.

With respect to the ozone NAAQS, the U.S. EPA set the 8-hour ozone standard at 0.08 parts per million (ppm) in July 1997, calculated as the annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years. On March 12, 2008, the U.S. EPA strengthened its ground-level 8-hour ozone standard from 0.08 ppm to 0.075 ppm. In May 2012, the U.S. EPA classified two areas in the State of California, the South Coast Basin and the San Joaquin Valley, as “extreme” nonattainment areas for the 2008 8-hour ozone standard.³ The attainment dates for the Basin for the 1997 and 2008 ozone standards are June 15, 2024 and July 20, 2032, respectively. Table VI-A-2 shows the classifications and attainment dates for several nonattainment areas in the nation. While an “extreme” nonattainment area has 20 years from the date of designation to reach attainment, other areas that are classified as “severe”, “serious”, “moderate,” and “marginal” must reach attainment in 15 years, 9 years, 6 years and 3 years after the date of designation, respectively.⁴

TABLE VI-A-2
8-Hour Ozone NAAQS State Designation for Moderate or Above Nonattainment Areas

NONATTAINMENT AREA	1997 OZONE STANDARD		2008 OZONE STANDARD	
	Classification	Attainment Year	Classification	Attainment Year
South Coast Air Basin, CA	Extreme	2024	Extreme	2032
San Joaquin Valley, CA	Extreme	2024	Extreme	2032
Los Angeles-San Bernardino Counties (West Mojave Desert), CA	Severe-15	2019	Severe-15	2027
Riverside County (Coachella Valley), CA	Severe-15	2019	Severe-15	2027
Sacramento Metro, CA	Severe-15	2019	Severe-15	2027
Houston-Galveston-Brazoria, TX	Severe-15	2019	Marginal	2015
Ventura County, CA	Serious	2013	Serious	2021
Dallas-Fort Worth, TX	Serious	2013	Moderate	2018
Baltimore, MD	Serious	2013	Moderate	2018
New York Metropolitan Area	Moderate	2010	Moderate*	2018

Note: Classifications of 8-Hour Ozone Nonattainment Areas, <http://www3.epa.gov/airquality/greenbk/hindex.html>, posted on 1/30/2015.

* Based on the State’s request to be reclassified as a “moderate” nonattainment area

In addition to BACM/BACT requirements for PM2.5 “serious” nonattainment area, a RACM/RACT demonstration is required for ozone nonattainment areas. In the final “Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements” published in the Federal Register on March 6, 2015 (80 FR 12263), the U.S. EPA states that the nonattainment air districts should consider all available measures, including those being implemented in other areas, and that a state must adopt measures for an area only if those measures are economically and technologically feasible and will advance the attainment date or are necessary for RFP. On June 6, 2014, the SCAQMD adopted the RACT Demonstration for the 2008 8-hour ozone NAAQS, as a component of the 2016 AQMP.⁵

The RACT Demonstration provides a comprehensive assessment of current SCAQMD rules and regulations. The analysis indicated that SCAQMD rules and regulations closely matched those of the other agencies, and identified eight SCAQMD rules covering six source categories that could be further evaluated as areas for improvements in the 2016 AQMP RACM analysis and control measure development.

The objective of this Appendix is to demonstrate that the SCAQMD has conducted thorough a RACM/RACT and BACM/BACT analysis for the 2012 annual PM_{2.5} standard, a RACM/RACT analysis for the 2008 8-hour ozone standard and a BACM/BACT analysis for the 2006 24-hour PM_{2.5} standard to meet the requirements of the CAA consistent with U.S. EPA guidance. A 7-step analysis was conducted to identify potential control measures from various sources including an Air Quality Technology Symposium, preceding RACT/BACT analysis, EPA Technical Support Documents, other districts' control measures, control measures beyond RACM in the 2012 AQMP, EPA Menu of Control Measures, and EPA guidance documents. The potential control measures are then evaluated in the Control Measure Assessment section for feasibility. The SCAQMD's goal is to develop and incorporate all feasible control measures to meet the requirements of the CAA as expeditiously as possible. Staff commits to refine the analysis of emission inventories, emission reductions, and cost-effectiveness during the rule development process. In addition, staff commits to monitor the rule development in other air districts and conduct further analysis if necessary, and has developed Control Measure MCS-02 – Application of All Feasible Measures Assessment to facilitate this activity.

The scope of this analysis includes, but is not limited to, attainment strategies for stationary and area sources, the rules and regulations of the air districts responsible for the nonattainment areas listed in Table VI-A-1 and Table VI-A-2, and potential control measures suggested by the U.S. EPA, CARB, Advisory Committee members, technical experts in air pollution control, as well as the public and a variety of stakeholders. The rules and regulations evaluated in this analysis primarily apply to the SCAQMD jurisdiction, including the SCAB and the Coachella Valley. The RACM/BACM analysis for Transportation Control Measures conducted by SCAG is shown in Appendix IV-C and the RACM/BACM analysis for mobile sources conducted by CARB is included in Attachment VI-A-3 of this Appendix. Details of the control measures, emission reductions, cost effectiveness, prioritization and implementation schedules are discussed in Chapter 4 and Appendix IV.

List of Emission Sources

A detailed inventory of emissions sources that emit VOC, NO_x, SO_x, NH₃, and direct PM_{2.5} has been prepared for the 2016 AQMP. An up-to-date and comprehensive emission inventory is essential to develop control measures that effectively reduce air pollution. Details on the methodology and development of the emission inventory are discussed in Chapter 3 and Appendix III. The 2012 annual average emission inventory, segregated by the 3-digit Equipment Identification Code (EIC), is presented in Table VI-A-3. A total of 75 major source categories are found in the base year emission inventory.

Table VI-A-3

List of Annual Average Emission Source Categories in 2012, tons per day

EIC	Description	VOC	NOx	SOx	PM2.5	NH3
10	Electric Utilities	1.06	0.44	0.32	1.20	1.99
20	Cogeneration	0.11	0.01	0.01	0.14	0.32
30	Oil and Gas Production (Combustion)	0.11	0.68	0.01	0.10	0.22
40	Petroleum Refining (Combustion)	1.01	0.00	0.00	1.49	0.91
50	Manufacturing and Industrial	3.87	11.31	0.24	1.09	2.19
52	Food and Agricultural Processing	0.03	0.16	0.00	0.03	0.04
60	Service and Commercial	4.85	11.79	1.15	1.39	3.28
99	Other (Fuel Combustion)	0.29	3.28	0.13	0.19	0.02
110	Sewage Treatment	0.34	0.01	0.03	0.00	0.23
120	Landfills	8.38	0.59	0.32	0.13	3.79
130	Incineration	0.07	1.42	0.13	0.07	0.31
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00
199	Other (Water Disposal)	3.93	0.00	0.00	0.00	0.95
210	Laundering	0.13	0.00	0.00	0.00	0.00
220	Degreasing	10.11	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	18.23	0.02	0.00	1.37	0.12
240	Printing	1.51	0.00	0.00	0.00	0.04
250	Adhesives and Sealants	3.43	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.69	0.04	0.00	0.04	0.26
310	Oil and Gas Production	2.31	0.02	0.06	0.00	0.00
320	Petroleum Refining	4.55	0.25	0.36	1.50	0.23
330	Petroleum Marketing	22.1	0.01	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.08	0.00	0.00	0.00	0.00
410	Chemical	4.91	0.01	0.01	0.40	0.02
420	Food and Agriculture	1.15	0.00	0.01	0.10	0.02
430	Mineral Processes	0.65	0.01	0.00	2.70	0.12
440	Metal Processes	0.12	0.04	0.09	0.20	0.01
450	Wood and Paper	0.24	0.00	0.00	2.35	0.00
460	Glass and Related Products	0.00	0.00	0.00	0.10	0.00
470	Electronics	0.02	0.00	0.00	0.01	0.00
499	Other (Industrial Processes)	3.04	0.02	0.00	0.47	8.57
510	Consumer Products	86.51	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	13.31	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.32	0.00	0.00	0.00	1.34
540	Asphalt Paving/Roofing	0.71	0.00	0.00	0.02	0.00
610	Residential Fuel Combustion	8.65	20.43	0.50	7.22	0.11
620	Farming Operations	2.46	0.00	0.00	0.21	12.69
630	Construction and Demolition	0.00	0.00	0.00	1.70	0.00

Table VI-A-3 (CONCLUDED)

List of Annual Average Emission Source Categories in 2012, tons per day

EIC	Description	VOC	NOx	SOx	PM2.5	NH3
640	Paved Road Dust	0.00	0.00	0.00	7.73	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.58	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.26	0.00
660	Fires	0.23	0.08	0.00	0.41	0.00
670	Waste Burning and Disposal	0.22	0.10	0.01	0.29	0.03
690	Cooking	1.73	0.00	0.00	10.39	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	25.03
	RECLAIM		19.06	6.87		
710	Light Duty Passenger Auto (LDA)	65.00	47.49	0.82	4.71	7.68
722	Light Duty Trucks 1 (T1)	17.78	11.83	0.09	0.55	0.96
723	Light Duty Trucks 2 (T2)	25.52	29.83	0.40	1.67	4.12
724	Medium Duty Trucks (T3)	21.20	30.49	0.39	1.26	4.34
732	Light Heavy Duty Gas Trucks 1 (T4)	5.43	7.66	0.04	0.21	0.42
733	Light Heavy Duty Gas Trucks 2 (T5)	0.77	1.18	0.01	0.04	0.07
734	Medium Heavy Duty Gas Trucks (T6)	1.58	2.60	0.01	0.06	0.04
736	Heavy Heavy Duty Gas Trucks (HHD)	0.32	0.57	0.00	0.00	0.00
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.40	16.13	0.01	0.19	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.14	5.46	0.01	0.07	0.00
744	Medium Heavy Duty Diesels Truck (T6)	2.02	37.01	0.05	1.66	0.13
746	Heavy Heavy Duty Diesel Trucks (HHD)	5.47	96.36	0.14	3.09	0.22
750	Motorcycles (MCY)	9.35	2.31	0.00	0.02	0.01
760	Diesel Urban Buses (UB)	1.20	19.64	0.01	0.58	0.02
762	Gas Urban Buses (UB)	0.44	0.78	0.00	0.01	0.01
771	Gas School Buses (SB)	0.11	0.12	0.00	0.02	0.00
772	Diesel School Buses (SB)	0.16	2.25	0.00	0.13	0.00
777	Gas Other Buses (OB)	0.20	0.58	0.00	0.02	0.02
778	Motor Coaches	0.09	1.56	0.00	0.04	0.00
779	Diesel Other Buses (OB)	0.10	1.63	0.00	0.06	0.01
780	Motor Homes (MH)	0.24	1.15	0.01	0.05	0.02
810	Aircraft	3.30	13.78	1.47	0.60	0.00
820	Trains	1.23	19.72	0.01	0.39	0.01
833	Ocean Going Vessels	1.75	30.14	4.57	0.92	0.03
835	Commercial Harbor Crafts	1.15	15.84	0.00	0.68	0.00
840	Recreational Boats	30.44	5.69	0.01	1.42	0.01
850	Off-Road Recreation Vehicles	2.60	0.05	0.00	0.01	0.00
860	Off-Road Equipment	51.46	65.63	0.07	3.93	0.09
870	Farm Equipment	0.68	2.59	0.00	0.15	0.00
890	Fuel Storage and Handling	7.50	0.00	0.00	0.00	0.00
	Total	470	540	18.4	66.4	81.1

RACT Update

The CAA, Section 172(c)(1) and Section 182, require nonattainment areas for ozone that are designated as “moderate” nonattainment or above to adopt and maintain RACT rules for source categories emitting ozone precursors (VOCs and NOx) for which the U.S. EPA has issued a Control Techniques Guidelines (CTGs) document. In addition, such areas are required to adopt and maintain RACT rules for all other major stationary sources of VOCs and NOx (Section 182(b)(2)). Nonattainment areas classified as “serious”, “severe”, or “extreme” must adopt control measures above and beyond the minimum RACT levels. The U.S. EPA defines RACT as the lowest level of control specifically designed for stationary sources:

“Lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.”

In July 2014, the SCAQMD submitted a RACT SIP update to the U.S. EPA as a component of the 2016 AQMP with respect to the 2008 8-hour ozone NAAQS. The Ozone RACT analysis is built upon the 2007 and 2012 RACM/RACT assessments and focuses on recently adopted rules and regulations by other agencies in California and the nation.^{6,7} The 2014 RACT analysis identified eight SCAQMD rules that have potential differences with the companion rules of other California agencies. An initial assessment was completed and two rules were identified that may need to be updated. Amendment of these two rules were further evaluated.

In accordance with the April 25, 2014 final rule *“Identification of Nonattainment Classification and Deadlines for Submission of State Implementation Plan (SIP) Provisions for the 1997 Fine Particle (PM2.5) National Ambient Air Quality Standard (NAAQS) and 2006 PM2.5 NAAQS,”* (79 FR 31566), areas classified as “moderate” nonattainment or above are required to develop and submit a demonstration that their current air pollution rules fulfill the 24-hour PM2.5 RACT assessment. In February 2015, a RACT assessment update was submitted as a supplement to the 2012 AQMP.

As part of the attainment plan requirement for the 2012 annual PM2.5 NAAQS, a RACT analysis update – containing up-to-date information of pending items from the previous RACM/RACT demonstration and the evaluation of recently adopted/amended rules in other California air districts – was developed for direct PM2.5 and PM2.5 precursors. It is important to note that no additional CTGs or Alternative Control Techniques (ACTs) have been released since the 2012 evaluation. Table VI-A-4 provides an updated brief discussion of the rules identified for further evaluation in the preceding demonstrations. Several SCAQMD rules have been amended to address the identified issue. This analysis updates the preceding RACM/RACT analyses. SCAQMD will be submitting the 2015 RECLAIM amendments to U.S. EPA providing necessary data and demonstration to satisfy RACT requirements.

TABLE VI-A-4
Outstanding Rule Evaluations

SCAQMD Rule(s)	Status
223	SJVAPCD Rule 4570 is more stringent regarding applicability than Rule 223 (i.e., applies to smaller facilities) for milk cows (1,000 milk cows in SCAQMD vs. 500 milk cows in SJVAPCD), and for chickens and ducks (650,000 birds in SCAQMD vs. 400,000 birds in SJVAPCD). Staff evaluated the feasibility and effectiveness of extending rule applicability to dairies and certain poultry facilities using a lower size threshold, and the assessment can be found in the Control Measure Assessment section of this Appendix.
462	Rule 462 controls emissions of volatile organic compounds (VOC) from facilities that load organic liquids. It is more stringent than the CTG and meets the core requirements for RACT but is not as stringent as BAAQMD Rule 8-33 with respect to the emissions limit for Class A facilities. SCAQMD staff evaluated the rule for potential emission reductions as part of the 2016 AQMP control development, and the assessment can be found in the Control Measure Assessment section of this Appendix.
1106	Rule 1106 regulates marine and pleasure craft coating operations. It does not meet the U.S. EPA CTG for one coating category – solvent based inorganic zinc. This type of coating is not used in major source facilities subject to Rule 1106 in the Basin.
1112/2002	BAAQMD, Regulation 9, Rule 13 (Adopted 9/17/12) controls emissions from the manufacture of Portland cement. The most recent RECLAIM amendment (version 12/2015) lowered the NO _x emission limit for cement kilns from 2.73 to 0.5 lbs per ton clinker, which is more stringent than BAAQMD Regulation 9, Rule 13 (0.5 vs. 2.3 lbs per ton of clinker). At present, there is no operating Portland cement plant in SCAQMD. Any new facility will be subject to BARCT, which is 0.5 lbs per ton of clinker.
1118/1150.1	Rule 1118 controls and minimizes flaring and flaring related emissions from refineries. It was determined to be RACT from the 2007 SIP. SJVAPCD Rule 4311 (exempting municipal landfills which is regulated under SCAQMD Rule 1150.1) applies to other sources > 10 tons per year (TPY). SCAQMD has a small inventory of flare emissions from sources other than refineries and landfills. According to 2012 AER reports, flare emissions from oil and gas production and wastewater treatment plants result in 2.8 and 5.6 TPY of VOC, respectively. SCAQMD staff evaluated the rule for potential emission reductions as part of the 2016 AQMP control development, and the assessment can be found in the Control Measure Assessment section of this Appendix. Further emission reductions are proposed through CMB-03, refer to Chapter 4 and Appendix IV-A for details.

TABLE VI-A-4 (CONCLUDED)
Outstanding Rule Evaluations

SCAQMD Rule(s)	Status
1128	Rule 1128 control emissions from paper, fabric and film coating operations. It is not as stringent as the 2007 EPA CTGs (CTG 80 g/L vs. Rule 1128 265 g/L) for facilities emitting > 15 lbs/day and coating lines emitting > 25 TPY. To the best of staff's knowledge, no facilities exceed the CTG applicable threshold (25 TPY of VOC per coating line) in the Basin. In addition, Rule 1128 does not have a trigger for when it is considered implementable. Instead, the rule pertains to all paper, fabric, and film coating operations. Currently, approximately 190 facilities are subject to Rule 1128, out of which 21 are major source facilities. Rule 1128 covers more sources / facilities regardless of potential emission level and therefore in general provides RACT-level of control for this source category.
1130	Rule 1130 was amended in May 2014 to reduce fountain solution VOC content to between 16–85 g/l with optional control device efficiency of 90–95%. The rule meets current CTG specifications and achieves RACT equivalency.
1148.1/1173	VCAPCD's Rule 71.5 (Adopted 12/13/94) controls reactive organic compound (ROC) emissions from glycol dehydrators used in natural gas dehydration through condenser/vapor disposal, flare/incinerator, or emission control systems that controls glycol regenerator vent ROC emissions by at least 95%. SCAQMD emissions from glycol dehydrators are regulated under Rules 1148.1 (Oil and Gas Production Wells). The 95% control efficiency in Rule 1148.1 is as stringent as VCAPCD Rule 71.5. VOC leaks and releases from components at petroleum facilities are regulated under Rule 1173. Both Rule 1148.1 and Rule 1173 were determined to fulfill RACT requirements by the U.S. EPA in August 2011 ⁵ and March 2010 ⁶ , respectively.

To cover the development of rules and regulations beyond those already included in the 2015 RACT supplement, staff has evaluated the recent regulatory actions in San Joaquin Valley Air Pollution Control District (SJVAPCD), Imperial County Air Pollution Control District (ICAPCD), Sacramento Metropolitan Air Quality Management District (SMAQMD), Bay Area Air Quality Management District (BAAQMD), and Ventura County Air Pollution Control District (VCAPCD). In 2015, the following rules have been amended/adopted in the aforementioned air districts:

SJVAPCD Rule 4905 Natural Gas-Fired, Fan-Type Central Furnaces

Evaluation: SJVAPCD Rule 4905 was amended on January 22, 2015 to lower the NO_x emission limit for residential units from 40 ng/J to 14 ng/J and to expand the rule applicability to commercial buildings and

manufactured homes. In SCAQMD, NO_x emissions from natural gas-fired, fan-type central furnaces in commercial and residential units are regulated by Rule 1111 (amended September 5, 2014). Rule 1111 is not subject to RACT because it is applicable to sources that are too small to exceed the major source threshold of 100 tpy for the 2012 annual PM NAAQS RACT analysis. Nonetheless, the requirements in SCAQMD Rule 1111 are generally as stringent as those in SJVAPCD Rule 4905.

SMAQMD Rule 442 Architectural Coatings

Evaluation: SMAQMD Rule 442 was amended on September 24, 2015 to incorporate the requirements of the Suggested Control Measure (SCM) adopted by CARB in 2007. In SCAQMD, VOC emissions from architectural coatings are regulated by Rule 1113 (amended September 6, 2013). Rule 1113 contains limits that, for some coating categories, are more stringent than the SCM. The requirements in SCAQMD Rule 1113 are generally as stringent as, or more stringent than, those in SMAQMD Rule 442.

VCAPCD Rule 74.33 Liquefied Petroleum Gas Transfer or Dispensing

Evaluation: On January 13, 2015, VCAPCD Rule 74.33 was amended to require that all containers subject to the rule have either a Low Emission Fixed Liquid Level Gauges (FLLG), which has a smaller orifice (0.025 inches instead of 0.055 inches) or transfer LPG using a fill by weight technique or alternative technology that monitors the maximum fill level without the use of an fluid liquid level gauges. In the SCAQMD, VOC emissions associated with the transfer and dispensing of liquefied petroleum gas are regulated by Rule 1177 (adopted June 1, 2012). Rule 1177 describes equipment and operation requirements, leak detection and repair program requirements, recordkeeping requirements, and reporting requirements. The requirements in SCAQMD Rule 1177 are generally as stringent as those in VCAPCD Rule 74.33.

VCAPCD Rule 74.15.1 Boilers, Steam Generators, and Process Heaters

Evaluation: VCAPCD Rule 74.15.1 was amended on June 23, 2015 to lower the NO_x emission limits to 12 ppm for natural gas – atmospheric combustion, and to 9 ppm for natural gas – all others. These new limits will only apply to new or replaced boilers, steam generators, and process heaters with a rated heat input capacity greater than 2 million BTU/hr and less than 5 million BTU/hr. In SCAQMD, NO_x emissions from boilers, stream generators and process heaters between 2 and 5 million BTU/hr are regulated under Rule 1146.1. The emission limit is 12 ppm for atmospheric units, 15 ppmv for digester gas, 25 ppmv for landfill gas, and 9 ppm for other units. The requirements in SCAQMD Rule 1146.1 are generally as stringent as those in VCAPCD Rule 74.15.1.

Overall, the RACT update for the 2012 annual PM_{2.5} NAAQS concludes that the SCAQMD's rules and regulations are, for the most part equivalent to, or more stringent than other districts' rules and regulations. Where improvements are possible, SCAQMD staff further evaluated potential emission reductions in the Control Measure Assessment of this Appendix.

BACT Evaluation

In the 1994 Addendum to the General Preamble for Implementation of Title I of the Clean Air Act Amendments of 1990 (The 1994 Addendum), U.S. EPA defines BACT similarly to BACM as an emission limitation based on the, "*maximum degree of reduction of each pollutant emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques.*" To fulfill the CAA requirements of a "serious" nonattainment area for the 2006 24-hour PM_{2.5} standard, BACT is required for major emitting point sources. CAA Subpart 4 defines a major source threshold of 70 tons per year (TPY) of PM₁₀ in "serious" PM₁₀ nonattainment areas. In the Proposed Rule "*Fine Particle Matter National Ambient Air Quality Standards: State Implementation Plan Requirements*" (80 FR 15340), EPA indicates that "*it is also reasonable to establish the threshold for PM_{2.5} in Serious areas at the same level as the threshold that applies to PM₁₀ in Serious areas.*" For the purpose of this BACT evaluation, point sources that emit equal to or greater than 70 TPY of SO_x, NO_x, VOC, NH₃ or PM_{2.5} in 2015 are considered major stationary sources, and their applicable rules are evaluated for BACT equivalency.

To catch all the improvements in innovative control technologies and identify potential areas for improvements in SCAQMD rules and regulations, the SCAQMD staff re-evaluated all of the SCAQMD's source-specific rules and regulations, and compared the requirements in these rules with the analogous rules adopted by four other air districts in California. The four air districts were San Joaquin Valley, Sacramento Metropolitan, Ventura, and Bay Area. They are selected based on the severity of their nonattainment status and their near-term attainment dates as shown in Table VI-A-1.

The summary of this analysis is presented in Attachment VI-A-1. In this table, staff *only* listed the areas where the requirements in other air districts' rules are more stringent than those in the SCAQMD's rules and regulations. The analysis in Attachment VI-A-1 shows that in general, the SCAQMD's current rules and regulations are equivalent to or more stringent than those developed by other air districts. In several areas identified in the attachment, the existing source-specific rules may be amended to lower the emissions standards, promote cleaner technologies and add additional best management practices. Subsequently, several control measures have been developed to further study the emission reduction opportunities as discussed in greater details in the following sections.

Existing and Potential Control Measures for Key PM Source Categories

This section describes the existing control strategies for the key stationary source categories under SCAQMD jurisdiction. Potential control measures are identified by comparing existing control measures to the requirements in federal and state regulations and guidance, as well as the analogous rules in other air districts.

Since PM_{2.5} is a complex mixture of directly emitted primary pollutants and secondarily formed particles, many chemical species and associated precursor emissions contribute to its total mass. To estimate the contribution from PM_{2.5} precursors and direct PM_{2.5}, it is useful to weight the value of the precursor emission reductions (on a per ton basis) to microgram per cubic meter improvements in ambient PM_{2.5} levels. The 2012 AQMP provided a set of factors to estimate the contribution of precursor emissions to PM_{2.5} concentration. The factors were empirical estimations based on CMAQ simulations. While similar relative contributions to PM_{2.5} have not been developed for ammonia, the mass contributions of ammonium sulfate and ammonium nitrate are accounted for in the SO_x and NO_x contributions. Yet, for the purpose of this RACM/BACM analysis, ammonia is included to make sure all of the potential control measures could be captured. Table VI-A-5 summarizes the precursor contribution factors, annual average emissions inventory for 2012 and the same emissions normalized to direct PM_{2.5} emissions based on the contribution factor. For instance, 15 tpd of NO_x emission contributes to PM_{2.5} concentration as much as one tpd of directly emitted PM_{2.5} emissions does, indicating that NO_x reductions are approximately 15 times less effective than directly emitted PM_{2.5} reductions.

Table VI-A-5

PM-equivalent Base Year Emission Inventory for the 24-hour PM_{2.5} NAAQS, tpd

	VOC	NO _x	SO _x	PM _{2.5}	NH ₃	Total
2012 AQMP Scaling Factor [PM-eqv]	0.020	0.068	0.53	1.00	0.27	-
2012 Base Year Inventory*	473	546	18.4	66.7	81.8	-
PM-eqv Base Year Inventory	9.6	36.9	9.7	66.7	22.2	145

*Based on emission inventory in draft 2016 AQMP

It is difficult to set a threshold based on atmospheric concentration due to the complex nature of chemical mechanisms involved in PM_{2.5} formation and the corresponding need for complex modeling to assess any proposed emission reduction. Instead, the level of emissions are well defined at an individual source level and it is therefore straightforward to rank and categorize them. The precursor contributions were accounted for via the relative contribution factors given in Table VI-A-5. Still, in order to be more cautious and ensure all the potential major sources are included in the analysis, a 2 percent threshold was used to select key PM source categories. The total PM_{2.5} equivalent emission for the 2012 base year is 145 tpd as shown in Table VI-A-5. Using the 2 percent threshold sets the threshold at 2.90 tpd. A key source

category is defined when the aggregate emissions from a source category (i.e., total PM_{2.5} equivalent inventory) exceeds 2.90 tpd. Table VI-A-6 lists the 11 key PM source categories identified using the methodology outlined above.

Table VI-A-6

Key PM Source Categories for the 24-hour PM Standard*, PM_{2.5}-equivalent tpd
(Source Categories under SCAQMD Authority are in Bold)

6-digit EIC	Source Category	VOC	NOx	SOx	PM25	NH3	Sum
610600	Residential Fuel Combustion-Wood Combustion - Wood Stoves	0.11	0.02	0.03	2.84	0.00	3.00
620618	Farming Operations-Livestock Wastes	0.05	0.00	0.00	0.24	2.71	2.99
640641	Paved Road Dust-Paved Road Travel Dust - Local Streets	0.00	0.00	0.00	2.98	0.00	2.98
690680	Cooking-Commercial Charbroiling	0.03	0.00	0.00	7.72	0.00	7.75
699995	Other (Miscellaneous Processes)-Other	0.00	0.00	0.00	0.00	6.80	6.80
710734	Light Duty Passenger-Catalyst Hot Stabilized	0.16	2.13	0.42	0.48	1.99	5.17
710746	Light Duty Passenger-Catalyst Brake Wear	0.00	0.00	0.00	3.52	0.00	3.52
723734	Light Duty Trucks-2 (3751 to 5750 lb.)-Catalyst Hot Stabilized	0.08	1.49	0.21	0.17	1.10	3.04
724734	Medium Duty Trucks (5751-8500 lb.)-Catalyst Hot Stabilized	0.08	1.52	0.20	0.13	1.18	3.11
744764	Medium Heavy Duty Diesel Trucks (14001-33000 lb.)-Diesel Hot Stabilized	0.04	2.46	0.03	1.39	0.03	3.95
746764	Heavy Heavy Duty Diesel Trucks (>33001 lb.)-Diesel Hot Stabilized	0.11	6.29	0.08	2.79	0.06	9.33
860887	Commercial/Industrial Mobile Equipment-Construction and Mining Equipment	0.07	1.73	0.01	1.38	0.00	3.19

*Based on emission inventory in draft 2016 AQMP

The threshold for the annual PM_{2.5} standard was established using the same approach as the 24-hour PM standard. The thresholds are pollutant and air quality standard specific, given the complexity of precursor chemistry and the level of air quality standard. The relative contribution of precursor emissions to the annual PM_{2.5} value was taken from the 2007 AQMP modeling results. After accounting for PM formation potential of the four precursors, the total PM_{2.5} equivalent emission for the 2012 base year is 626 tpd (Table VI-A-7). Using the 2 percent threshold, a key PM source category is defined when the aggregated emissions from a source category (i.e., total PM_{2.5} equivalent inventory) exceeds 12.5 tpd. Table VI-A-8 presents the 10 key PM source categories for the 2012 annual PM Standard.

Table VI-A-7PM-equivalent Base Year Emission Inventory for the Annual PM_{2.5} NAAQS, tpd

	VOC	NO _x	SO _x	PM _{2.5}	NH ₃	Total
2007 AQMP Scaling Factor [PM-eqv]	0.20	0.60	2.00	1.00	1.23	-
2012 Base Year Inventory*	473	546	18.4	66.7	81.8	-
PM-eqv Base Year Inventory	94.6	328	36.8	66.7	101	626

*Based on emission inventory in draft 2016 AQMP

Table VI-A-8Significant BACM Source Categories for the Annual PM Standard*, PM_{2.5}-equivalent tpd
Source Categories under SCAQMD Authority are in Bold.

6-digit EIC	Source Category	VOC	NO _x	SO _x	PM _{2.5}	NH ₃	Sum
510506	Consumer Products-Phase III Consumer Products	15.72	0.00	0.00	0.00	0.00	15.72
620618	Farming Operations-Livestock Wastes	0.32	0.00	0.00	0.24	12.29	12.85
699995	Other (Miscellaneous Processes)-Other	0.00	0.00	0.00	0.00	30.78	30.78
710734	Light Duty Passenger-Catalyst Hot Stabilized	1.59	18.88	0.80	0.48	8.99	31.53
723734	Light Duty Trucks-2 (3751 to 5750 lb.)-Catalyst Hot Stabilized	0.76	13.23	0.00	0.17	4.97	19.92
724734	Medium Duty Trucks (5751-8500 lb.)-Catalyst Hot Stabilized	0.83	13.53	0.00	0.13	5.33	20.58
744764	Medium Heavy Duty Diesel Trucks (14001-33000 lb.)-Diesel Hot Stabilized	0.43	21.82	0.00	1.39	0.16	23.90
746764	Heavy Heavy Duty Diesel Trucks (>33001 lb.)-Diesel Hot Stabilized	1.07	55.85	0.00	2.79	0.27	60.27
833835	Ocean Going Vessels-Container Ships	0.22	10.05	1.76	0.43	0.02	14.23
860887	Commercial/Industrial Mobile Equipment-Construction and Mining Equipment	0.70	15.32	0.00	1.38	0.02	17.47

*Based on emission inventory in draft 2016 AQMP

Based on the analysis described above, the following key stationary source categories (under SCAQMD jurisdiction) are identified for the PM_{2.5} NAAQS:

- Residential Fuel Combustion-Wood Combustion - Wood Stoves
- Farming Operations-Livestock Wastes
- Paved Road Dust-Paved Road Travel Dust - Local Streets

- Cooking-Commercial Charbroiling

The existing control measures for these four key stationary sources are summarized below. Potential control measures are identified by comparing existing control measures to the requirements in federal and state regulations and guidance, as well as the analogous rules in other air districts.

Residential Fuel Combustion – Wood Combustion – Wood Stoves

Current control measure

Rule 445 Wood Burning Devices (Amended May 3, 2013)

Rule 445 was first adopted in 2008 to reduce the emissions of particulate matter from wood-burning devices. The rule establishes requirements for the sale, operation, and installation of wood burning devices. Under Rule 445, only gaseous-fueled hearth devices are allowed to be installed in new developments. For existing residential and commercial developments (additions, remodels, etc.), Rule 445 requires wood burning devices sold or installed to be U.S. EPA certified or equivalent. Rule 445 prohibits the burning of any product not intended for use as a fuel (e.g. trash) in a wood burning device and requires commercial firewood sellers to only sell seasoned firewood (20 percent or less moisture content) from July through February. Rule 445 also includes a mandatory winter burning curtailment program that extends from November 1 through the end of February in each winter season. In the 2011/2012 winter season when the program was first implemented, the public is required to refrain from both indoor and outdoor wood-based fuel burning in specific areas where PM_{2.5} air quality is forecast to exceed 35 µg/m³ (federal 24-hour standard). The SCAQMD has also implemented the Healthy Hearths™ program that includes a comprehensive education and outreach effort as well as financial incentives to encourage the public to switch to cleaner, gaseous-fueled hearth products. On June 11, 2009, the U.S. EPA approved Rule 445 into the SIP as fulfilling BACT/BACM for PM₁₀ (74 FR 27716). Rule 445 was last amended on May 3, 2013 to lower the curtailment threshold from 35 to 30 µg/m³, establish criteria for a basin-wide curtailment, and set standards for solid-fuel labeling for wood and wood-based products by commercial firewood sellers. U.S. EPA approved that amendment of Rule 445 for SIP approval in June 2013.

Federal and State rules and regulations

On February 3, 2015, U.S. EPA finalized the amendments for New Source Performance Standards (NSPS) for New Residential Wood Heaters (40 CFR Part 60 Subpart AAA). The 2015 NSPS significantly lowers the certification emission limits for wood-burning heaters to 4.5 g/hr in phase 1 and 2.0 g/hr in phase 2. Rule 445 points to the NSPS for emission standards in U.S. EPA certified wood-burning heaters and is therefore as stringent as the newly promulgated NSPS. There are no other federal or state regulations applicable to this source category.

Analogous rules in other air districts

SJVAPCD Rule 4901 Wood Burning Fireplaces and Wood Burning Heaters (Amended September 18, 2014)

SJVAPCD recently lowered the No Burn threshold for high polluting wood burning heaters and fireplaces from the 30 $\mu\text{g}/\text{m}^3$ to 20 $\mu\text{g}/\text{m}^3$ in 2014. The staff report indicates that lowering the threshold level would increase the No Burn days from 35 days per wood burning season per county to 69 days per wood burning season per county. The increase in the number of curtailment days could reduce emissions by 1.5 tpd of PM_{2.5}. Rule 4901 also requires the replacement of non-EPA Phase II certified wood burning devices upon sale or transfer of real property.

SMAQMD Rule 417 Wood Burning Appliances (Adopted October 26, 2006)

Staff evaluated the requirements of SMAQMD Rule 417 and found no requirements that were more stringent than those already incorporated in Rule 445.

BAAQMD Regulation 6 Rule 3 Wood-Burning Device (Adopted July 9, 2008)

Staff evaluated the requirements of BAAQMD Regulation 6 Rule 3 and found no requirements that were more stringent than those already incorporated in Rule 445.

Evaluation

As part of the 2016 AQMP control measure development, staff evaluated the feasibility and effectiveness of lowering the No Burn threshold and the requirement to replace non-EPA Phase II certified wood burning devices upon sale or transfer of real property. Other emission reduction opportunities for this source category could be found in BCM-09.

Farming Operations-Livestock Waste

Current control measure

Emissions from livestock waste in farming operations are regulated by Rule 223 and Rule 1127 in the SCAQMD. More details are described as follows:

Rule 223 Emission Reduction Permits for Large Confined Animal Facilities (Adopted June 2, 2006)

Rule 223 requirements apply to Large Confined Animal Facilities (LCAFs) above certain size thresholds. Dairies with at least 1,000 milking cows, poultry facilities with at least 650,000 birds, and horse facilities with at least 2,500 horses qualify as LCAFs. Pertaining to manure management, the dairy provisions require that owners/operators implement at least six of 12 corral measures, two of seven solid manure or separated solids handling measures, one of eight liquid manure handling measures, and two of four land application measures. A Poultry LCAF owner/operator must implement at least one of seven solid manure or separated solids handling measures, and one of eight liquid manure handling measures.

Rule 1127 Emission Reductions from Livestock Waste (Adopted August 6, 2004)

Rule 1127 was adopted on August 6, 2004 to reduce emissions of ammonia, VOC, and PM10 emissions from dairy livestock waste. Rule 1127 applies to dairy farms with 50 or more cows, heifers, and/or calves and to manure processing operations, such as composting operations and anaerobic digesters. The major requirements of Rule 1127 include Best Management Practices (BMPs) to minimize fugitive dust emissions, minimize excess water in corrals, pave feedlanes at least 8 feet on the corral side of the feedlane fence, clear corrals of accumulated manure, and timely remove on-dairy stockpiles. Manure disposal is permitted from the dairy only to a manure processing operation designed to reduce ammonia and VOC emissions from unprocessed manure; agricultural land within the SCAQMD approved for the spreading of manure; or a combination of the above options.

Federal and State rules and regulations

There are no federal or State regulations/policies describing RACM/BACM for this source category.

Analogous rules in other air districts

SJVAPCD Rule 4570 Confined Animal Facilities (Amended October 21, 2010)

Rule 4570 limits emissions of VOC and NH₃ from Confined Animal Facilities. Rule 4570's regulatory thresholds include facilities with at least 500 milking cows, 3,500 beef cattle, 7,500 calves, heifers, or other cattle, 400,000 heads of chicken and ducks, 100,000 heads of turkey, 3,000 heads of swine and horses, and 15,000 heads of sheep, goats, or any combination of the two. Rule 4570 is more stringent regarding applicability than Rule 223 for milk cows (1,000 milk cows in SCAQMD vs 500 milk cows in SJVAPCD), and for chickens and ducks (650,000 birds in SCAQMD vs. 400,000 birds in SJVAPCD). Rule 4570 also made certain feed and housing menu items mandatory for dairies and poultry facilities. However, SCAQMD Rule 1127 has lower applicability thresholds for cows, heifers and/or calves. Rule 223 also has a lower applicability for horse facilities (2,500 in SCAQMD vs. 3,000 in SJVAPCD).

For corral mitigation measures in dairy operations, Rule 4570 has nine mitigation measures, six of which are mandatory and one additional measure that is required from the remaining three. SCAQMD Rule 223 requires at least six control measures from 10 Class One mitigation measures and two Class Two mitigation measures. For one Class One mitigation measure – inspect water pipes and troughs and repair leaks – SCAQMD Rule 223 has a higher frequency requirement than SJV Rule 4570. In addition, SCAQMD Rule 1127, which applies to dairies with 50 or more cows, requires facilities to choose at least five of the seven corral mitigation measures. Rule 4570 contains two solid waste control measures, from which facilities are required to choose at least one. SCAQMD Rule 223 has four Class One mitigation measures and three Class Two mitigation measures, from which facilities are required to choose at least two. With regard to liquid waste mitigation measures in dairies, operators are required to choose at least one of the four mitigation measures listed in Rule 4570. SCAQMD Rule 223 has five Class One mitigation measures and three Class Two mitigation measures, from which facilities are required to choose at least one. SCAQMD Rule 1127 requires that manure removed must be either treated at an approved manure processing operation, or applied on agricultural land with local approval.

BAAQMD Regulation 2 Rule 10 Large Confined Animal Facilities (Adopted July 19, 2006)

Rule 2-10 is a permit rule that limits emissions of precursor organic compound, NOx and PM10 from large CAFs. The applicability threshold is the same as in SCAQMD Rule 223. Rule 2-10 requires RACT to be implemented for a large CAF.

SMAQMD Rule 496 Large Confined Animal Facilities (Adopted August 24, 2006)

Rule 496 applies to large CAFs with the same regulatory threshold as SCAQMD Rule 223. Regarding corral mitigation measures in dairies, Rule 496 has 15 Class One mitigation measures and three Class Two mitigation measures from which facilities are required to choose at least six. SCAQMD Rule 223 requires the same number of control measures (at least six) from ten Class One mitigation measures and two Class Two mitigation measures. For controlling emissions from solid waste, Rule 496 requires the dairy operators to choose at least two mitigation measures from five Class One mitigation measures and three Class Two mitigation measures; SCAQMD Rule 223 has four Class One mitigation measures and three Class Two mitigation measures, from which facilities are required to choose at least two. Regarding liquid waste mitigation measures, Rule 496 has five Class One mitigation measures and five Class Two mitigation measures, from which facilities are required to choose at least one. SCAQMD Rule 223 has similar requirements at which operators are required to choose at least one measure from five Class One mitigation measures and three Class Two mitigation measures.

Evaluation

Rule 223 and 1127 together represent a BACT-level of control for this source category. No additional feasible control measures pertaining to the operational practices of the Basin's large confined animal facilities are identified. As part of the 2016 AQMP control measure development, staff evaluated the feasibility and effectiveness of extending rule applicability to dairies and certain poultry facilities using a lower size threshold. The evaluation can be found in the Control Measure Assessment section of this Appendix.

Paved Road Dust -Paved Road Travel Dust - Local Streets

Current control measure

SCAQMD Rule 1186 PM10 Emissions from Paved and Unpaved Roads and Livestock Operations (Amended July 11, 2008)

Rule 1186 controls emissions of particulate matter (PM) from paved and unpaved public roads, and livestock operations. It establishes requirements to prevent material from being deposited on roadways and also requires local jurisdictions to procure certified street sweeping equipment. Rule 1186 requires new or widened roads to be constructed with curbing or, as an alternative, paved shoulders. Local governments are also required to remove material deposited onto roads as a result of wind, water erosion, or by other means, and are also required to procure only SCAQMD Rule 1186-certified street sweepers when replacing equipment. The Rule also requires unpaved access connections and unpaved

feed lane access areas in livestock operations to be treated. All grinding activities are limited to 2 to 5 p.m. if visible emissions are detected.

SCAQMD Rule 1157 PM10 Emission Reductions from Aggregate and Related Operations (Amended September 8, 2006)

Rule 1157 requires access improvements which are intended to reduce the amount of material tracked out from a facility onto surrounding paved public roads.

SCAQMD Rule 403 Fugitive Dust (Amended June 3, 2005)

Rule 403 requires access improvements for sites greater than 5 acres and all material tracked out from applicable sources must be removed at the conclusion of the work day or at any time it extends more than 25 feet out from a site.

Federal and State rules and regulations

Staff evaluated the requirements of U.S. EPA's Fugitive Dust Background Document and Technical Information Document for BACM and found no requirements that were more stringent than those already incorporated in the SCAQMD rules for this source category.

There are no State regulations/policies describing RACM/BACM for this source category.

Analogous rules in other air districts

SJVAPCD Rule 8061 Paved and Unpaved Roads (Amended August 19, 2004)

SJVAPCD Rule 8061 requires municipalities to sweep paved roads at least once per month with PM10 efficient units. For unpaved roads, on any unpaved road segment with 26 or more Annual Average Daily Traffic (AADT), the owner/operator shall limit visible dust emission to 20 percent opacity and comply with the requirements of a stabilized unpaved road, or shall implement an APCO-approved Fugitive PM10 Management Plan; within an urban area, the Rule requires all new unpaved roads be paved. SCAQMD evaluated the rule for potential emission reductions as part of the 2016 AQMP control development.

SMAQMD Rule 403 Fugitive Dust (Adopted August 3, 1997)

Staff evaluated the requirements of SMAQMD Rule 403 and found no requirements that were more stringent than those already incorporated in the SCAQMD rules for this source category.

BAAQMD has no rule for this source category.

Evaluation

As part of the 2016 AQMP control measure development, staff evaluated the feasibility and effectiveness of establishing minimum street sweeping frequencies and enhancing street cleaning for roads with higher silt loadings. The evaluation can be found in the Control Measure Assessment section of this Appendix.

Cooking-Commercial Charbroiling

Current control measure

Rule 1138 Control of Emissions from Restaurant Operations (Adopted November 14, 1997)

SCAQMD regulates VOC and PM emissions from chain-driven charbroilers through Rule 1138. Rule 1138 covers chain-driven charbroilers cooking 875 pounds of meat or more per week, applicable to mostly large chain operations. The Rule requires the installation of flameless catalytic oxidizers, or equivalent control devices, to chain-driven charbroilers.

Federal and State rules and regulations

There are no federal or State regulations/policies describing RACM/BACM for this source category.

Analogous rules in other air districts

SJVAPCD Rule 4692 Commercial Charbroiling (Amended September 17, 2009)

Rule 4692 reduces PM emissions by requiring catalytic oxidizers for chain-driven charbroilers cooking 400 pounds of meat or more per week. This threshold is more stringent than Rule 1138 which applies to chain-driven charbroilers cooking 875 pounds of meat or more per week. In its 2012 PM2.5 Plan, SJVAPCD committed to expand Rule 4692 applicability to include under-fired charbroilers in 2016 with an anticipated compliance date of 2017.

SMAQMD has no rule for this source category.

BAAQMD Regulation 6, Rule 2 Commercial Cooking Equipment (Adopted December 5, 2007)

Rule 6-2 requires controls on chain-driven charbroilers and on under-fired charbroilers meeting the requirements of: 10 square feet of surface area; purchasing 1,000 lbs of beef or more per week; and cooking 800 lbs of beef per week. PM10 emissions are limited to no more than 1.0 pounds of PM10 per 1000 pounds of beef cooked for applicable under-fired charbroilers.

Evaluation

Staff has assessed the potential emission reduction opportunities of lowering the regulatory threshold for chain-driven charbroilers as part of the 2016 AQMP control measure development. Staff has also evaluated the ongoing technology development of under-fired charbroiler control technology and examined the feasibility of extending rule applicability to under-fired charbroilers. The evaluation can be found in the Control Measure Assessment section of this Appendix.

Identifying Potential Control Measures

Regarding the approach of identifying emission reduction programs, the U.S. EPA recommends that nonattainment air districts first identify the emission reduction programs that have already been implemented at the federal, state or local air district level. Next, the U.S. EPA recommends that air districts examine additional control measures adopted for other nonattainment areas to attain the ambient air quality standards as expeditiously as practicable. To demonstrate that the SCAQMD has considered all candidate measures that are available and technologically and economically feasible to implement within the Basin, a 7-step analysis was conducted, as described below.

Step 1 – Air Quality Technology Symposium

The 2015 Air Quality Technology Symposium was held on June 10 and 11, 2015 with participation of technical experts from a variety of areas and the public to solicit new and innovative concepts to assist the Basin in attaining the NAAQS for PM_{2.5} by 2019–2021 and ozone by 2024–2032. In addition, multiple internal meetings were held from March to October of 2015 to brainstorm ideas for feasible control measures. The SCAQMD also conducted on-going extensive outreach to engage a wide range of stakeholders in the process. In general, the following concepts were proposed:

- Promoting zero emission and near-zero emissions public transport fleet and freight, and providing incentives for on-road and non-road mobile sources;
- Addressing co-benefits from GHG reductions, residential weatherization and other energy efficient measures, the need for energy storage and a smart grid, and the use of outreach to promote energy efficiency measures;
- Further reducing VOC emissions for select coating, adhesive, and solvent categories by limiting the allowable VOC content in formulations or incentivizing the use of super compliant technologies;
- Further reducing NO_x emissions from commercial and multi-unit residential space heating and boilers;
- Further reducing PM emissions from commercial cooking through the identification of more affordable and innovative under-fired charbroiler controls;
- Further reducing PM emissions from fugitive dust sources;
- Further reducing NH₃ from manure management strategies through acidifier application and dietary manipulation;
- Further reducing PM from agricultural, prescribed, and training burning; and
- Further reducing PM from cooling towers.

Step 2 – RACT/BACT

The RACT/BACT analysis identified several SCAQMD rules that are less stringent than the EPA CTGs or the analogous rules in other air districts. SCAQMD staff's analysis is summarized in Table VI-A-9. Consequently, the SCAQMD evaluated them as candidate potential measures in the Control Measure Assessment section of this Appendix.

TABLE VI-A-9

Rules Identified for Potential Control Measures from RACT/BACT Assessment

Rule #	Evaluation
223	SJVAPCD Rule 4570 is more stringent regarding applicability than Rule 223 (i.e. applies to smaller facilities) for milk cows (1,000 milk cows in SCAQMD vs. 500 milk cows in SJVAPCD), and for chickens and ducks (650,000 birds in SCAQMD vs. 400,000 birds in SJVAPCD). Staff evaluated the feasibility and effectiveness of extending rule applicability to dairies and certain poultry facilities using a lower size threshold, and the assessment can be found in the Control Measure Assessment section of this Appendix.
462	Rule 462 controls emissions of VOC from facilities that load organic liquids. It is more stringent than the CTG and meets the core requirements for RACT but is not as stringent as BAAQMD Rule 8-33 with respect to the emissions limit for Class A facilities. SCAQMD staff evaluated the rule for potential emission reductions as part of the 2016 AQMP control development, and the assessment can be found in the Control Measure Assessment section of this Appendix.
1115	Rule 1115 is not as stringent as the 2008 EPA CTGs for a few coating processes for facilities emitting > 15 lbs/day. SCAQMD evaluated the rule for potential emission reductions as part of the 2016 AQMP control development.
1118 /1150.1	Rule 1118 was determined to be RACT from the 2007 SIP targeting flare emissions from refineries. SJVAPCD Rule 4311 (exempting municipal landfills which is regulated under Rule 1150.1) applies to other sources > 10 tons per year (TPY). SCAQMD has a small inventory of flare emissions from sources other than refineries and landfills. According to 2012 AER reports, flare emissions from oil and gas production and wastewater treatment plants result in 2.8 and 5.6 TPY of VOC, respectively. SCAQMD staff evaluated the rule for potential emission reductions as part of the 2016 AQMP control development, and the assessment can be found in the Control Measure Assessment section of this Appendix. Further emission reductions are proposed through CMB-03, refer to Chapter 4 and Appendix IV-A for details.

TABLE VI-A-9 (CONCLUDED)

Rules Identified for Potential Control Measures from RACT/BACT Assessment

Rule #	Evaluation
1138	SJVAPCD Rule 4692 has a lower applicability threshold (400 vs 875 lbs of meat or more per week in SCAQMD) for chain-driven charbroilers. BAAQMD Rule 2 of Regulation 6 applies to under-fired charbroilers with combined total grill surface area of at least 10 square feet, purchasing 1,000 lbs of beef or more per week, and cooking 800 lbs of beef per week. As part of the 2016 control measure development, staff evaluated the feasibility of lowering the regulatory threshold of chain-driven charbroilers from 875 to 400 lbs of meat or more per week and extending applicability to under-fired charbroilers.
1186	SJVAPCD Rule 8061 requires municipalities to sweep paved roads at least once per month with PM10 efficient units. For unpaved roads, on any unpaved road segment with 26 or more AADT, the owner/operator shall limit visible dust emission to 20% opacity and comply with the requirements of a stabilized unpaved road, or shall implement an APCO-approved Fugitive PM10 Management Plan; within an urban area, this rule requires all new unpaved roads be paved. SCAQMD evaluated the rule for potential emission reductions as part of the 2016 AQMP control development.

Step 3 – EPA Technical Support Documents

For newly adopted / amended rules to be incorporated into the California SIP, they have to be submitted for U.S. EPA's review and approval. U.S. EPA prepares Technical Support Documents (TSD) that review the State's submittals of rules to be approved in the SIP, outline the Clean Air Act requirements for U.S. EPA to approve such submittal, and provide evaluation and recommendation for action on the State's submittals. TSDs include U.S. EPA's suggestions for future rule revisions that could be considered as potential control measures. Below are two of the U.S. EPA's TSD recommendations that might result in potential emission reductions:

- Rule 1125 Metal Container, Closure, and Coil Coating Operations (last amended March 7, 2008). The 2009 TSD provides the following recommendations:
 1. In section (c)(1), lower the VOC content limit for three-piece can interior body sprays to 360 grams per liter. Please see for example, SJVAPCD Rule 4604 and BAAQMD Rule 8-11.
 2. In section (c)(1), lower the limit for two-piece can interior body sprays to 420 grams per liter. Please see for example, SJVAPCD Rule 4604 and BAAQMD Rule 8-11.
 3. Add a VOC limit and corresponding definition for the category of exterior body spray. Please see for example, SJVAPCD Rule 4604 and BAAQMD Rule 8-11.
- Rule 445 Wood Burning Devices (Amended May 3, 2013). The 2009 and 2013 TSD document recommends replacing non-EPA Phase II certified wood burning devices upon home sale.

Step 4 – Other Districts’ Control Measures

Because the SCAQMD is classified as “extreme” nonattainment for both the 1997 and 2008 ozone standards, and nonattainment for both the 2006 and 2012 PM_{2.5} standards, SCAQMD staff commits to search for innovative control technologies, make improvements, and update the SCAQMD’s rules and regulations as expeditiously as possible to effectively help the Basin reach the PM_{2.5} attainment in 2019–2021, and ozone attainment in 2024–2032. Staff will evaluate whether control technologies that are available and cost-effective within other areas in California or any other areas in the nation, would be available and cost-effective for use in the Basin in a timely manner.

In an effort to ensure that all feasible candidate control measures are considered, SCAQMD staff evaluated the control measures adopted within the period of 2012–2015 by eight nonattainment air districts (Ventura County, San Francisco Bay Area, San Joaquin Valley, Sacramento Metropolitan in California, Dallas-Fort Worth and Houston-Galveston-Brazoria in Texas, New York and New Jersey) in the nation for both PM_{2.5} and 8-hour ozone. A summary of this evaluation is provided below.

San Joaquin Valley

San Joaquin Valley is “extreme” nonattainment with respect to the 2008 8-hour ozone standard and nonattainment with respect to the PM_{2.5} standards. In 2013–2015, SJVAPCD developed three separate plans to address the 8-hour ozone standard, the 2006 PM_{2.5} standard, and the 1997 PM_{2.5} standard.

In December 2012, SJVAPCD adopted the 2012 PM_{2.5} Plan to addresses U.S. EPA’s 24-hour PM_{2.5} standard of 35 µg/m³ established in 2006.¹² The plan has proposed five regulatory control measure commitments. Besides the four control measures (including SJVAPCD Rule 4308, SJVAPCD Rule 4692, SJVAPCD Rule 4905, and SJVAPCD Rule 9610) that the SCAQMD has either already implemented or developed similar control for, below is a measure that is evaluated as a potential control measure in the 2016 AQMP:

- SJVAPCD Rule 4901 Wood Burning Fireplaces and Wood Burning Heaters - Lower the threshold level for calling wood-burning curtailments from 30 µg/m³ to ≥ 20 µg/m³ (contingency threshold); Consider expanding the wood burning season to include October and/or March. SCAQMD controls wood burning emissions through Rule 445. Curtailment is mandatory when the forecast level exceeds 30 µg/m³ from November through February.

In September 2013, SJVAPCD adopted the 2013 Plan for the revoked 1-hr ozone standard.¹³ The plan refers to NO_x rule projects in the 2012 PM_{2.5} Plan as the regulatory control measure commitments. The SCAQMD has already implemented the two NO_x commitments proposed in the SJVAPCD plan.

SJVAPCD adopted the 2014 Ozone RACT demonstration as part of the CAA requirements for an “extreme” nonattainment area of the 2008 8-hour ozone NAAQS.¹⁴ It certifies RACT levels of control are being implemented for sources subject to U.S. EPA CTG and for major sources of ozone precursors. The 2014

Ozone RACT SIP verifies that SJVAPCD's regulations meet RACT levels of emission control, and no rule amendments or control measures are proposed.

SJVAPCD adopted the 2015 PM_{2.5} Plan for the 1997 PM_{2.5} Standard in April 2015.¹⁵ This plan addresses EPA's annual PM_{2.5} standard of 15 µg/m³ and 24-hour PM_{2.5} standard of 65 µg/m³. In the 2015 PM_{2.5} Plan, SJVAPCD did not identify any additional technologically feasible and cost effective control measures beyond those already incorporated in their 2012 PM_{2.5} plan.

New York Metropolitan

The New York Metropolitan Area is classified as a nonattainment area for the 2008 8-Hour ozone NAAQS. To satisfy the requirement of the CAA, the New York Department of Environmental Conservation (NYDEC) submitted the 8-Hour Ozone RACT in December 2014.¹⁶ NYDEC certified that all RACT regulations adopted to date are RACT-level controls; no control measures have been committed in their analysis.

New Jersey

In 2012, the New Jersey Department of Environmental Protection (NJDEP) submitted a SIP revision to redesignate New Jersey's 1997 annual and 2006 daily PM_{2.5} nonattainment areas to attainment. The 2012 Maintenance Plan includes measures that are already implemented, or adopted with future implementation dates, or have already been adopted and implemented and continue to provide additional emission reductions each year with fleet and equipment turnover. These control measures are anticipated to provide continued emissions reductions in the future of PM_{2.5} and its precursors, NO_x and SO₂, from a 2007 inventory base year to 2025, the maintenance plan year. In June 2015, NJDEP finalized the RACT determination for the 2008 8-Hour ozone NAAQS.¹⁷ The document committed to propose and adopt, subject to public notice and comment, amendments to New Jersey rules incorporating four CTGs, if determined to be more effective than current New Jersey requirements, and to consider further limiting NO_x emissions from natural gas compressor engines and turbines, which are major sources of NO_x, subject of two U.S. EPA ACTs. There are no additional new measure concepts that the SCAQMD has not yet implemented or considered for this 2016 AQMP.

Others

As of January 2016, Ventura County, San Francisco Bay Area, Sacramento Metropolitan, DFW Texas, and HGB Texas have no new attainment plans since those included in the 2012 AQMP.

Step 5 – Control Measures beyond RACM in 2012 AQMP

The following four control measures were considered beyond RACM in the 2012 AQMP. They are re-considered in the 2016 AQMP using up-to-date emission inventory and improved modelling tools. The evaluation can be found in the Control Measure Assessment section of this Appendix.

Emission reduction of NH₃ from usage of feed additives

In the 2012 AQMP, this control measure was developed to reduce NH₃ emissions from farming operations. The cost of feed additives were relatively high. Furthermore, NH₃ controls were not effective in reducing PM_{2.5} based on the modeling results in the last AQMP. This control strategy is re-considered using the more up-to-date emission inventory and state-of-the-art modeling tools.

Emission reduction of NH₃ from NO_x Controls

In Selective Catalytic Reduction (SCR), ammonia slips through the catalyst unreacted. It is often challenging to maintain NO_x compliance due to NH₃ slip requirements, but recent catalyst technology has resulted in the development of ammonia slip catalysts that enable a maximum control of NO_x without the consequence of excess ammonia emissions. This control strategy is evaluated using the more up-to-date emission inventory and state-of-the-art modeling tools.

Emission reduction of PM from entrained road dust

Additional emission reductions could be sought by mandating street cleaning frequencies for all curb and guttered streets.

Emission reductions of VOC and ammonia PM from greenwaste composting

Chipping and grinding is a process to mechanically reduce the size of greenwaste and woodwaste. This potential control measure is examined and developed further to quantify emissions from chipping and grinding, as well as related operations, and seeks emission reductions where feasible.

Step 6 – EPA Menu of Control Measures

The Menu of Control Measures (MCM)¹⁸ compiled by the State and Local Programs Group within U.S. EPA's Office of Air Quality Planning and Standards, was developed to provide information useful in the development of local emission reduction and NAAQS SIP scenarios, and to identify and evaluate potential control measures. U.S. EPA's list of potential control measures for PM_{2.5} and precursors provides a broad listing of potential emission reduction measures to assist states in identifying and evaluating potential measures. The potential measures are developed based in part on the results of a literature review of the current and proposed measures of various air quality agencies, including CARB, individual California Air Management Districts, the Ozone Transport Commission, the Lake Michigan Air Directors Consortium, and others. For each source category, one or more emission reduction measures, the respective control efficiency, and cost effectiveness are provided.

Staff has reviewed the control measures for point and nonpoint sources of PM_{2.5}, SO₂, NO_x and VOC. Staff has identified the following three control measures in U.S. EPA's Menu of Control Measures that are currently above and beyond the requirements in existing SCAQMD rules:

- Reformulation and process modification for cutback asphalt PM
- PM control measures for asphalt manufacturing

- PM control measures for wood pulp and paper

Except for the topics identified above, control measures adopted in the Basin result in similar or higher emission reductions than those listed in the menus. The control technology/measures adopted in the Basin take into account the environmental impacts as well as economic and technological feasibility. Some alternative control measures have been developed in response to requests from industry, based on the product reformulation, product substitution and production processes specific to the facility to provide compliance flexibility and pollution prevention, while resulting in equivalent or superior environmental benefits, as compared to current requirements in the menus. Staff evaluated the above listed control measures for potential emission reductions in the Basin.

Step 7 – EPA Guidance Document

In March 2013, the U.S. EPA revised its document “*Strategies for Reducing Residential Wood Smoke*¹⁹” to provide new information and tools to help state, tribal, and local air officials reduce fine particle pollution from residential wood smoke. The document provides a comprehensive list of strategies to help identify appropriate wood smoke reduction measures. A combination of regulatory, voluntary, and educational strategies is encouraged to ensure a successful wood smoke program with measurable emission reductions. U.S. EPA recommends that each community determines the most appropriate measures given the nature and extent of their problem. Below is a list of regulatory options outlined in the guidance document, and the corresponding control strategies (when applicable) in SCAQMD.

Table VI-A-10

U.S. EPA List of Regulatory Options for Reducing Residential Wood Smoke and SCAQMD Current Control Strategies.

EPA Suggested List of Regulatory Options	SCAQMD Control Strategies
1. Wood-Burning Curtailment Programs	Rule 445 enacts a mandatory winter wood burning curtailment when PM _{2.5} concentrations are forecasted to exceed 30 µg/m ³
2. Opacity and Visible Emission Limits	SCAQMD Rule 401 does not have such "no visible emissions" requirement. Rule 401 requires the Ringelmann Chart No. 1 or an equivalent (10%) opacity limit.
3. Wood Moisture Content	Rule 445 requires a commercial firewood seller to only sell seasoned wood (≤20% moisture) from July 1 through the end of February the following year.
4. Removal of Old Wood Stove Upon Resale of a Home	Currently, SCAQMD does not require the removal and destruction of old wood stoves upon the resale of a home. This regulatory option has been evaluated as a potential control measure in the 2016 AQMP; more details can be found in the next section of this Appendix.

Table VI-A-10 (CONCLUDED)

U.S. EPA List of Regulatory Options for Reducing Residential Wood Smoke and SCAQMD Current Control Strategies.

EPA Suggested List of Regulatory Options	SCAQMD Control Strategies
5. Require EPA Certification	For existing residential and commercial developments (additions, remodels, etc.), Rule 445 requires wood burning devices sold or installed to be U.S. EPA certified or equivalent.
6. Ban the Use of Non-EPA-Certified Wood Stoves	Currently, SCAQMD does not prohibit the use of non-EPA certified wood stoves that have been installed in existing homes and businesses prior to the adoption of Rule 445. This regulatory option has been evaluated as a potential control measure in the 2016 AQMP, and more details can be found in the next section of this Appendix.
7. Restrictions on Wood-Burning Devices in New Construction	Rule 445 prohibits the installation of any wood-burning hearth appliances in new construction
8. Hydronic Heater Rules	The use of hydronic heaters is very uncommon in SCAQMD.
9. Requirements for Wood-burning Fireplaces	For existing residential and commercial developments (additions, remodels, etc.), Rule 445 requires wood burning devices sold or installed to be U.S. EPA certified or equivalent. Incentives are available to replace wood burning devices with cleaner alternatives in selected neighborhoods.
10. State/Tribal/Local Wood-Heating Emission Standards	EPA's New Source Performance Standards (NSPS), revised March 2015, have the most stringent emission limit across the nation for residential wood heaters.
11. NSPS for New Residential Wood Heating Appliances	EPA strengthened its NSPS for residential wood heaters in 2015. The 2015 NSPS compliant-wood heaters are part of the requirement of Rule 445.

In addition to the regulatory programs listed in Table VI-A-10, the SCAQMD has implemented the Healthy Hearths™ program that includes a comprehensive education and outreach effort to encourage the public to switch to cleaner, gaseous-fueled hearth products. An incentive program for cleaner hearth appliances is ongoing to encourage the public to switch to cleaner hearth products, including gaseous-fueled devices that are exempt from burning curtailments. As part of the Healthy Hearths™ initiative, the “Check Before You Burn” program is designed to protect public health by reducing harmful wood smoke from residential wood burning from November 1 through the end of February. Daily air quality forecast information can be found online on the SCAQMD’s “Check Before You Burn” map, through e-mail messages, or a toll free number. Rule 445 also requires commercial firewood or other wood-based fuel sellers to notify the public of the SCAQMD’s Check Before You Burn program through a labeling program.

Summary of Potential Control Measures

Given the thorough review of the above listed sources, SCAQMD staff has identified the following potential control measures (PCM) for stationary sources. They will be further assessed for technological and economic feasibility in the next section of this Appendix.

Table VI-A-11

Potential Stationary Control Measures Identified for the 2016 AQMP RACM/BACM

#	Source of Information	SCAQMD Current Control	Potential Control Measure
1	Air Quality Technology Symposium	N/A	Co-benefits from GHG programs, policies and incentives
2	Air Quality Technology Symposium	N/A	Co-benefits from existing residential and commercial building energy efficiency measures
3	Air Quality Technology Symposium	N/A	Additional Enhancement in Building Energy Efficiency and Smart Grid Technology
4	Air Quality Technology Symposium	N/A	Emission reduction of NOx from commercial and multi-unit residential space heating and boilers
5	Air Quality Technology Symposium	N/A	Emission reduction of PM from cooling towers
6	Air Quality Technology Symposium	Rule 1127 Emission Reductions from Livestock Waste	Emission reduction of NH3 from manure management strategies
7	Air Quality Technology Symposium	N/A	Emission reduction of NH3 from NOx controls
8	Air Quality Technology Symposium	N/A	Emission reduction of PM from agricultural, prescribed, and training burning
-	RACT/BACT	Rule 223 Emission Reduction Permits for Large Confined Animal Facilities	Lowering the applicability threshold of Rule 223 for milk cows, chickens, and ducks; combined with PCM 6
9	RACT/BACT	Rule 462 Organic Liquid Loading	Lowering emission limit of Rule 462 for gasoline bulk terminals
10	RACT/BACT	Rule 1118 Control of Emissions from Refinery Flares	Emission reductions from non-refinery flares
11	RACT/BACT	Rule 1115 Motor Vehicle Assembly Line Coating Operations	Lowering emission limits to meet the 2008 EPA CTG for Auto and Light-Duty Truck Assembly

Table VI-A-11 (CONTINUED)

Potential Stationary Control Measures Identified for the 2016 AQMP RACM/BACM

#	Source of Information	SCAQMD Current Control	Potential Control Measure
12	RACT/BACT	Rule 1138 Control of Emissions from Restaurant Operations	Further emission reduction from commercial cooking
13	RACT/BACT	Rule 1186 PM10 Emissions from Paved and Unpaved Roads, and Livestock	Further emission reduction from fugitive dust sources
14	EPA Technical Support Document	Rule 1125 Metal Container, Closure and Coil Coating Operation	Lowering the VOC Limit of Rule 1125 for Three-piece and Two-piece can Interior Body Sprays, and Add a VOC Limit and Corresponding Definition for Exterior Body Spray
15	EPA Technical Support Document	Rule 445 Wood Burning Devices	Replace non-EPA Phase II certified wood burning devices upon home sale & ban the use of non-EPA-certified wood stoves in Rule 445
-	Other Districts' Control Measure	Rule 1138 Control of Emissions from Restaurant Operations	Extend applicability of the rule to under-fired charbroilers. Addressed in PCM # 13
16	Other Districts' Control Measure	Rule 445 Wood Burning Devices	Lower curtailment threshold in Rule 445
-	Control measures beyond RACM from 2012 AQMP	N/A	Emission reduction of NH3 from usage of feed additives. Addressed in PCM # 5
-	Control measures beyond RACM from 2012 AQMP	N/A	Emission reduction of NH3 from NOx controls; Addressed in PCM # 6.
-	Control measures beyond RACM from 2012 AQMP	N/A	Emission reduction of PM from entrained road dust; Addressed in PCM # 14
17	Control measures beyond RACM from 2012 AQMP	Rule 1133.3 Emission Reductions from Greenwaste Compositing Operations	Emission reductions of VOC and NH3 from greenwaste composting
18	EPA Menu of Control Measures	Rule 1157 PM10 Emission Reductions from Aggregate and Related Operations	Emission reduction of PM from asphalt manufacturing

Table VI-A-11 (CONCLUDED)

Potential Stationary Control Measures Identified for the 2016 AQMP RACM/BACM

#	Source of Information	SCAQMD Current Control	Potential Control Measure
19	EPA Menu of Control Measures	N/A	Emission reduction of PM from wood pulp and paper
20	EPA Menu of Control Measures	Rule 1108 Cutback Asphalt	Emission reduction of VOC and NO _x through reformulation and process modification for cutback asphalt
-	EPA Guidance Document	Rule 445 Wood Burning Devices	Removal of old wood stove upon resale of a home; addressed in PCM # 16
-	EPA Guidance Document	Rule 445 Wood Burning Devices	Ban the use of non-EPA-certified wood stoves; combined with PCM # 16

In addition to the above analyses, SCAG, CARB, and the SCAQMD staff have completed the following analyses to meet the requirements of the CAA:

RACM/BACM analyses and demonstration conducted by SCAG and CARB for transportation and mobile sources control measures are included in Appendix IV-C and in Attachment VI-A-3 of this Appendix.

Costs and cost effectiveness analyses, and planning and schedule for implementation for each of SCAQMD's stationary source and mobile source control measures, if available, are provided in Chapter IV, Appendix IV-A and B.

Control Measure Assessment

The potential control measures identified in the preceding section were evaluated to advance SCAQMD's emissions control strategies. A comprehensive feasibility analysis is conducted for all potential control measures. Quantifying emissions and estimated reductions are based on a variety of data sources, including, but not limited to, SCAQMD's AER program, approved AQMP emissions inventory (Chapter 3 and Appendix III of 2016 AQMP), approved CARB's GHG reporting/inventory program emissions database, archived equipment statistics obtained from the SCAQMD's past rulemaking, and data libraries of public energy policy and planning agencies and utility businesses (e.g., CPUC, CEC, SCE, etc.). For each potential control measure with quantifiable emission reduction opportunities, their technological and economic feasibility is assessed. Assessments of the 20 potential control measures are presented in Attachment VI-A-2 of this Appendix. Staff commits to refine the analysis of emission inventories, emission reductions, and cost-effectiveness during the rule development process.

The 2006 24-Hour PM_{2.5} Standard – BACM Demonstration

U.S. EPA reclassified the Basin as “serious” nonattainment for the 2006 24-hour standard effective February 12, 2016 with an attainment date of December 31, 2019. More stringent “serious” nonattainment area requirements apply including implementation of Best Available Control Measures. The Final Rule of “*Fine Particle Matter National Ambient Air Quality Standards: State Implementation Plan Requirements*” (81 FR 58010) indicates that a “serious” area attainment plan must include provisions to implement BACM on sources in a “serious” nonattainment area no later than four years after reclassification. The BACT evaluation presented in Appendix VI-A-1 provides a comparative analysis between SCAQMD’s source-specific rules and the analogous rules adopted by four other air districts in California for major stationary sources. For the key stationary source categories under SCAQMD jurisdiction, potential control measures are identified by comparing existing control measures to the requirements in federal and state regulations and guidance, as well as the analogous rules in other air districts. Furthermore, a 7-step analysis was conducted to identify candidate measures that are potentially feasible to be implemented in the Basin. The source of information includes the Air Quality Technology Symposium, RACT/BACT Evaluation, EPA Technical Support Documents, other Districts’ control measures, control measures beyond RACM in the 2012 AQMP, EPA menu of control measures, and EPA guidance document. The 20 potential control measures identified from the abovementioned analyses are further evaluated for technological feasibility and cost effectiveness. Details of the feasibility assessment are found in Attachment VI-A-2.

Table VI-A-12 shows a list of feasible control measures for the 2006 24-hour PM_{2.5} standard. PCM 4 (Emission Reductions from Replacement with Zero or Near-Zero NO_x Appliances in Commercial and Residential Applications), PCM 6 (Emission Reductions from Manure Management Strategies), PCM 10 (Emission Reductions from Non-Refinery Flares) and PCM 17 (Emission Reductions from Greenwaste Composting) are four feasible control measures with quantifiable emission reductions. By the time the State and District submit this plan to U.S. EPA in 2017, less than three years remain before the attainment date of December 31, 2019. In SCAQMD, most significant rules can take 18 months or longer to develop. Given these control measures are likely to be less socially or economically acceptable, it is likely that more than 18 months will be needed to adopt these rules and perform the environmental and socioeconomic analyses required by California law. These control measures are anticipated to be adopted in 2018/2019, with an implementation schedule of 2020. The implementation time of these control measures is beyond the statutory “serious” attainment deadline (2019) and therefore they do not qualified as BACM for the 2006 24-hour PM_{2.5} standard. Note that the 24-hour PM_{2.5} standard is expected to be met in 2019, based on air quality modeling of 2019 baseline emissions. The 2019 baseline emission is derived from the projected emissions from 2012 which includes all adopted control measures that will be implemented by December 31, 2019 (refer to Chapter 5 and Appendix 5 for details). The projected 2019 design value is 32.2 µg/m³ at Mira Loma – the design site of PM_{2.5}, indicating that sufficient emission reductions will be achieved for the Basin to attain the federal 24-hour PM_{2.5} standard in 2019 without additional controls.

Table VI-A-12Feasible Control Measures Identified for the 2006 24-hr PM_{2.5} Standard

PCM	Title	Pollutant	Potential Emission Reduction by 2021	Included as Plan Commitments?
1	Co-Benefit Emission Reductions from GHG Programs, Policies, and Incentives	NOx	TBD	Yes; co-benefits from other programs not included as BACM
2	Co-Benefits from Existing Residential and Commercial Building Energy Efficiency Measures	NOx & VOC	0.40 tpd of NOx 0.23 tpd of VOC	Yes; co-benefits from other programs not included as BACM
4	Emission Reductions from Replacement with Zero and Near-Zero NOx Appliances in Commercial and Residential Applications	NOx	1.8 tpd of NOx	Yes; implementation beyond 2019
6	Emission Reductions from Manure Management Strategies – Lowering the Regulatory Threshold for Rule 223	NH ₃	0.26 tpd of NH ₃	Yes; implementation beyond 2019
10	Emission Reductions from Non-Refinery Flares	NOx & VOC	1.2 tpd of NOx 0.4 tpd of VOC	Yes; implementation beyond 2019
16	Lowering the Curtailment Threshold in Rule 445	PM	0.9 tpd of PM	No, other consideration
17	Emission Reductions from Greenwaste Composting	VOC & NH ₃	1.40 tpd of VOC 0.08 tpd of NH ₃	Yes, implementation beyond 2019
20	Emission Reduction of VOC and NOx through Reformulation and Process Modification for Cutback Asphalt	VOC & NOx	N/A	No, other consideration

For PCM 16 and 20, although they are deemed technologically and economically feasible, there are other factors that make them impractical or unreasonable for implementation in the Basin. The section below provides additional justification for these two control measures.

Other Considerations

PCM 16 Lowering the curtailment threshold in Rule 445

The San Joaquin Valley Air Pollution Control District (SJVAPCD) recently amended the previous Rule 4901 episodic curtailment threshold (PM_{2.5} concentrations > 30 µg/m³ or PM₁₀ > 135 µg/m³) and implemented a two-tiered curtailment program. During a Level One Curtailment, triggered when PM_{2.5} concentrations are forecast to be between 20 and 65 µg/m³, operation of a wood burning fireplace or an unregistered wood burning heater is prohibited. Properly operated wood burning heaters that meet certification requirements (U.S. EPA Phase II-certified or equivalent) and have a current registration with SJVAPCD may be used during a Level One Curtailment. During a Level Two Curtailment, which is triggered when PM_{2.5}

concentration is forecast to be above $65 \mu\text{g}/\text{m}^3$ or $\text{PM}_{10} > 135 \mu\text{g}/\text{m}^3$, operation of any wood burning device is prohibited.* The staff report indicates that lowering the threshold level would increase the No Burn days from 35 days per wood burning season per County to 69 days. The increase in the number of SJVAPCD curtailment days could reduce $\text{PM}_{2.5}$ emissions by 1.5 tpd.

Under SCAQMD Rule 445 (Wood Burning Devices, Amended 5/3/13), curtailment is mandatory when the forecast level exceeds $30 \mu\text{g}/\text{m}^3$ from November to February. The SCAQMD curtailment threshold applies to all solid fuel devices, including wood-based residential cooking devices. In 2014 and 2015, none of the forecast levels exceeded $65 \mu\text{g}/\text{m}^3$, and hence, no Level Two Curtailments would have been called if SJVAPCD's two-tiered program had been implemented in the Basin. In SCAQMD, winters are generally milder and warmer than San Joaquin Valley. In downtown Los Angeles, the daily average temperature is above 60 degree Fahrenheit on 66 days of the 120 days during the 2015 curtailment months, compared to only about 8 days in Fresno. Prohibiting wood burning on 60 percent (i.e., 72 days) of the 120 day winter season with the Basin's smaller contribution of wood smoke emissions compared to the San Joaquin Valley, however, has insignificant impact on attainment and would be considered impractical. The current thresholds in Rule 445 ($30 \mu\text{g}/\text{m}^3$) is higher than SJVAPCD's level one threshold. However, Rule 445 applies to all solid wood burning sources with no exemption on any type or technology. Also, the two-tiered systems used in SJVAPCD will introduce serious challenges in enforceability. Instead, a clear, straightforward message to the public to prohibit all wood burning during periods of poor air quality accompanied by an existing incentive program to encourage the public to switch to gaseous-fueled devices is more effective and will ultimately result in more emission reductions for this region. The impracticability of this approach combined with existing and ongoing efforts makes it infeasible.

PCM 20 Emission reduction of VOC and NO_x through reformulation and process modification for cutback asphalt

As discussed in the control measurement assessment section (PCM 20), warm mix asphalt (WMA) allows the mixing and placement of asphalt mix at temperatures about 35 to 100°F lower than conventional hot mix asphalt (HMA), resulting in a reduction of fuel consumption, as well as potential reductions of emissions from the manufacturing plant and the project site where the asphalt is laid. In a white paper developed by the SCAQMD in 2008, staff concluded that lower-energy warm mix asphalt technologies were promising in reducing energy use and reducing NO_x and VOC emissions. Nonetheless, the impact of mix and structural design, material processing requirements, construction procedures, and quality control specifications were not yet fully evaluated. In the last few years, WMA has been increasingly popular in the United States. Caltrans promotes the use of WMA because of its many improvements over HMA. In its April 2013 publication, Caltrans reported a 30 percent potential fuel savings and an 18 percent reduction in the overall GHG emissions associated with WMA.⁸ The University of California Pavement Research Center (UCPRC) investigated the performance of rubberized WMA and found that in a controlled environment, rubberized WMA have better workability, and could result in potential energy savings and safer working conditions compared to HMA.⁹ WMA suppliers reported 19–50 percent VOCs reduction

* Exemptions are provided where natural gas service is not available or where a wood burning device is the sole source of heat in a residence.

and 60–70 percent NO_x reduction in plant emissions in Europe, although increased emissions of VOCs and CO were observed in the United States.¹⁰ Although the overall performance of WMA seemed promising, mixed results were revealed on the potential emission reductions in a field test. UCPRC measured VOCs and semi-volatile organic compounds (SVOCs) emissions from WMA and HMA at the pavement surface during construction. Results showed that depending on the mix type and the temperature inside the chamber, total reactive organic gases (ROG) emission flux of WMA could be higher or lower than HMA.¹¹ Based on current information, the emission reduction of WMA technology is still uncertain. The potential increase in VOC emissions needs to be further investigated. Therefore, staff suggests further evaluation of the emission reduction and cost-effectiveness for WMA technology prior to being considered as RACM.

In summary, SCAQMD's existing rules and regulations are generally as stringent as, or more stringent than the analogous rules in other districts. Four cost effective and technologically feasible control measures have been identified in this AQMP. The earliest implementation time of these feasible control measures is beyond the attainment date of 2019, and therefore they do not qualify as BACM or additional feasible measures for the 2006 24-hr PM_{2.5} standard. Based on these analyses, SCAQMD has in place the Best Available Control Measures for the 2006 annual PM_{2.5} standard.

The 2012 Annual PM_{2.5} Standard

RACM Demonstration

The Basin was designated as a “moderate” nonattainment area for the 2012 annual PM_{2.5} standards on April 15, 2015. This designation sets an attainment deadline of December 31, 2021. Air quality modeling analysis, as presented in Appendix VI-B, demonstrates that the District cannot practically attain the 2012 annual PM_{2.5} standard by December 31, 2021. The Final Rule of “*Fine Particle Matter National Ambient Air Quality Standards: State Implementation Plan Requirements*” (81 FR 58010) indicates that for “moderate” areas that demonstrate that attainment by the statutory attainment date is impracticable, RACM and RACT would constitute all those technologically and economically feasible measures available for sources in the area that can be implemented within four years of designation. Therefore, control measures have to be implemented by April 15, 2019 to be considered RACM/RACT for the 2012 annual PM_{2.5} standard. Measures that can only be implemented after the four-year deadline for RACM and RACT, but before the end of the sixth calendar year following designation, are defined in the final rule as “additional reasonable measures.”

As presented earlier in this Appendix, various analyses have been conducted to identify potential control measures for direct PM_{2.5} and PM_{2.5} precursors. Table VI-A-13 shows a list of feasible control measures for the 2012 annual PM_{2.5} standard. PCM 4 (Emission Reductions from Replacement with Zero or Near-Zero NO_x Appliances in Commercial and Residential Applications), PCM 6 (Emission Reductions from Manure Management Strategies), PCM 10 (Emission Reductions from Non-Refinery Flares) and PCM 17 (Emission Reductions from Greenwaste Composting) are four feasible control measures with quantifiable

emission reductions. The implementation of these control measures is anticipated in 2020, resulting in 3.0 tpd of NO_x reduction, 1.8 tpd of VOC reduction, and 0.34 tpd of NH₃ reduction by 2021. Since the implementation of these control measures is beyond 2019, they are committed as “additional reasonable measures” for the 2012 annual PM_{2.5} standard. More details about the implementation of PCM 4, PCM 6, PCM 10 and PCM 17 can be found in the discussion of CMB-02 (Emission Reductions from Replacement with Zero and Near-Zero NO_x Appliances in Commercial and Residential Applications), BCM-04 (Emission Reductions from Manure Management Strategies—Lowering the Regulatory Threshold of Rule 223), CMB-03 (Emission Reductions from Non-Refinery Flares) and BCM-10 (Emission Reductions from Greenwaste Composting) in Chapter 4 – Control Strategy & Implementation, respectively.

In summary, SCAQMD’s existing rules and regulations are generally as stringent as, or more stringent than the analogous rules in other districts. The four cost effective and technologically feasible control measures identified, namely PCM 4, PCM 6, PCM 10 and PCM 17, are committed as “additional reasonable measures” in the 2016 AQMP. As such, SCAQMD meets the RACM requirements for the 2012 Annual PM_{2.5} standard.

Table VI-A-13Feasible Control Measures Identified for the 2012 Annual PM_{2.5} Standard

PCM	Title	Pollutant	Potential Emission Reduction by 2021	Included as Plan Commitments?
1	Co-Benefit Emission Reductions from GHG Programs, Policies, and Incentives	NO _x	TBD	Yes; co-benefits from other programs not included as BACM
2	Co-Benefits from Existing Residential and Commercial Building Energy Efficiency Measures	NO _x & VOC	0.40 tpd of NO _x 0.23 tpd of VOC	Yes; co-benefits from other programs not included as BACM
4	Emission Reductions from Replacement with Zero and Near-Zero NO _x Appliances in Commercial and Residential Applications	NO _x	1.8 tpd of NO _x	Yes, as additional reasonable measure
6	Emission Reductions from Manure Management Strategies – Lowering the Regulatory Threshold for Rule 223	NH ₃	0.26 tpd of NH ₃	Yes, as additional reasonable measure
10	Emission Reductions from Non-Refinery Flares	NO _x & VOC	1.2 tpd of NO _x 0.4 tpd of VOC	Yes, as additional reasonable measure
16	Lowering the Curtailment Threshold in Rule 445	PM	0.9 tpd of PM	No, other consideration
17	Emission Reductions from Greenwaste Composting	VOC & NH ₃	1.40 tpd of VOC 0.08 tpd of NH ₃	Yes, as additional reasonable measure
20	Emission Reduction of VOC and NO _x through Reformulation and Process Modification for Cutback Asphalt	VOC & NO _x	N/A	No, other consideration

BACM Demonstration

The Basin was designated as a “moderate” nonattainment area for the 2012 annual PM_{2.5} standard on April 15, 2015. Acknowledging the challenges in meeting the stringent health-based standard, including the uncertainties in drought conditions, and the potential inability to claim all ozone strategy reductions toward PM_{2.5} attainment, if approved under CAA Section 182 (e)(5), SCAQMD is requesting a voluntary bump up to the “serious” category for the 2012 annual PM_{2.5} standard. Modeling analysis supporting the request for the reclassification is described in Appendix VI-B. Upon EPA’s review and approval of the impracticability demonstration, the Basin will be reclassified as a “serious” nonattainment for the 2012 annual PM_{2.5} standard. The attainment year for a “serious” nonattainment area is 10 years after the initial nonattainment designation, which is year 2025 for the 2012 annual PM_{2.5} standard. A “serious” nonattainment area is subject to the requirements to implement BACM/BACT and additional feasible measures. Four feasible control measures have been identified in the 2016 AQMP, namely PCM 4 (Emission Reductions from Replacement with Zero or Near-Zero NO_x Appliances in Commercial and Residential Applications), PCM 6 (Emission Reductions from Manure Management Strategies), PCM 10 (Emission Reductions from Non-Refinery Flares) and PCM 17 (Emission Reductions from Greenwaste Composting). The implementation of these control measures will result in 3.0 tpd of NO_x reduction, 1.8 tpd of VOC reduction, and 0.34 tpd of NH₃ reduction by 2021. SCAQMD did not identify any additional feasible measures beyond the anticipated emissions reductions from these four control measures. In general, the SCAQMD’s existing rules and regulations are equivalent to, or more stringent than other districts’ rules and regulations. In the four areas where improvements are feasible, they are included as plan commitments. As such, SCAQMD meets the Best Available Control Measures requirements for the 2012 annual PM_{2.5} standard.

The 2008 8-Hour Ozone Standard – RACM Demonstration

In July 2014, the SCAQMD submitted a RACT SIP update to the U.S. EPA as a component of the 2016 AQMP with respect to the 2008 8-hour ozone NAAQS. The 2014 RACT analysis identified eight SCAQMD rules that have discrepancies with the companion rules at other California agencies. These rules were further evaluated as part of RACM. Table VI-A-14 shows a list of feasible control measures for the 2008 8-hour ozone standard. PCM 4 (Emission Reductions from Replacement with Zero or Near-Zero NO_x Appliances in Commercial and Residential Applications), PCM 10 (Emission Reductions from Non-Refinery Flares) and PCM 17 (Emission Reductions from Greenwaste Composting) are the feasible control measures with quantifiable VOC and NO_x emission reductions. The implementation of the three control measures is anticipated to start in 2020, resulting in 4.3 tpd of NO_x reduction and 2.2 tpd of VOC reduction by 2031. More details about the implementation of PCM 4, PCM 10 and PCM 17 can be found in the discussion of CMB-02 (Emission Reductions from Replacement with Zero and Near-Zero NO_x Appliances in Commercial and Residential Applications), CMB-03 (Emission Reductions from Non-Refinery Flares) and BCM-10 (Emission Reductions from Greenwaste Composting) in Chapter 4 – Control Strategy & Implementation,

respectively. In summary, SCAQMD's existing rules and regulations are generally as stringent as, or more stringent than the analogous rules in other districts. The three cost effective and technologically feasible control measures identified, namely PCM 4, PCM 10 and PCM 17, are committed in the 2016 AQMP. As such, SCAQMD meets the RACM requirements for the 2008 8-hour ozone standard.

Table VI-A-14

Feasible Control Measures Identified for the 2008 8-hour Ozone Standard

PCM	Title	Pollutant	Potential Emission Reduction by 2031	Included as Plan Commitments?
1	Co-Benefit Emission Reductions from GHG Programs, Policies, and Incentives	NOx	TBD	Yes; co-benefits from other programs not included as RACM
2	Co-Benefits from Existing Residential and Commercial Building Energy Efficiency Measures	NOx & VOC	1.1 tpd of NOx 0.29 tpd of VOC	Yes; co-benefits from other programs not included as RACM
4	Emission Reductions from Replacement with Zero or Near-Zero NOx Appliances in Commercial Residential Application	NOx	2.84 tpd of NOx	Yes, as RACM
10	Emission Reductions from Non-Refinery Flares	NOx & VOC	1.5 tpd of NOx 0.4 tpd of VOC	Yes, as RACM
17	Emission Reductions from Greenwaste Composting	VOC & NH3	1.8 tpd of VOC	Yes, as RACM
20	Emission Reduction of VOC and NOx through Reformulation and Process Modification for Cutback Asphalt.	VOC & NOx	N/A	No, other consideration

Conclusions

Following are the SCAQMD staff's conclusions:

- As required by the CAA and the U.S. EPA's PM2.5 Implementation Rule, SCAQMD staff evaluated and analyzed all feasible control measure concepts that were currently available for inclusion in the 2016 AQMP. These concepts were either provided by the public and experts, recommended by U.S. EPA, or implemented by other air districts. From these concepts, SCAQMD staff selected and developed 25 potential stationary source control measures and 15 mobile source control measures to address attainment of the PM2.5 and the 8-hour ozone standard (more details in Appendix IV-A). SCAQMD staff also developed Control Measure MCS-02 – Application of All Feasible Measures Assessment to facilitate the inclusion of any future innovative air pollution control technologies or ideas that can help the Basin achieve the NAAQS as expeditiously as possible.

- Following the approach recommended by the U.S. EPA, SCAQMD staff evaluated rules, regulations and control measures developed in the 2012–2015 timeframe by other nonattainment air districts in the nation. In general, the SCAQMD’s existing rules and regulations are equivalent to, or more stringent than other districts’ rules and regulations and the proposed control measures in their respective SIPs. In the few areas where the SCAQMD’s rules can be amended, they are included as plan commitments or have been targeted for further evaluation. SCAQMD staff will monitor the rule development of other air districts, and conduct further analyses to refine the emission inventory, emission reductions, and cost-effectiveness analysis.
- The Basin is expected to meet the 24-hour PM_{2.5} standard in 2019 with no additional emission reductions beyond already adopted measures and regulations. The SCAQMD is projected to attain the annual PM_{2.5} standard in 2023 with co-benefits from the 2023 ozone strategy, but attainment was demonstrated in 2025 due to the potential inability to credit all ozone strategy reductions towards PM_{2.5} attainment, if approved under CAA Section 182 (e)(5).
- With regard to the early actions to achieve ozone attainment, SCAQMD staff has developed an integrated slate of controls to meet the attainment dates as expeditiously as possible. The available control measures that were not included as plan commitments would not collectively advance the attainment date or contribute to the RFP because of the uncertain or non-quantifiable amount of emission reductions that they would potentially generate.

In conclusion, the SCAQMD has conducted the RACM/RACT and BACM/BACT analysis for identifying and selecting the control measures for the 2016 AQMP in compliance with the requirements of the CAA as well as the U.S. EPA’s policy and guidelines.

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FINAL 2016 AQMP
APPENDIX VI-A
ATTACHMENT VI-A-1

EVALUATION OF SCAQMD RULES AND REGULATIONS

Attachment VI-A-1a

Evaluation of SCAQMD Rules and Regulations - PM Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
404	PM	Rule 404 – Particulate Concentration (Amended 2/7/86)	Atmospheric discharge from any source is required to meet the PM limits varying from 0.01 gr/dscf to 0.19 gr/dscf in Rule 404 depending on exhaust flow rates.	Bay Area, Regulation 6, Rule 1 (Adopted 12/5/07) contains the following limits: · PM limit is 0.15 gr/dscf	SCAQMD Rule 404 varies in stringency when compared to other Districts' requirements. For majority of the categories, Rule 404 is as stringent as or more stringent than the other Districts' rules, and provides BACT level of control.
444	All	Open Burning (Amended 7/12/13)	Contains requirements and prohibitions for open burning to minimize emissions and smoke impacts to the public; allows open burning on permissive burn days, provided a permit and burn authorization is obtained; establishes burn plan requirements for prescribed burns; sets daily maximum burn acreage for agricultural and prescribed burning.	San Joaquin Valley Rule 4103 (Amended 4/15/10) contains additional best management practices compared to Rule 444 such as best management practices to control open burning of weeds. Bay Area, Reg 5, sets requirements for open burning, and forbids recreational burning during curtailment periods.	On April 8, 2002, EPA approved Rule 444 into the Applicable-SIP as fulfilling BACT/BACM for PM10 (67 FR 16644). In its TSD for the approval of Rule 444 into the California SIP published in 2013, EPA determined that with the exception of provisions about banning the burning of specific crops, Rule 444 is generally as stringent as or more stringent than analogous rules in other California Districts. Overall, Rule 444 provides BACT level of control for this source category.
1137	PM	PM10 Reduction From Woodworking Operations (Adopted 2/1/02)	Require that woodworking operations send sawdust emissions either directly to a baghouse filter, or to a pneumatic conveyance device that leads to a baghouse filter.	n/a*	Meets BACT.

re no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

Attachment VI-A-1a

Evaluation of SCAQMD Rules and Regulations - PM Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1138	PM	Control Of Emissions From Restaurant Operations (Adopted 11/14/97)	Require catalytic oxidizer for chain-driven charbroilers. Exemption provided for under-fired charbroilers and units cooking less than 875 lbs/week.	<p>Ventura Rule 74.25 (Adopted 10/12/04) has equivalent requirements as in Rule 1138.</p> <p>Bay Area Rule 2 of Regulation 6 (12/5/07) has emission standards of 0.74 lbs PM10 and 0.32 lbs VOC per thousand pounds of meat cooked for all chain-driven charbroilers; 1.0 lbs PM10 per thousand pounds of meat cooked for all under-fired charbroilers with combined total grill surface area of at least 10 square feet.</p> <p>San Joaquin Rule 4692 requires catalytic oxidizers for chain-driven charbroilers cooking 400 pounds of meat or more per week. This threshold is more stringent than Rule 1138 which applies to chain-driven charbroilers cooking 875 pounds of meat or more per week.</p>	<p>Most BAAQMD under-fired charbroilers facilities are too small to trigger the under-fired charbroilers requirements.</p> <p>Note that the lower applicability threshold and the extension of rule applicability to under-fired charbroilers applies to facilities that are too small to exceed the major source threshold.</p> <p>Further reduce PM emission from under-fired charbroilers: Control Measure BCM-01 proposes to establish a tiered program targeting higher efficiency controls for higher use under-fired charbroilers at larger establishments, with more affordable lower efficiency controls at smaller restaurants.</p>
1140	PM	Abrasive Blasting (Amended 8/2/85)	Set standards for the abrasives and require a visible emission evaluation to determine the impact of abrasive blasting operations on visibility.	n/a*	Rule 1140 is substantively similar to the California Code of Regulations, Title 17, Subchapter 6 — Abrasive Blasting provisions, which have been adopted by most California Air Districts. State law prohibits more stringent requirements. As such, Rule 1140 meets the BACT requirements.
1155	PM	Particulate Matter Control Devices (Amended 5/2/14)	PM standards for PM control devices at 0.01 gr/dcsf for existing large baghouses >7500 square feet. Good operational practices to reduce PM emissions	n/a*	Meets BACT.
1156	PM	PM10 Emission Reductions from Cement Manufacturing Facilities (Amended 3/6/09)	PM standards for PM control devices (0.01 gr/dcsf for existing and 0.005 gr/dcsf for new devices). Good operational practices to reduce PM emissions from aggregate and related operations	n/a*	Meets BACT.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

Attachment VI-A-1a

Evaluation of SCAQMD Rules and Regulations - PM Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1157	PM	PM10 Emissions Reductions from Aggregate and Related Operations (Amended 9/8/06)	Good operational practices to reduce PM emissions from aggregate and related operations. Establish source specific performance standards (no dust emissions exceeding 20 percent opacity, or no dust emissions exceeding 50 percent opacity, or no dust plume beyond 100 feet from any emission source, etc.) and specifying operational PM10 controls for various types of equipment, processes, storage piles, internal roadways at aggregate and related operations, and track-out of materials onto paved public roads	EPA promulgated standards for new hot mix asphalt facilities in Title 40, Chapter I, Part 60, Subpart I of the Code of Federal Regulations (40 CFR Part 60, Subpart I). Subpart I assigns a 20 percent opacity limit and a 90 mg/dscm (micrograms/dry standard cubic meter) PM content for fugitive emissions.	<p>In its TSD for the approval of Rule 1157 into the California SIP published in 2011, EPA determined that Rule 1157 generally had the most stringent requirements and concluded that Rule 1157 fulfills CAA BACM.</p> <p>Overall, Rule 1157 is as stringent as or more stringent than the other Districts' rules, and meets the BACT requirements for this source category.</p>
1186	PM	PM10 Emissions from Paved and Unpaved Roads, and Livestock Operations (Adopted 7/11/08)	Requires good management practice such as clean-up of spills on public roadways, post-event street cleaning, routine sweeping using certified street sweeping equipment, new or widened roads to have improved road shoulders and treatment of livestock feed access lanes and cessation of hay grinding activities during high winds, etc.; Establish unpaved road treatment schedule for local jurisdictions in the Basin.	SJVAPCD Rule 8061 requires municipalities to sweep paved roads at least once per month with PM10 efficient units. For unpaved roads, on any unpaved road segment with 26 or more AADT, the owner/operator shall limit visible dust emission to 20% opacity and comply with the requirements of a stabilized unpaved road, or shall implement an APCO-approved Fugitive PM10 Management Plan; Within an urban area, requires all new unpaved roads be paved.	<p>In its TSD for the approval of Rule 1186 into the California SIP published in 2011, EPA determined that the requirements to insure continued compliance added in the 2008 amendment further strengthens the SIP-approved version of this rule, which was determined to meet the BACM provisions.</p> <p>For majority of the categories, Rule 1186 is as stringent as or more stringent than the other Districts' rules, and provides BACT level of control.</p> <p>Further reduction of PM emission: Control Measure BCM-03 outlines possible efforts to reduce paved road dust emissions, and proposes a review of current SCAQMD Rule requirements to determine if additional emission reductions could be achieved from fugitive dust sources (e.g., temporary unpaved parking lots).</p>

Attachment VI-A-1a

Evaluation of SCAQMD Rules and Regulations - PM Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1133, 1133.1	PM	<p>Rule 1133 - Composting and Related Operations – General Administrative Requirements (Adopted 1/10/03)</p> <p>Rule 1133.1 – Chipping and Grinding Activities (Amended 7/8/11)</p>	<p>Rule 1133 is an administrative rule that requires composting, chipping, and/or grinding facilities to register with the District. These facilities provide information such as types and amounts of feedstocks produced, and a description of the processes used at the facility. This information is updated annually.</p> <p>Rule 1133.1 establishes holding or processing time requirements for green waste and food waste chipping and grinding activities. The rule's objective is to prevent inadvertent decomposition occurring during chipping and grinding activities.</p>	n/a*	Rule 1133.1 was amended in 2011 to better manage stockpile operations associated with chipping and grinding activities, which is to be consistent with current greenwaste material processing requirements established in Title 14 of the California Code of Regulations. Rule 1133.1 meets the BACT requirements.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

Attachment VI-A-1b

Evaluation of SCAQMD Rules and Regulations - SOx Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
431.1	SOx	Sulfur Content Gaseous Fuels (Amended 6/12/98)	H ₂ S Limits: Natural gas (16 ppmv) Refinery Gas (40 ppmv) Landfill Gas (150 ppmv) Sewage Gas (40 ppmv) Other Gas (40 ppmv)	n/a*	Meets BACT.
431.2	SOx	Sulfur Content Liquid Fuels (Amended 9/15/2002)	Limit: 15 ppm by weight	n/a*	Meets BACT.
468	SOx	Rule 468 – Sulfur Recovery Units (Amended 10/8/76)	Rule 468 for sulfur recovery units contains emission limits of the following: · 500 ppm of sulfur compounds expressed as sulfur dioxide · 10 ppm of hydrogen sulfide · 90 kilograms (198.5 pounds) per hour of sulfur compounds expressed as sulfur dioxide Many of Rule 468 units are in RECLAIM, and RECLAIM incorporates the BARCT limit of 5 ppmv for sulfur recovery units.	Bay Area, Regulation 6, Rule 1 (Adopted 12/5/07) contains the following limits: · Sulfur Recovery Units: limit sulfur trioxide or sulfuric acid mist, or both, expressed as 100% sulfuric acid, to 0.08 gr/dscf	The BARCT emission limit in SOx RECLAIM (Rule 2002) is 5 ppmv for sulfur recovery units. Rule 468 and the RECLAIM program provide BACT level of control for this source category.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

Attachment VI-A-1b

Evaluation of SCAQMD Rules and Regulations - SOx Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1118	All	Refinery Flares (Amended 11/4/05)	<ul style="list-style-type: none"> · Minimize flare emissions & require smokeless operations · Specify SO2 gradually decreasing performance target to less than 0.5 tons per million barrels of crude by 2012. · If the performance target is exceeded, the operator must 1) pay mitigation fee; or 2) submit a Flare Mitigation Plan to reduce emissions. · Require Cause Analysis for event exceeding 100 lbs VOC, 500 lbs of SO2, or 500,000 scfm of vent gas, excluding planned shutdown, startup and turnarounds · Require 160 ppmv H2S, 3 hour average by 1/1/09, and no limits for NOx, VOC, PM and CO. 	<p>U.S. EPA suggested the SCAQMD to further re-evaluate Rule 1118 (FR Vol 76 No 217, Nov 9, 2011, CBE comments).</p> <p>San Joaquin Valley Rule 4311 (Amended 6/18/09) has VOC/NOx limits for ground-level enclosed flares; SO2 Targets (1.50 tons/million barrels of crude by 2011, and 0.5 tons/million barrels by 2012); Flare Minimization Plan for refinery flares more than 5 mmbtu/hr; and operational requirements for all flares that have potential to emit more than 10 tons/yr VOC and more than 10 tons/yr of NOx.</p> <p>Bay Area Rule 12-12 (Adopted 4/5/06) does not specify a declining SO2 target and does not contain a mitigation fee option.</p>	<p>SJVAPCD Rule 4311 (exempting municipal landfills) applies to sources other than refineries that emit > 10 TPY.</p> <p>Rule 1118 meets BACT for controlling flare emissions emanating from refineries.</p>
2002	SOx	RECLAIM (Amended 12/4/15)	<p>Include facility allocations for SOx for RECLAIM facilities.</p> <p>BARCT Emissions Limits:</p> <ul style="list-style-type: none"> • 10 ppmv (0.11 lbs/ton coke)Cement Kiln • 5 ppmv (0.04 lbs/ton clinker)Coal-Fired Boiler • 5 ppmv (95% reduction)Container Glass Melting Furnace • 5 ppmv (0.03 lbs/ton glass)Diesel Combustion • 15 ppmv as required under Rule 431.2 Fluid Catalytic Cracking Unit • 5 ppmv (3.25 lbs/thousand barrels feed)Refinery Boiler/Heater • 40 ppmv (6.76 lbs/mmscft)Sulfur Recovery Units/Tail Gas • 5 ppmv for combusted tail gas (5.28 lbs/hour)Sulfuric Acid Manufacturing • 10 ppmv (0.14 lbs/ton acid produced) 	n/a*	BARCT emission limits are incorporated in Rule 2002, providing BACT level of control.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

Attachment VI-A-1c

Evaluation of SCAQMD Rules and Regulations - NOx Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
444	NOx	Open Burning (Amended 7/12/13)	Contains requirements and prohibitions for open burning to minimize emissions and smoke impacts to the public.	San Joaquin Valley Rule 4103 (Amended 4/15/10) contains additional best management practices compared to Rule 444 such as best management practices to control open burning of weeds.	<p>On April 8, 2002, EPA approved Rule 444 into the Applicable-SIP as fulfilling BACT/BACM for PM10 (67 FR 16644).</p> <p>In its TSD for the approval of Rule 444 into the California SIP published in 2013, EPA determined that with the exception of provisions about banning the burning of specific crops, Rule 444 is generally as stringent as or more stringent than analogous rules in other California Districts.</p> <p>SCAQMD Rule 444 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 444 is as stringent as or more stringent than the other Districts' rules, and provides BACT level of control for this source category.</p>

Attachment VI-A-1c

Evaluation of SCAQMD Rules and Regulations - NOx Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1110.2	NOx	Emissions from Gaseous and Liquid Fueled Engines (Amended 9/7/12)	<p>Rule 1110.2 has NO_x, VOC, CO limits for all stationary and portable engines over 50 brake horse power (bhp). In general, the limits applicable to 1) stationary, non-emergency engines, and 2) biogas (landfill and digester gas) engines are:</p> <ul style="list-style-type: none"> • 11 ppmv NO_x • 30 ppmv VOC • 250 ppmv CO <p>Limits for new non-emergency engines driving electrical generators are:</p> <ul style="list-style-type: none"> • 0.07 lbs NO_x per MW-hr • 0.20 lbs CO per MW-hr • 0.10 lbs VOC per MW-hr <p>Limits for low usage biogas engines:</p> <ul style="list-style-type: none"> • 36 ppmv NO_x, engines ≥ 500 bhp • 45 ppmv NO_x, engines < 500 bhp • 40 ppmv VOC, landfill gas • 250 ppmv VOC, digester gas • 2000 ppmv CO. <p>Portable and agricultural engines are not subject to the general limits listed above. Many of Rule 1110.2 engines are in RECLAIM, and RECLAIM (version 12/2015) incorporates the BARCT limit of 11 ppm of NO_x @15% O₂.</p>	<p>San Joaquin Valley Rule 4702 (Amended 8/19/11) has NO_x, VOC, CO and SO_x limits for engines rated over 25 bhp.</p> <p>For engines over 50 bhp:</p> <ul style="list-style-type: none"> - By 1/1/2017, the limits for spark-ignited engines are: <ul style="list-style-type: none"> • 11 ppmv NO_x • 250 ppmv VOC (rich-burn) and 750 ppmv VOC (lean burn), and • 2000 ppmv CO - Engines used in agricultural operations (AO), or fueled with waste gas, or limited used, or cyclic loaded and field gas fueled are subject to higher limits than the above - In general, all compression ignited engines must meet EPA Tier 4 standards. <p>Engines between 25 bhp - 50 bhp, non AO, must meet federal standards 40CFR Part 60 Subpart IIII and JJJJ. The SO_x limits are: 1) Natural gas, propane, butane, LPG, or combination, or 2) 5 grains/100 scf for gaseous fuel, or 3) 15 ppmv liquid fuel, or 4) CA reformulated gasoline for spark-ignited engines, or 5) CA reformulated diesel for compression ignited engines, or 6) 95% control.</p>	<p>In its TSD for the approval of Rule 1110.2 into the California SIP published in 2008, EPA concluded that the rule's emissions limits are more stringent than the corresponding limits in the guidance and policy documents (specified in the TSD) or other California District rules on internal combustion engines. The emissions limits scheduled for July 1, 2011 and July 1, 2012, are comparable to the limits expressed by the South Coast AQMD BACT Guidelines.</p> <p>The RECLAIM (version 12/2015) BARCT limit of 11 ppm is at least as stringent as other California District rules.</p> <p>Rule 1110.2 and the RECLAIM program provide BACT level of control for this source category.</p>
1134	NOx	Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Amended 8/8/97)	<p>Standard = Reference Limit x (Unit Efficiency/25%), where reference limit depends on size of units, varying from 9 ppmv for units rating at equal to or larger than 10MW to 25 ppmv for units rating from 0.3 MW to less than 2.9 MW.</p> <p>RECLAIM, amended 12/2015 version, incorporates a BARCT limit of 2 ppmv.</p>	<p>Sacramento Rule 413 (Amended 03/24/05) has standards from 9 ppmv – 25 ppmv depending on size of units, but are independent on equipment efficiency.</p> <p>San Joaquin Rule 4703 (Amended 9/20/07) has standards from 5 ppmv – 50 ppmv depending on size of units. Combined cycle units > 10 MW has limit of 3 ppmv.</p> <p>Ventura Rule 74.9 (Amended 11/08/05) has standards from 25 – 125 ppmv depending on fuel type but are independent from equipment size and efficiency. Control efficiency 90% - 96%. In addition, all units have to meet 20 ppmv NH₃.</p>	<p>SCAQMD Rule 1134 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1134 is as stringent as or more stringent than the other Districts' rules.</p> <p>SCAQMD's RECLAIM program incorporates NO_x limits of 2 ppmv for all units.</p> <p>Rule 1134 and the RECLAIM program provide BACT level of control for this source category.</p>

Attachment VI-A-1c

Evaluation of SCAQMD Rules and Regulations - NOx Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1146	NOx	Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters (Amended 11/1/2013)	<p>Applicable to units rating of more than 5 mmbtu/hr.</p> <p>Current NOx limits:</p> <ul style="list-style-type: none"> • For digester gas: 15 ppmv • For landfill gas: 25 ppmv • For refinery gas: 30 ppmv (the 2008 amendment did not revise limits for refinery gas) • For other types of fuels: 5 ppmv for ≥ 75 mmbtu/hr, natural gas; 30 ppmv for ≥ 75 mmbtu/hr, other fuels; and 5 or 9 ppmv for 20–75 mmbtu/hr units <p>CO limit: 400ppmv</p> <p>Many Rule 1146 units are in RECLAIM. RECLAIM (Amended 12/15 version) contains the following NOx limits:</p> <ul style="list-style-type: none"> • For refinery gas: 2 ppmv for units > 40 mmbtu/hr • For other units: 9 ppmv for units > 20 mmbtu/hr; and 12 ppmv for units ≥ 2 mmbtu/hr 	<p>Sacramento Rule 411 (Amended 10/27/05) limits for gaseous fuel are 9 ppmv for units greater than 20 mmbtu/hr, and 15 ppmv for units from 5 to 20 mmbtu/hr.</p> <p>San Joaquin Rule 4306 (Amended 10/18/08) has the following limits:</p> <p>NOx limits:</p> <ul style="list-style-type: none"> • 30 ppmv for 5–65 mmbtu/hr units using refinery gas. For units from 40 – 100 mmbtu/hr, refer to the comparison under Rule 1109 • For other types of fuels: 9 ppmv for >20 mmbtu/hr units; 15 ppmv for ≤ 20 mmbtu/hr units (6 – 9 ppmv for enhanced options) • Other units: 15 – 30 ppmv CO limit: 400 ppmv. <p>San Joaquin Valley reduced NOx, CO, SO2 and PM10 emissions by adopting Rule 4320 on 10/16/08. The limits in Rule 4320 are:</p> <p>NOx limits:</p> <ul style="list-style-type: none"> • For refinery gas: 5 – 6 ppmv for units between 20-110 mmbtu/hr; 6 – 9 ppmv for units between 5 - 20 mmbtu/hr; and 9 ppmv for units firing of less than 50% by vol PUC quality gas. Refer to the comparison under Rule 1109 for 40 mmbtu/hr units and above using refinery gas. • For oil field generators: 5 - 7 ppmv for units greater than 20 mmbtu/hr; 6 – 9 ppmv for units larger than 5 but less than 20 mmbtu/hr; and 9 ppmv for units firing of less than 50% by vol PUC quality gas • For low usage units: 9 ppmv • For units at a wastewater treatment facilities firing on less than 50% by vol PUC quality gas: 9 ppmv • For other units: 5 – 7 ppmv for units larger than 20 mmbtu/hr; and 6 – 9 ppmv for units between 5 mmbtu/hr and 20 mmbtu/hr <p>Compliance may be mitigated with annual emission fees.</p>	<p>In its TSD for the approval of Rule 1146 published in 2014, EPA concluded that Rule 1146 is as stringent as other California District rules for this category.</p> <p>Rule 1146 and the RECLAIM program provide BACT level of control for this source category.</p>

Attachment VI-A-1c

Evaluation of SCAQMD Rules and Regulations - NOx Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1146.1	NOx	Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (Amended 11/1/13)	<p>Applicable to units rating from 2 mmbtu/hr to 5 mmbtu/hr. NOx limits:</p> <ul style="list-style-type: none"> • Atmospheric Units: 12 ppmv • Digester gas: 15 ppmv • Landfill gas: 25 ppmv • All others: 9 ppmv <p>CO limit: 400 ppmv.</p> <p>Many Rule 1146.1 units are in RECLAIM, and RECLAIM (Amended 12/15 version) has a limit of 12 ppmv NOx for boilers in this size range.</p>	<p>Bay Area Rule 9-11 (Amended 5/17/00) has following limits for boilers using gaseous fuel 1) 10 ppmv for boilers with rated input greater than 1.75 mmbtu/hr, 2) 25 ppmv for boilers from 1.5-1.75 mmbtu/hr, 3) 30 ppmv for boilers less than 1.5 million btu/hr. Non-gaseous fuel combustion devices have higher limits than gaseous fuel devices.</p> <p>San Joaquin Rule 4307 (Amended 5/19/2011) has the following limits: NOx limits: For New or Replacement Units: Atmospheric Units: 12 ppmv, and Non-Atmospheric Units: 9 ppmv - For Retrofit Units: 30 ppmv burning gaseous fuels; and 40 ppmv burning liquid fuels Sulfur limits for SO2: - For natural gas, propane, butane, or LPG: 5 grains of total sulfur per 100 scf, or 9 ppmv SO2, or 95% control - For liquid fuels: 15 ppmv sulfur</p>	<p>In its TSD for the approval of Rule 1146.1 published in 2014, EPA concluded that Rule 1146 is as stringent as other California District rules for this category.</p> <p>Rule 1146.1 and the RECLAIM program provide BACT level of control for this source category.</p>
1146.2	NOx	Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers (Amended 5/5/06)	<p>Current limit is 20 ppmv for units less than 2 mmbtu/hr.</p>	<p>San Joaquin Valley Rule 4308 (Amended 11/14/13) requires:</p> <ul style="list-style-type: none"> • 20 ppmv for units used PUC gas from 75,000 btu/hr – 2 mmbtu/hr • 30 ppmv for units from 400,000 btu/hr - 2 mmbtu/hr used other types of fuels • 77 ppmv for units rating from 75,000 btu/hr – 400,000 btu/hr used other types of fuels 	<p>In its TSD for the approval of Rule 1146.2 into the California SIP published in 2008, EPA concluded that the rule meets the requirements listed in the guidance and policy documents (specified in the TSD).</p> <p>Emission limits in Rule 1146.2 are generally as stringent as, or more stringent than other California District rules for this source category, and meet the BACT requirements.</p>

Attachment VI-A-1c

Evaluation of SCAQMD Rules and Regulations - NOx Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1147	NOx	NOx Emissions from Miscellaneous Sources (Amended 9/9/11)	<p>Current limits are:</p> <p>Gas Fired Equipment:</p> <ul style="list-style-type: none"> • 60 ppmv for units operating at temperatures ≥ 1200 o F • 30 or 60 ppmv for units operating at temperatures < 1200 o F. • 40 ppmv for asphalt <p>Liquid Fuel fired Equipment:</p> <ul style="list-style-type: none"> • 40 ppmv for units operating at temperatures < 1200 o F • 60 ppmv for units operating at temperatures ≥ 1200 o F • Units less than 1 lb/day compliance delayed until 2017 <p>Mitigation fee option for delayed compliance for multiple units</p>	<p>San Joaquin Valley APCD Rule 4309 (2005) has equivalent limit for asphalt.</p> <p>For ovens, dehydrators and dryers equal or greater than 5 MMBtu/hr, 40 ppmv with no temperature stratification</p>	<p>Cooking ovens, dry roasters removed from rule applicability to new Rule 1153.1 (11/7/14)</p> <p>In its TSD for the approval of Rule 1147 into the California SIP published in 2010, EPA concluded that Rule 1147 is as stringent as or more stringent than SJVAPCD Rule 4309 which covers some of the sources subject to Rule 1147.</p> <p>Overall, Rule 1147 is as stringent as or more stringent than the other Districts' rules, and meets the BACT requirements for this source category.</p>
1153.1	NOx	Emissions of Oxides of Nitrogen from Commercial Food Ovens (Adopted 11/7/14)	<ul style="list-style-type: none"> • 40 ppmv for units operating at temperatures < 500 o F • 60 ppmv for units operating at temperatures ≥ 500 o F • CO capped at 800 ppmv • Exemption < 1 lb/day and low use sources • 20 year equipment life • Mitigation fee for alternate compliance plan 	n/a*	Meets BACT.
2002	NOx,	RECLAIM (Amended 12/4/15)	Include facility allocations for NOx for RECLAIM facilities	Other Districts do not have RECLAIM, refer to individual rules such as Rule 1146, 1146.1, 1110.2 etc.	BARCT review completed in 2015 and revision to BARCT limits are incorporated in Rule 2002 (version 12/2015).

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

Attachment VI-A-1d
Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1103	VOC	Pharmaceuticals and Cosmetics Manufacturing (Amended 3/12/99)	For reactors, distillation columns, crystallizers, or centrifuges: 15 lbs/day VOC or use surface condensers. For air dryers: 90% control efficiency or 33 lbs/day VOC. Also include other various operating requirements.	n/a*	Meets BACT.
1104	VOC	Wood Flat Stock Coating Operation (Amended 8/13/99)	2.1 lbs/gal, less water and exempt solvent. In lieu of VOC limit, use control device having 95% control efficiency (or 50 ppmv outlet) and 90% collecting efficiency	n/a*	Meets BACT.
1106	VOC	Marine Coating Operations (Amended 1/13/95)	Coating-specific emission limits from 275 – 780 g/L. In lieu of complying with specific emission limits, operator can use air pollution control system with at least 85% efficiency. Solvent cleaning operations must comply with Rule 1171.	<p>Ventura Rule 74.24 (Amended 9/11/12) generally has the same limits as South Coast Rule 1106, except the limit for special marking of items such as flight decks, ship numbers is 420 g/L (490 g/L in Rule 1106), antenna coating (340 g/L in Rule 74.24 vs. 530 g/L in Rule 1106), solvent-based inorganic zinc coating (340 g/L in Rule 74.24 vs. 650 g/L in Rule 1106), repair and maintenance thermoplastic coating (550 g/L in Rule 74.24 vs. 340 g/L in Rule 1106).</p> <p>Bay Area Rule 8-43 (Amended 10/16/02) generally has the same limits as South Coast Rule 1106, except it has lower limit for pretreatment wash primer at 420 g/L (780 g/L in Rule 1106), repair and maintenance thermoplastic coating (550 g/L in Rule 8-43 vs. 340 g/L in Rule 1106), and solvent-based inorganic zinc coating (340 g/L in Rule 8-43 vs. 650 g/L in Rule 1106)</p> <p>EPA CTG generally has the same limits as South Coast Rule 1106 with the exception of inorganic zinc coating (340 g/L in CTG vs. 650 g/L in Rule 1106)</p>	<p>SCAQMD Rule 1106 varies in stringency when compared to other Districts' requirements. Although Rule 1106 does not meet the U.S. EPA CTG for one coating category – solvent based inorganic zinc, this type of coating is not used in major source facilities subject to Rule 1106 in the Basin.</p> <p>Additional VOC reductions from lowering emissions limits in Rule 1106 are proposed. The amendment is expected to be considered in 2017. Under the proposed amendment to Rule 1106, BACT level of control would be achieved.</p>

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

Attachment VI-A-1d

Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1107	VOC	Coating of Metal Parts and Products (Amended 1/6/06)	Coating-specific emission limits from 2.3 lbs/gal – 3.5 lbs/gal. In lieu of complying with specific emission limits, operator can use air pollution control system with at least 95% control efficiency (or 5 ppmv outlet) and 90% capture efficiency. Solvent cleaning operations must comply with Rule 1171.	<p>Ventura Rule 74.12 (Amended 4/8/08) generally has the same coating-specific limits as South Coast Rule 1107, except in the following categories:</p> <ul style="list-style-type: none"> · Limit for metallic coating is 3 lbs/gal (3.5 lbs/gal in Rule 1107); · Limit for camouflage is 3 lbs/gal (3.5 lbs/gal in Rule 1107); · Limit of pretreatment coatings is 2.3 lbs/gal (3.5 lbs/gal in Rule 1107) · Overall minimum control efficiency is 90%, higher than Rule 1107 requirement at 85% <p>San Joaquin Valley Rule 4603 (Amended 9/17/09) has more stringent limits than Rule 1107 for baked camouflage and baked metallic coating at 360 g/L (420 g/L in Rule 1107)</p>	<p>SCAQMD Rule 1107 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1107 is as stringent as or more stringent than the other Districts' rules, and provides BACT level of control for this source category.,</p>
1110.2	VOC	Emissions from Gaseous and Liquid Fueled Engines (Amended 9/7/12)	<p>Rule 1110.2 has NOx, VOC, CO limits for all stationary and portable engines over 50 brake horse power (bhp). In general, the limits applicable to 1) stationary, non-emergency engines, and 2) biogas (landfill and digester gas) engines are:</p> <ul style="list-style-type: none"> • 11 ppmv NOx • 30 ppmv VOC • 250 ppmv CO <p>Limits for new non-emergency engines driving electrical generators are:</p> <ul style="list-style-type: none"> • 0.07 lbs NOx per MW-hr • 0.20 lbs CO per MW-hr • 0.10 lbs VOC per MW-hr <p>Limits for low usage biogas engines:</p> <ul style="list-style-type: none"> • 36 ppmv NOx, engines ≥ 500 bhp • 45 ppmv NOx, engines < 500 bhp • 40 ppmv VOC, landfill gas • 250 ppmv VOC, digester gas • 2000 ppmv CO. <p>Portable and agricultural engines are not subject to the general limits listed above. Many of Rule 1110.2 engines are in RECLAIM, and RECLAIM will be amended to incorporate feasible BARCT.</p>	<p>San Joaquin Valley Rule 4702 (Amended 11/14/13) has NOx, VOC, CO and SOx limits for engines rated over 25 bhp.</p> <ul style="list-style-type: none"> • 250 ppmv VOC (rich-burn) and 750 ppmv VOC (lean burn), and • 2000 ppmv CO <p>- Engines used in agricultural operations (AO), or fueled with waste gas, or limited used, or cyclic loaded and field gas fueled are subject to higher limits than the above</p> <p>- In general, all compression ignited engines must meet EPA Tier 4 standards.</p> <p>Engines between 25 bhp - 50 bhp, non agricultural operations (AO), must meet federal standards 40CFR Part 60 Subpart IIII and JJJJ.</p>	<p>In its TSD for the approval of Rule 1110.2 into the California SIP published in 2008, EPA concluded that the rule's emissions limits are more stringent than the corresponding limits in the guidance and policy documents (specified in the TSD) or other California District rules on internal combustion engines. The emissions limits scheduled for July 1, 2011 and July 1, 2012, are comparable to the limits expressed by the South Coast AQMD BACT Guidelines.</p> <p>Overall, Rule 1110.2 is as stringent as or more stringent than the other Districts' rules, and meets the BACT requirements for this source category.</p>

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1113	VOC	Architectural Coatings (Amended 9/6/13)	Coating-specific emission limits from 50 g/L – 730 g/L. Exempt containers with capacity 2 fluid oz or less.	n/a*	Meets BACT.
1122	VOC	Solvent Degreasers (Amended 5/1/09)	Contain various work practice and design requirements.	n/a*	Meets BACT.
1124	VOC	Aerospace Assembly and Component Manufacturing Operations (Amended 9/21/01)	Coating-specific emission limits from 160 – 1000 g/L. Specific high transfer coating applications (e.g. HVLP spray). In lieu of complying with specific emission limits, operator can use air pollution control system with at least 95% control efficiency (or 50 ppmv outlet) and 90% capture efficiency. Solvent cleaning operations must comply with Rule 1171.	San Joaquin Valley Rule 4605 (Amended 6/16/11) has the following limits that are more stringent than those in Rule 1124: <ul style="list-style-type: none"> • Flight Test Coatings = 600 g/L (420 g/l for used on missiles and single use target craft, 840 g/L for other flight test coatings in Rule 1124) • Fastener Sealant = 600 g/L (675 g/L for fastener sealant and 600 g/L for other sealants in Rule 1124) Sacramento Rule 456 (Amended 10/23/08) has the following limits that are more stringent than those in Rule 1124: <ul style="list-style-type: none"> • Conformal Coating = 600 g/L (Rule 1124 limit is 750 g/L) • Fire Resistant Coatings = 600 g/L. (Rule 1124 limits are 650 g/L for Commercial; 800 g/L for Military) • High-Temperature Coating = 420 g/L. (Rule 1124 limit is 850 g/L) • Mold Release Coatings = 762 g/L. (Rule 1124 limit is 780 g/L) • Radiation Effect = 600 g/L. (Rule 1124 limit is 800 g/L) • Rain Erosion Resistant Coating = 600 g/L in All Other Category. (Rule 1124 limit is 800 g/L) 	In its TSD for the approval of Rule 1124 into the California SIP published in 2002, EPA determined that the coating limits conform to the EPA's CTG document and Agency guidance. The rule contains adequate record keeping and test method provisions to monitor the compliance status of the regulated facilities. SCAQMD Rule 1124 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1124 is as stringent as or more stringent than the other Districts' rules, and provides BACT level of control for this source category.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1127	VOC	Emission Reductions from Livestock Waste (Adopted 8/6/04)	<p>Requires Good housekeeping practices for dairy farms with 50 or more cows, heifers and/or calves.</p> <p>Note: The SCAQMD adopted Rule 223 in June 2006 to reduce emission for large confined animal facilities. Rule 223 targets various types of large confined animal facilities and includes series of good management practices that are more stringent than Rule 1127.</p>	<p>Sacramento Rule 496 – Large Confined Animal Facilities (Adopted 8/24/06), has more stringent control and good management practices than South Coast Rule 1127 (e.g. venting to control system with at least 80% control efficiency). The more stringent requirements are targeted towards silage emissions, which is not applicable in South Coast for dry feed lot operations.</p> <p>San Joaquin Valley Rule 4570 has required best management practices for manure management and other areas to reduce VOC and ammonia emissions. Note that direct comparison with Rule 1127 is difficult due to the significant differences in source operations (dry feed lot in South Coast vs. flushing and lagoon operations in San Joaquin, the focus on corral waste control in SCAQMD vs. feed and silage and milk parlor in SJVAPCD, etc). In addition, SJV Rule 4570 applies to all types of large confined animal facilities, while Rule 1127 applies only to dairies with a much lower applicability threshold.</p>	<p>Together with Rule 223, Rule 1127 achieves BACT equivalency for this source category.</p>

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1128	VOC	Paper, Fabric and Film Coating Operations (Amended 3/8/96)	Coating-specific emission limits from 20 – 265 g/L. Specific high transfer coating applications (e.g. HVLP spray). Alternatively, operator can also use control system with at least 95% control efficiency (or 50 ppmv outlet) and 90% capture efficiency. Solvent cleaning operations must contain 15% or less VOC or 85% VOC must be collected and disposed of.	The 2007 EPA CTG requires an overall 90% control efficiency for facilities emitting > 15 lbs/day and coating lines emitting > 25 tpy. Rule 1128 is not as stringent as the 2007 EPA CTGs (85.5% overall control efficiency in Rule 1128). CTG alternative compliance emission limit of 80 g/L is also more stringent than the limit of 265 g/L in Rule 1128.	<p>Rule 1128 is not as stringent as the 2007 EPA CTGs (CTG 80 g/L vs. Rule 1128 265 g/L) for facilities emitting > 15 lbs/day and coating lines emitting > 25 tpy. To the best of staff's knowledge, no facilities exceed the CTG applicable threshold (25 tpy of VOC per coating line) in the Basin. The incremental increase from 85% to 90%-97% in control efficiency is not cost-effective for the existing sources in the South Coast air basin. (note) In addition, Rule 1128 does not have a trigger for when it is considered implementable. The rule pertains to all paper, fabric, and film coating operations. Currently, approximately 190 facilities are subject to Rule 1128, out of which 21 are major source facilities. Rule 1128 covers more sources / facilities regardless of potential emission level. As such, Rule 1128 provides BACT level of control for this source category.</p> <p>Note: Per communication with Bill Milner on February 13, 2007.</p>
1130	VOC	Graphic Arts (Amended 5/2/14)	<p>VOC content limits: 16 g/l – 85 g/l for fountain solution, 150 g/l for adhesives, 225 g/l - 300 g/l for inks and coatings. In lieu of meeting specific emission limits, control device with overall control efficiency from 90% - 95% can be used to achieve equal or better emission reductions.</p> <p>VOC limits for cleaning solutions for printing presses are in Rule 1171 ranging from 25 g/l (0.21 lb/gal) for flexographic printing to 100 g/l (0.83 lb/gal) for lithographic printing.</p>	Bay Area, Regulation 8, Rule 20 (Amended 11/19/08) requires 8% VOC content in fountain solution. In addition, the rule requires recordkeeping for digital printing, cleaning and stripping of UV or electron beam-cured inks for further study potential emission reductions in a near future.	<p>SCAQMD Rule 1130 was recently amended (05/02/14) to be consistent with CTG requirements by amending the overall add-on control device efficiency requirements and VOC content limits for fountain solutions.</p> <p>Meets BACT.</p>

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1131	VOC	Food Product Manufacturing and Processing Operations (Amended 6/6/03)	VOC content limits from 120 – 200 g/L, or air pollution control system with at least 95% control efficiency and 90% capture efficiency. Solvent cleaning operations must contain 15% or less VOC or 85% VOC must be collected and disposed of.	n/a*	Meets BACT.
1136	VOC	Wood Products Coatings (Amended 6/14/96)	VOC content limits range from 2.3 – 6.3 lbs/gal VOC. Averaging provisions and add-on control are allowed. Transfer efficiency is at least 65%, or operator must use certain type of equipment (e.g. HVLP). Solvent cleaning operations must comply with Rule 1171.	<p>Ventura Rule 74.30 (Amended 6/27/06) has more stringent limit for high-solid stains on new wood products at 2 lbs/gal (2.9 lbs/gal in Rule 1136). In lieu of coating specific limits, control equipment achieving 90% efficiency is required. No averaging provisions in Ventura. Rule 74.30 has higher emissions limits for refinishing operations.</p> <p>San Joaquin Valley Rule 4606 (Amended 10/16/08) is more stringent in the following areas:</p> <ul style="list-style-type: none"> • Rule 1136 allows the use of a stripper with limits higher than 350 g/L if the stripper has low vapor pressure of 2 mmHg. SJV does not have this allowance; • SJV Rule 4606 requires a min overall control efficiency of 85% - 90% for flat wood paneling products, whereas Rule 1136 does not have control efficiency requirement. <p>Rule 4606 exempts refinishing, replacement, and custom Replica Furniture Operations. SCAQMD Rule 1136 has a VOC limit of 120 g/L for low-stain barrier coat. This category is not found in SJV/Ventura and it is lower than their general limits.</p> <p>Bay Area, Regulation 8, Rule 32, (Amended 8/5/09) has lower limits for surface preparation and cleanup, including stripping, at 0.21 lbs/gal. Solvent cleaning operations and the storage and disposal of VOC containing materials are subject to Rule 1171 (general limit = 0.21 lbs/gal) in SCAQMD. Bay Area has higher emission limit of clear topcoat (4.6 lbs /gal vs. 2.3 lbs/gal in SCAQMD) for custom furniture Bay Area exempts refinishing, replacement, and custom Replica Furniture Operations.</p>	SCAQMD Rule 1136 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1136 is as stringent as or more stringent than the other Districts' rules, and provides BACT level of control for this source category.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1141	VOC	Control of Volatile Organic Compound Emissions from Resin Manufacturing (Amended 11/17/00)	95% - 98% control or 0.12 – 0.5 lbs/1000 lbs of resin produced	n/a*	Meets BACT.
1142	VOC	Marine Tank Vessel Operations (Amended 7/19/91)	2 lbs/1000 barrels liquid loaded or 95% emissions reduced	n/a*	Meets BACT.
1143	VOC	Consumer Paint Thinners and Multi-purpose Solvents (Amended 12/3/10)	Set VOC content of 25 g/l for consumer paint thinner and multi-purpose solvent beginning 1/1/2011	n/a*	Meets BACT.
1144	VOC	Metalworking Fluids and Direct-contact Lubricants (Amended 7/9/10)	Various limits from 50 g/L – 340 g/L. Add-on control at 90% capture efficiency, 95% control efficiency (or 5 ppmv outlet)	n/a*	Meets BACT.
1145	VOC	Plastic, Rubber, Leather and Glass Coatings (Amended 12/4/2009)	VOC limits: 50–800 lbs VOC per gallon. Avg provisions and add-on control at 95% control efficiency (50 ppmv outlet), 90% capture efficiency. High transfer coating equipment (e.g. HVLP). Solvent cleaning operations must comply with Rule 1171.	n/a*	Meets BACT.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1149	VOC	Storage Tank Degassing (Amended 5/2/08)	Degassing operations must be controlled such that the VOC concentration within the tank is reduced to less than 5,000 ppmv for a minimum time limit estimated in the rule based on volume of the gas to be freed in the tank and the flow rate through control device.	Ventura Rule 74.26, 74.27 (Adopted 10/12/04) requires degassing of crude oil, gasoline and other high TVP liquid storage tanks be controlled by vapor recovery or flare having 95% control efficiency until the vapor concentration in the tanks is less than 10,000 ppmv. Bay Area Rule 8-10 (Adopted 1/21/04) sets requirements for depressurizing process vessels at petroleum refineries and chemical plants. The gases must be vented to control devices until the vapor concentration in the tanks is less than 10,000 ppmv.	Overall, Rule 1149 is as stringent as or more stringent than the other Districts' rules, and provides BACT level of control for this source category.
1150.1	VOC	Control of Gaseous Emissions from Active Landfills (Amended 4/1/11)	98% control or 20 ppmv non methane organic compounds. 50-500 ppmv total organic compounds above background	n/a*	Meets BACT.
1151	VOC	Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations (Amended 9/5/14)	VOC content limits range from 250 – 840 grams VOC per liter. Averaging provisions are allowed. High transfer coating equipment (e.g. HVLP) is required. Solvent cleaning operations must comply with Rule 1171.	San Joaquin Valley Rule 4602 (Amended 9/17/09) is more stringent in the following areas: 1) adhesive at 250 g/L (540 g/L in Rule 1151) and 2) truck bed liner coating at 200 g/L (310 g/L in Rule 1151) Sacramento Rule 459 (Amended 8/25/11) is more stringent in the following areas: 1) multi-color coating at 520 g/L for mobile equipment driven on rails (680 g/L in Rule 1151), 2) truck bed liner coating at 200 g/L (310 g/L in Rule 1151) Bay Area, Regulation 8, Rule 45 (Amended 12/3/08) is more stringent in the following areas: 1) VOC limit for surface preparation and cleanup, including stripping, of 0.2 lbs/gal or 2) a minimum 85% overall control efficiency.	SCAQMD Rule 1151 varies in stringency when compared to other Districts' requirements. For the majority of the categories, Rule 1151 is as stringent as or more stringent than other Districts' rule, and provides BACT level of control for this source category.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1153	VOC	Commercial Bakery Ovens (Adopted 1/13/95)	Emission reduction of 70% or more is required for existing ovens emitting between 50 lbs – 100 lbs VOC/day, 95% or more for ovens emitting more than 100 lbs/day, and 95% or more for new ovens.	n/a*	Meets BACT.
1162	VOC	Polyester Resin Operations (Amended 7/8/05)	VOC limits (monomer content) from 10-48% by weight or alternatively 90% control efficiency for add-on control	Bay Area Regulation 8, Rule 50 (Amended 12/2/09) is similar to Rule 1162, except the limit for corrosion resistant resin is more stringent at 40% - 46% (48% in Rule 1162). The rule allows some usage of acetone	In its TSD for the approval of Rule 1162 into the California SIP published in 2011, EPA concluded that Rule 1162 is also generally consistent with relevant national guidance and analogous rules in other areas. For the majority of the categories, Rule 1162 is as stringent as or more stringent than other Districts' rules, and provides BACT level of control for this source category.
1164	VOC	Semiconductor Manufacturing (Amended 1/13/95)	VOC limit for cleanup solvents is 200 g/L or low vapor pressure of 0.64 psia at 68 degree F. Photoresist applications must be vented to control.	n/a*	Meets BACT.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1166	VOC	Volatile Organic Compound Emissions from Decontamination of Soil (Amended 5/11/01)	<p>Good management practices.</p> <p>Requires that contaminated soil be covered and removed within 30 days. Treatment facilities using negative pressure enclosures are required to treat low VOC contaminated soil (less than 1000 ppm) within 30 days of excavation and high VOC contaminated soil (1000 ppm or more) should immediately be placed in a sealed container or trucked off-site or by any other alternative approved by the Executive Officer.</p> <p>Requires the following from the responsible contractors:</p> <ol style="list-style-type: none"> 1.Prompt monitoring and detection of contaminated soil; 2.Mitigation of VOC emissions through spraying and prompt covering of stockpiles; 3.Prompt transport and/or treatment of soil; and 4.Maintenance of verifiable chain of custody records for the soil that is handled and treated. 	<p>Ventura Rule 74.29 – Soil Decontamination Operations (Amended 4/8/08) has standards for soil decontamination (e.g. 50 - 100 ppmv). Leaking agricultural tanks is exempted.</p> <p>Bay Area Rule 8-40 (Amended 6/15/05) for soil decontamination and tank degassing. All vapor exceeding the specified limit based on organic content and aeration rate must be vented to control devices with ≥ 90% efficiency until meeting 5,000 ppmv.</p> <p>San Joaquin Valley Rule 4651 (Amended 9/20/07) employs good management practices similar to those in SCAQMD. For ex-situ decontamination, VOC emissions must be vented to control devices with 95% efficiency or more.</p>	<p>SCAQMD Rule 1166 varies in stringency when compared to other Districts' requirements.</p> <p>Note that at the end of 1998, most excavation activities relating to gasoline underground tanks were completed in accordance to the Federal and State requirements.</p> <p>VOC emission emanating from current / new decontamination sites exceeding the major source threshold is unlikely.</p>
1168	VOC	Adhesive and Sealant Applications (Amended 1/7/05)	<p>VOC limits for solvents range from 30 – 775 lbs VOC per gallon. Require the use of high transfer efficiency equipment (e.g. HVLP spray). In lieu of meeting the VOC limits, using add-on control with 80% control efficiency is allowed.</p>	<p>San Joaquin Valley Rule 4653 (Amended 9/16/10) has more stringent limits in the following areas:</p> <ul style="list-style-type: none"> • 100 g/L for Cellulosic Plastic Welding Adhesive, 100 g/L for Styrene Acrylonitrile Welding Adhesive, and 200 g/L for Reinforced Plastic Composite Adhesive (Rule 1168 limit is 250 g/L limits for all three categories) • Minimum overall control efficiency is 85% (80% in Rule 1168) 	<p>Staff has completed its evaluation and is proposing to reduce primer VOC limits to 250 g/L to meet the CTG. Additional VOC reductions from lowering the emissions limits are proposed. The amendment is expected to be considered in 2017. Under the proposed amendment to Rule 1168, BACT-level of control would be achieved.</p>
1171	VOC	Solvent Cleaning Operations (Amended 5/1/09)	<p>VOC limits for solvents are 25 g/L in general, and have a 100- 800 g/L VOC for specific cleaning operations. In lieu of meeting the VOC limits, add-on control having 90% collection efficiency and 95% destruction efficiency or meeting 50 ppmv outlet concentration can be used.</p>	<p>The U.S. EPA RACT published in September 2006 limit is 50 g/L or an overall control efficiency of 85%. The U.S. EPA is not recommending limits beyond 50 g/L; but also recommends states to adopt higher limits based on individual performance requirements of specific applications.</p>	<p>Rule 1171 is as stringent as or more stringent than other Districts' rules, and meets the BACT requirements for this source category.</p>

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1173	VOC	Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (Amended 2/6/09)	<p>Require to connect atmospheric PRDs to vapor recovery or add-on control by first turnaround, if the facility experiences:</p> <ul style="list-style-type: none"> • a second release of more than 500 lbs VOC within any five year period, or • any release of 2,000 lbs VOC in any 24 hour period. <p>In lieu of connecting PRDs to control, operator may elect to pay mitigation fee of \$350,000 for any release exceeding the threshold.</p> <p>Leak Detection and Repair (LDAR) program to reduce fugitive emissions. Leak thresholds are:</p> <ul style="list-style-type: none"> • for light liquid/gas/vapor service >10,000 ppmv, • for PRDs >200 ppmv, • for pumps in heavy liquid >100 ppmv 	<p>Bay Area Rule 8-28 (amended 12/21/05) requires atmospheric PRDs to be:</p> <ul style="list-style-type: none"> • vented to vapor recovery or equivalent control devices that have 95% control efficiency within one year of the second release event of greater than 10 lbs VOC. • equipped with at least two or three redundant preventive measures to minimize episodic releases, and • equipped with tell-tale indicators. 	<p>In its TSD for the approval of Rule 1173 into the California SIP published in 2010, EPA concluded that Rule 1173 is more stringent than EPA's CTG and the requirements of Rule 1173 are similar to those in other California district rules.</p> <p>Overall, Rule 1173 is as stringent as or more stringent than other Districts' rules, and meets the BACT requirements for this source category</p>
1174	VOC	Control of Volatile Organic Compound Emissions from the Ignition of Barbecue Charcoal (Amended 10/5/90)	VOC emissions less than 0.02 lb VOC per start.	n/a*	Meets BACT.
1175	VOC	Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products (Amended 11/5/10)	VOC limit for expandable polystyrene molding operations is less than 2.4 lbs/100 lbs of raw material processed	n/a*	Meet BACT.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1176	VOC	Sumps and Wastewater Separators (Amended 9/13/96)	<ul style="list-style-type: none"> • Wastewater: 500 ppmv • Sumps and wastewater separators must have floating cover with seals; or fixed cover vented to control • Sewer lines: totally enclosed • Process drains: with SCAQMD approved water seals • Junction boxes: totally enclosed • Control device: 95% efficiency or 500 ppmv leak above background • Monthly to annually inspection 	Bay Area Rule 8-8 (Amended 9/15/04) in general is similar to South Coast Rule 1176, with the following exceptions: <ul style="list-style-type: none"> • Floating covers must have double seals; and • Semi-annual inspection is allowed. 	Overall, Rule 1176 is as stringent as or more stringent than other Districts' rules, and provides BACT level of control for this source category.
1178	VOC	Further Reductions of VOC Emissions From Storage Tanks at Petroleum Facilities (Amended 4/7/06)	<p>Applicable to high emitting facility that has 20 tpy VOC emissions or more and tanks >19,815 gals with liquids having TVP > 0.1 psia. Rule 1178 requires doming for high emitting external floating roof tanks, better seals and better control for all tanks.</p> <p>(Note that Rule 463 is applicable for tanks >19,815 gals at all facilities and have requirements for fixed roof tanks and floating roof tanks.)</p>	n/a*	Meets BACT.
1179	VOC	Publicly Owned Treatment Works Operations (Amended 3/6/92)	Include recordkeeping and emission testing requirements.	n/a*	Meets BACT.
1183	VOC	Outer Continental Shelf (OCS) Air Regulations (Adopted 3/12/93)	Adopt by reference Code of Federal Regulations, Part 55, Title 40.	n/a*	Meets BACT.

* There are no analogous requirements in SJVAPCD, SMAQMD, VCAPCD, and BAAQMD, or the rules in other Districts are not more stringent than the SCAQMD rule being evaluated.

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Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1133.2, 1133.3	VOC	<p>Rule 1133.2 - Emission Reductions from Co-Composting Operations (Adopted January 10, 2003)</p> <p>Rule 1133.3 - Emission Reductions from Greenwaste Composting Operations (Adopted July 8, 2011)</p>	<p>Rule 1133.2 establishes various performance standards. Air pollution control must have 80% control efficiency or greater. Existing operations must reduce up to 70% baseline VOC and ammonia emissions. Baseline emission factors are 1.78 lbs VOC/ton throughput and 2.93 lbs NH3/ton throughput.</p> <p>Rule 1133.3 establishes operational best management practices (BMPs) for greenwaste composting operations. If the facility processes more than 5,000 tons per year of foodwaste, any active phase of composting containing more than 10% foodwaste, by weight, must use an emission control device with an overall control efficiency of at least 80% by weight of VOC.</p> <p>For operations less than 5000 tons/year, require the composting piles to be covered, watered, and turned, or operated with measures that reduce at least 40% VOC emission and 20% NH3 emissions.</p>	<p>San Joaquin Rule 4565 – Biosolids, Animal Manure, and Poultry Litter Operations (Adopted 3/15/07) and Rule 4566 – Organic Material Composting Operations (Adopted 8/18/11) have various operational requirements for these operations as well as the operators who landfills, composts, or co-composts these materials. The applicability of Rules 4565/4566 is broader than the applicability of Rule 1133.2/1133.3. Rules 4565/4566 include additional mitigation measures to control VOC from composting active piles (e.g. maintain minimum oxygen concentration of 5%, moisture content of 40%-70%, carbon to nitrogen ratio of 20-1).</p>	<p>SCAQMD Rule 1133.2 is more stringent than San Joaquin’s Rule 4565 for larger co-composting facilities and less stringent for smaller co-composting facilities. While SCAQMD Rule 1133.2 requires either 70 or 80% overall emission reductions from all parts of composting process, San Joaquin’s Rule 4565 requires add-on controls to apply only to the active composting phase. Rule 1133.2 also has more stringent requirements for in-vessel composting.</p> <p>San Joaquin’s rule does not address chipping & grinding as in Rule 1133.1.</p> <p>Overall, Rules 1133.2 and 1133.3 are as stringent as or more stringent than other Districts’ rules, and meets the BACT requirement for this source category.</p>

Attachment VI-A-1e

Evaluation of SCAQMD Rules and Regulations - NH3 Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
223	NH3	Emissions Reduction Permits From Large Confined Animal Facilities (Adopted 6/2/06)	Sets permit requirement for new and modified LCAF facilities. Specifics mitigation options by animal and facility type for: <ul style="list-style-type: none"> • Feed and silage handling, • Milk parlor operations, • Corrals and free stall barn operations, • Handling of manure and solids, • Handling of manure in liquid form • Land application of liquid or solid manure 	<p>Sacramento Rule 496 – Large Confined Animal Facilities (Adopted 8/24/06), has more stringent control and good management practices than South Coast Rule 1127 (e.g. venting to control system with at least 80% control efficiency). The more stringent requirements are targeted towards silage emissions, which is not applicable in South Coast for dry feed lot operations.</p> <p>SJVAPCD Rule 4570 is more stringent regarding applicability than Rule 223 for milk cows, (1,000 milk cows in SCAQMD vs 500 milk cows in SJVAPCD), and for chickens and ducks (650,000 birds in SCAQMD vs. 400,000 birds in SJVAPCD), and made certain feed and housing menu items mandatory for dairies and poultry facilities. However, that is partly mitigated by SCAQMD Rule 1127 which has a much lower applicability thresholds of 50 or more cows, heifers and/or calves. Rule 223 also has a lower applicability for horse facilities (2,500 in SCAQMD vs. 3,000 in SJVAPCD).</p> <p>Rule 4570 sets comparable permit requirements and mitigation measures.</p>	<p>Together with Rule 1127, Rule 223 achieves BACT equivalency for this source category.</p> <p>Further reduce NH3 emission from: Control Measure BCM-04 seeks to reduce NH3 emission from manure management strategies.</p>
1127	NH3	Emission Reductions from Livestock Waste (Adopted 8/6/04)	Requires Good housekeeping practices for dairy farms with 50 or more cows, heifers and/or calves. Note: The SCAQMD adopted Rule 223 in June 2006 to reduce emission for large confined animal facilities. Rule 223 includes series of good management practices that are more stringent than Rule 1127.	<p>SJVAPCD Rule 4565 and 4566 sets comparable permit requirements and mitigation measures.</p> <p>SJVAPCD 4570 has required best management practices for manure management and other areas to reduce VOC and ammonia emissions. Note that direct comparison with Rule 1127 is difficult due to the significant differences in source operations (dry feed lot in South Coast vs. flushing and lagoon operations in San Joaquin, the focus on corral waste control in SCAQMD vs. feed and silage and milk parlor in SJVAPCD, etc). In addition, SJV Rule 4570 applies to all types of confined animal facilities, while Rule 1127 applies only to dairies with a much lower applicability threshold.</p>	Together with Rule 223, Rule 1127 achieves BACT equivalency for this source category.

Attachment VI-A-1e
 Evaluation of SCAQMD Rules and Regulations - NH3 Rules

RULE NO.	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2000-2015 RULES, CONTROL MEASURES AND FEDERAL AND STATE GUIDANCE	BACT EVALUATION
1133.2, 1133.3	NH3	Emission Reductions from Co-Composting Operations (Adopted 1/10/03) Emission Reductions from Greenwaste Composting Operations (Adopted 7/8/11)	<p>Various performance standards. Air pollution control must have 80% control efficiency or greater. Existing operations must reduce up to 70% baseline VOC and ammonia emissions. Baseline emission factors are 1.78 lbs VOC/ton throughput and 2.93 lbs NH3/ton throughput.</p> <p>Rule 1133.3 establishes operational best management practices (BMPs) for greenwaste composting operations. If the facility processes more than 5,000 tons per year of foodwaste, any active phase of composting containing more than 10% foodwaste, by weight, must use an emission control device with an overall control efficiency of at least 80% by weight of VOC.</p> <p>For operations less than 5000 tons/year, require the composting piles to be covered, watered, and turned, or operated with measures that reduce at least 40% VOC emission and 20% NH3 emissions.</p>	<p>San Joaquin Rule 4565 – Biosolids, Animal Manure, and Poultry Litter Operations (Adopted 3/15/07) and Rule 4566 – Organic Material Composting Operations (Adopted 8/18/11) have various operational requirements for these operations as well as the operators who landfills, composts, or co-composts these materials. The applicability of Rules 4565/4566 is broader than the applicability of Rule 1133.3. In addition, Rules 4565/4566 include additional mitigation measures to control VOC from composting active piles (e.g. maintain minimum oxygen concentration of 5%, moisture content of 40%-70%, carbon to nitrogen ratio of 20-1).</p>	<p>SCAQMD Rule 1133.2 is more stringent than San Joaquin's Rule 4565 for larger co-composting facilities and less stringent for smaller co-composting facilities. While SCAQMD Rule 1133.2 requires either 70 or 80% overall emission reductions from all parts of composting process, San Joaquin's Rule 4565 requires add-on controls to apply only to the active composting phase. Rule 1133.2 also has more stringent requirements for in-vessel composting.</p> <p>San Joaquin's rule does not address chipping & grinding as in Rule 1133.1.</p> <p>Overall, Rules 1133.2 and 1133.3 are as stringent as or more stringent than other Districts' rules, and meets the BACT requirement for this source category.</p>

FINAL 2016 AQMP
APPENDIX VI-A
ATTACHMENT VI-A-2

CONTROL MEASURE ASSESSMENT

Potential Control Measure 1

Title

Co-Benefit Emission Reductions from GHG Programs, Policies, and Incentives

Target Pollutant

All pollutants

Synopsis

Sources that emit greenhouse gases are typically sources of criteria pollutants. Significant efforts are currently being implemented and planned to reduce GHGs under the State's 2020 and 2050 targets as well as the Governor's 50-50-50 targets by 2030. As these GHG reduction efforts are undertaken across all sectors, the reductions of criteria pollutants should be considered along with any additional enhancements needed to achieve further criteria pollutant reductions under the GHG programs. Existing and future incentives, programs, and partnerships would be evaluated for reduction of emissions of both GHGs and criteria pollutants. Affected sources include stationary and transportation sources, as well as fuel providers.

Potential Emission Reduction

The 2019 baseline emission inventory is TBDⁱⁱ for this source category. The 2021 baseline emission inventory is TBDⁱⁱ for this source category.

The 2025 baseline emission inventory is TBDⁱⁱ for this source category.

The 2031 planning baseline emission inventory is TBDⁱⁱ for this source category.

Potential emission reduction is TBDⁱⁱ.

Technological Feasibility

Many different regulations, market mechanisms, and incentive programs are already being implemented in California to help achieve GHG reductions. Since these GHG reduction efforts are undertaken across all sectors, the reductions of criteria pollutants will be accounted for under this control measure.

Economic Feasibility

Because this control measure relies on other programs, incentives or measures, no additional costs are anticipated as a direct result of this control measure and thus, the economic impact from this control measure is assumed to be very small.

Summary Table

ⁱⁱ TBD are reductions to be determined once the inventory and control approach are identified.

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	TBD ⁱⁱ	Feasible	Feasible	✓
PM-annual	RACM	TBD ⁱⁱ	Feasible	Feasible	✓
PM-annual	BACM	TBD ⁱⁱ	Feasible	Feasible	✓
Ozone	RACM	TBD ⁱⁱ	Feasible	Feasible	✓

Potential Control Measure 2

Title

Co-Benefits from Existing Residential and Commercial Building Energy Efficiency Measures

Target Pollutant

NO_x, VOC

Synopsis

Residential energy consumption results in direct and indirect emissions of criteria and greenhouse gas emissions. Direct emissions result from combustion fuels such as natural gas, propane, and wood. Indirect emissions are a result of energy use associated with electricity production. Improvements in residential weatherization largely provide emission reductions through reduced energy use for heating, cooling, lighting, cooking, and other needs. Weatherization and other demand side energy measures, to date, have proven to reduce the need for new power plants and additional energy infrastructure.

Potential Emission Reduction

The 2019 baseline emission inventory is 16.4 tpd for NO_x for this source category.

The 2021 baseline emission inventory is 15.0 tpd for NO_x for this source category.

The 2025 baseline emission inventory is 13.1 tpd for NO_x for this source category.

The 2031 planning baseline emission inventory is 9.7 tpd for NO_x for this source category.

Potential emission reduction is 1.1 tpd (from 2031 planning baseline) in existing buildings based on Governor's 2030 target.

The 2019 baseline emission inventory is 8.9 tpd for VOC for this source category.

The 2021 baseline emission inventory is 8.9 tpd for VOC for this source category.

The 2025 baseline emission inventory is 8.9 tpd for VOC for this source category.

The 2031 planning baseline emission inventory is 2.65 tpd for VOC for this source category.

Potential emission reduction is 0.29 tpd (from 2031 planning baseline) in existing buildings based on Governor's 2030 target.

Technological Feasibility

Energy efficiency equipment is widely produced and available.

Economic Feasibility

Weatherization and efficiency measures when appropriately applied can realize short payback periods from reduced energy costs. The economic impact from implementing energy efficiency equipment is assumed to be very small.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	0.4 tpd of NOx by 2023 0.23 tpd of VOC by 2023	Feasible	Feasible	✓
PM-annual	RACM	0.4 tpd of NOx by 2023 0.23 tpd of VOC by 2023	Feasible	Feasible	✓
PM-annual	BACM	0.4 tpd of NOx by 2023 0.23 tpd of VOC by 2023	Feasible	Feasible	✓
Ozone	RACM	1.1 tpd of NOx 0.29 tpd of VOC	Feasible	Feasible	✓

Potential Control Measure 3

Title

Additional Enhancement in Reducing Existing Residential Building Energy Use

Target Pollutant

NOx

Synopsis

Large commercial space heating furnaces are not currently regulated by the SCAQMD unless they have a heat input rating of more than 2 million BTU per hour. This control measure seeks emission reductions from unregulated commercial space heating furnaces and reductions from incentive programs to replace older boilers, water heaters and space heating furnaces with zero and near-zero emission technologies. This control measure will apply to manufacturers, distributors, sellers, installers and purchasers of residential and commercial water heaters, boilers and heating furnaces used for water or space heating. The primary focus of this control measure is on commercial and multi-family residential water and space heating appliances.

Potential Emission Reduction

The 2019 baseline emission inventory is 13.6 tpd for NO_x for this source category.

The 2021 baseline emission inventory is 12.3 tpd for NO_x for this source category.

The 2025 baseline emission inventory is 10.5 tpd for NO_x for this source category.

The 2031 planning baseline emission inventory is 7.0 tpd for NO_x for this source category.

Potential emission reduction is 2.1 tpd (2031 planning baseline).

Technological Feasibility

Combustion appliances within residences account for the majority of direct emissions within the residential sector. Appliances are considered durable goods and many appliances often last one or two decades before needing replacement. There are more efficient appliances along with zero and near-zero emitting applications that can provide significant emission reductions and efficiency benefits above most existing appliances with the typical appliance replacement rate. Many appliances such as water heaters are now available with energy factors (EF) greater than 0.8 for natural gas pilotless storage and EF levels over 2.4 for heat pump storage systems. High efficiency appliances are also available for pool heaters, furnaces, and cook stoves.

Several different technologies are being utilized for energy storage systems. Currently the most widely used storage systems utilize different battery chemistries along with using second life electric vehicle batteries. Grid scale energy storage systems are starting to be implemented that replace the need for peaking generation plants and can minimize the need for additional transmission lines along with other electrical utility infrastructure. Additionally, the California Independent System Operator (CAISO) is developing a distributed energy resource program (DERP) that allows the aggregation of several smart grid systems to bid into the wholesale electricity power market. This will provide an additional market and incentive for the installation of these systems.

Economic Feasibility

Weatherization, renewable energy, appliance efficiency and smart grid measures when appropriately applied can realize short payback periods from reduced energy costs. Staff estimates costs for a residential energy efficiency incentive program at about \$230 to \$700 million to reduce emissions by 2.1 tons per day by 2031. The incentive program range is dependent on the type of equipment replacements. Types of equipment identified for this measure include: water heaters, heat pump storage systems, pool heater and covers, weatherization and clothes dryers. Incentivizing the purchase of a pool cover is the most cost-effective option at the lower end of the incentive cost range while weatherizing an entire existing home or installing a solar thermal pool heating system is at the higher end of the incentive cost range. The average cost-effectiveness over the lifetime of the equipment is about \$45,000 per ton. The payback period can be as short as two to three years depending on the cost of the equipment, available incentives, efficiency gains, and energy prices.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	1.7 tpd of NOx by 2023		Not feasible due to high cost; refer to ECC-03 for voluntary incentive program	No
PM-annual	RACM	1.7 tpd of NOx by 2023	Feasible		
PM-annual	BACM	1.7 tpd of NOx by 2023			
Ozone	RACM	2.1 tpd of NOx	Feasible		

Potential Control Measure 4

Title

Emission Reductions from Replacement with Zero or Near-Zero NOx Appliances in Commercial and Residential Applications

Target Pollutant

NOx

Synopsis

This control measure seeks annual average NOx emission reductions of about 1.1 tons per day by 2023 and 2.8 tons per day by 2031 from: (1) regulations for currently unregulated commercial furnaces used for space heating; and (2) a combination of long-term regulation and shorter-term incentives to replace existing commercial and residential NOx appliances such as boilers, water heaters and space heating furnaces with new zero or near-zero emission units. This control measure will apply to manufacturers, distributors, sellers, installers and purchasers of commercial boilers, water heaters and furnaces used for space heating.

Potential Emission Reduction

The 2019 baseline inventory is 11.4 tpd for NOx for this source category.

The 2021 baseline inventory is 10.2 tpd for NOx for this source category.

The 2025 baseline inventory is 13.6 tpd for NOx for this source category.

The 2031 planning baseline inventory is 9.5 tpd for NOx for this source category.

Emission reduction is 2.84 tpd by 2031 based on planning inventory.

Technological Feasibility

Low NOx burners are available for a variety of commercial and industrial heating and drying applications and achieve NOx emission levels of 10 to 30 ppm. Assuming a future NOx emission limit of between 20 ppm to 30 ppm, emissions from a commercial heating unit can be reduced by 60 to 80 percent.

Economic Feasibility

Based on the cost effectiveness of rules for other heating equipment (SCAQMD Rules 1111, 1121, 1146.2 and 1147), the cost effectiveness is estimated to be at \$15,000 to \$30,000 per ton of NOx reduced.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	1.8 tpd of NOx by 2023	Feasible	Feasible; \$15,000 to \$30,000/ton	✓
PM-annual	RACM	1.8 tpd of NOx by 2023			
PM-annual	BACM	1.8 tpd of NOx by 2023			
Ozone	RACM	2.84 tpd of NOx by 2031			

Potential Control Measure 5

Title

Emission Reductions from Cooling Towers

Target Pollutant

PM

Synopsis

This proposed control measure would seek reductions of PM from industrial cooling towers. This measure would require operators of cooling towers to use the latest drift eliminator technologies. The control measure would reduce PM2.5 emissions from cooling towers by requiring all units to upgrade their drift eliminators to more efficient drift eliminators that keep drift losses to less than 0.001 percent of the recirculating water flow rate, resulting in water savings as well. Currently, industrial cooling towers not used for evaporative cooling of process water or containing chromium compounds are exempt from obtaining permits so that this control measure would need to incorporate a registration or permitting element for tracking and enforceability.

Potential Emission Reduction

The 2019 baseline inventory is TBD for PM for this source category.
 The 2021 baseline inventory is TBD for PM for this source category.
 The 2025 baseline inventory is TBD for PM for this source category.
 Potential emission reduction is TBD.

Technological Feasibility

Newly constructed cooling towers have demonstrated ultra-low drift rate of 0.0005 percent. This drift rate has been achieved in practice and could be considered BACT for new construction.

Economic Feasibility

The amount of solid mass in each drop is dependent on the content of Total Dissolved Solid (TDS) and drift droplet size distribution. The estimated fraction of PM emissions as PM10 and PM2.5 therefore varies with TDS content. Although efficiency improvements are achievable through use of the newer drift eliminators, the proportion of PM2.5 in the overall drift is fairly small compared to the PM10 fraction (PM2.5 estimated at ~3 percent of PM10). Based on a the installation costs for a recent \$1.37 million cooling tower high efficiency drift eliminator retrofit project at a local refinery and representative drift rates based on cooling tower model years, reduction in total PM, PM10 and PM2.5 were estimated at approximately 173, 11 and 0.4 tons per year. As such, cost effectiveness for this application would be roughly \$15,000 per ton of PM10, but not cost effective for reducing PM2.5 (> \$400K/ton).

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	Not determined	Feasible	Not feasible	No
PM-annual	RACM				
PM-annual	BACM				
Ozone	RACM	Target pollutant is not a precursor for ozone formation			

Potential Control Measure 6

Title

Emission Reductions from Manure Management Strategies

Target Pollutant

NH3, VOC

Synopsis

This control measure would seek to use manure management systems to reduce ammonia, a PM2.5 precursor. Such systems can be applied on a year-around basis; however, seasonal or episodic controls could be considered to minimize costs. SCAQMD Rule 223 (Emission Reduction Permits for Large Confined Animal Facilities, Amended 6/2/06) requirements apply to Large Confined Animal Facilities (LCAFs) above certain size thresholds. Currently, SJVAPCD Rule 4570 has a more stringent regulatory threshold than Rule

223 (1,000 milk cows in SCAQMD vs 500 milk cows in SJVAPCD, and 650,000 birds in SCAQMD vs. 400,000 birds in SJVAPCD). The feasibility of lowering the applicability threshold is evaluated.

Acidifier Application

Ammonia reducing agents would reduce ammonia emissions from fresh manure.

Dietary Manipulation/Feed Additives

Dietary manipulation such as lowering the protein content and including high-fiber ingredients is an effective method to decrease ammonia emissions from monogastric animals’ and ruminants’ manure. Feed additives can be considered as a seasonal or episodic control strategy when ambient ammonium nitrate concentration in the region is high.

Potential Emission Reduction

	2019		2021		2025		2031	
	VOC	NH ₃	VOC	NH ₃	VOC	NH ₃	VOC	NH ₃
Baseline (t/d)	1.10	5.93	0.95	5.20	0.73	4.00	0.49	2.69
Projected Emission Reduction (t/d)*	0.05	0.30	0.05	0.26	0.04	0.20	0.02	0.14

*For lowering the regulatory threshold in Rule 223

Technological Feasibility

Technologies used in manure management systems are already available in the dairy farms and feasible based on experimental studies.

Lowering Rule 223 thresholds results in an estimated 5% reductions in ammonia as well as in VOC (from additional 46,000 cows). The approach would be much more efficient if certain options in the mitigation menu for cows and chicken are mandated (e.g., feed accordingly to NRC guidelines) and the frequency of housing mitigation measures is increased.

Economic Feasibility

Technologies used in manure management systems are economically feasible. However, pilot tests should be conducted to determine the cost effectiveness.

Rule 223 requires applicable facilities to obtain an SCAQMD permit including a mitigation plan with measures chosen from the mitigation menu. The menu option approach in Rule 223 provides the flexibility of selecting the more cost-effective measures.

Summary Table

	Type of Analysis	Emission Reduction*	Technological Feasibility*	Economic Feasibility*	Feasible Measure*
PM-24-hr	BACM	0.30 tpd of NH ₃ ; 0.05 tpd of VOC	Feasible	Feasible	✓
PM-annual	RACM	0.26 tpd of NH ₃ ; 0.05 tpd of VOC	Feasible	Feasible	✓
PM-annual	BACM	0.20 tpd of NH ₃ ; 0.04 tpd of VOC	Feasible	Feasible	✓
Ozone	RACM	0.02 tpd of VOC	Feasible	Feasible	✓

*For lowering the regulatory threshold in Rule 223

Potential Control Measure 7

Title

Ammonia Emission Reductions from NO_x Controls

Target Pollutant

NH₃

Synopsis

This proposed control measure would seek reductions of ammonia from NO_x controls such as selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR). Ammonia slip is the result of injection of ammonia into SCR systems that are installed on a variety of basic combustion equipment such as boilers, heaters, engines, gas turbines, and furnaces for NO_x removal. Ammonia slip is subject to permit conditions for different types of source equipment. Excess ammonia that does not react to remove NO_x in flue gas streams exits out of the SCR system and out of the stack into the atmosphere. Advances in catalytic technology have resulted in the production of ammonia slip catalysts (ASCs) that enable a maximum control of NO_x without the consequence of excess ammonia emissions and can be added as an additional catalyst layer in newer SCR installations. Ammonia slip catalysts would enable a reduction of ammonia slip permit limits and contemporaneous achievement of NO_x emission limits.

Potential Emission Reduction

The 2019 baseline emission inventory is 1.63 tpd for NH₃ for this source category.
 The 2021 baseline emission inventory is 1.63 tpd for NH₃ for this source category.
 The 2025 baseline emission inventory is 1.63 tpd for NH₃ for this source category.
 Potential NH₃ emission reduction is 1.2 tpd.

Technological Feasibility

Recent advances in catalyst technology have resulted in the development of ammonia slip catalysts that selectively convert ammonia into nitrogen. These catalysts could be installed post-SCR and would result in less ammonia slip.

Economic Feasibility

The emission reductions that can potentially be achieved by installing ASCs on virtually every SCR control device may be quantifiable, however, they may not be economically feasible due to the high costs of replacing existing equipment that is still operating through its useful life. Many existing SCR systems are still capable of maintaining NOx emissions at the required levels. Some SCR catalyst chamber housings are incapable of accommodating additional catalyst layers and would require engineering and construction of a new housing. Depending on site restrictions, the installation costs can further rise if there are space constraints around the equipment and within the facility. Additionally, catalysts installed by certain vendors often require that other components of the emission control system also be from the same vendor. These often include the logic control system that provides feedback to the injection nozzles based on the real time NOx levels going through the system.

To establish a basis for costs, it is assumed that the entire emission control system for each piece of equipment will be replaced with a new system with SCR catalysts as well as ASCs. This is a conservative assumption because not all of these sources would require the installation of an entire new system. According to permit records, there are currently over 300 active permits for SCRs. Recent costs for SCR systems were obtained as part of the BARCT analysis for the amendments to the NOx RECLAIM program in 2015, which affected the largest NOx sources, including those operated at petroleum refineries.

Ammonia slip emissions from these RECLAIM sources (a subset of the active SCR permits) were estimated to be 1.63 tons per day for 140 SCR installations, assuming a 5 ppm ammonia slip emission limit from each of these sources. This includes systems that are already installed and those that are projected to be installed as a result of the NOx reductions associated with the December 2015 amendments. The present worth values for each device analyzed across the different refinery and non-refinery source categories were then summated to reach a total range of \$728 MM to \$1,099 MMⁱⁱⁱ. The total project lifetime is calculated to be 25 years, consistent with current and recent practice with District rules. The estimated ammonia slip reductions based on vendor discussions is 75 percent on the conservative side, which equates to approximately 1.2 tons per day. The resulting aggregate cost effectiveness ranges from \$66,000 to \$100,000 per ton. This is significantly higher than the \$50,000 per ton that was utilized as a guide for the RECLAIM 2010 SOx and 2015 NOx amendments to assess economic feasibility. On this basis, this control measure is not considered to be economically feasible.

ⁱⁱⁱ SCAQMD; Staff Report for Amendments to Regulation XX, NOx RECLAIM; December 2015.

Summary Table

	Type of Analysis	NH3 Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	1.2 tpd	Potentially Feasible	Not Feasible	No
PM-annual	RACM	1.2 tpd	Potentially Feasible	Not Feasible	No
PM-annual	BACM	1.2 tpd	Potentially Feasible	Not Feasible	No
Ozone	RACM	Target pollutant is not a precursor for ozone formation			

Potential Control Measure 8

Title

Further Emission Reductions from Agricultural, Prescribed, and Training Burning

Target Pollutant

PM

Synopsis

This control measure would seek further PM emission reductions from certain categories of open burning including agricultural and prescribed (*e.g.*, forestry service) burning activities, as well as training burns. Agricultural burning involves collection and combustion of vegetative materials produced from the growing and harvesting of crops. Prescribed burning is the planned burning of vegetative materials, usually conducted by a fire protection agency or the department of forestry in order to control plant disease and pests or to reduce fire episode impacts. Training burns are hands-on activities conducted by fire protection agencies to practice suppressing fires.

This control measure would seek further PM emission reductions via the use of alternatives to agricultural burning (*e.g.*, chipping/grinding or composting) through use of incentives, with priority for eliminating burn projects located within close proximity of sensitive receptors. Additional considerations could include aligning burn prohibitions with any potential changes to the Rule 444 no burn day provisions which could further reduce open burning emissions during peak PM2.5 episodes.

Potential Emission Reduction

The 2019 baseline emission inventory is 0.68 tpd for PM for this source category.
 The 2021 baseline emission inventory is 0.68 tpd for PM for this source category.
 The 2025 baseline emission inventory is 0.68 tpd for PM for this source category.

If burn prohibitions were proposed to match potential changes to the Rule 444 no burn day provision, there likely would be a slight increase in the number of no-burn days under this potential control measure. However, no annual emissions reductions would be anticipated as the burning prohibited during a

revised program would likely be switched to other, non-episodic times of the year. Therefore, potential emission reduction is expected to be minimal.

Technological Feasibility

Burning alternatives such as chipping/grinding or composting are widely available in the South Coast.

Economic Feasibility

The cost effectiveness of this control measure has not been estimated. However, costs to implement burning alternatives would be expected to be higher due to equipment and labor costs. The San Joaquin Valley APCD report on alternatives to agricultural burning estimated shredding and land application of vineyard material for a 20 acre site at approximately \$975 per acre while open burning was estimated to cost approximately \$200 per acre (SJVAPCD, 2010).

Cost impacts from an increase in burning prohibitions due to elevated PM2.5 levels are expected to be minimal as burning would likely be switched to other days or times of the year.

Since no annual emission reductions would be anticipated from increased burning prohibitions, this potential control measure is considered economically infeasible in terms of cost per ton.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	0 tpd	Feasible	Not Feasible	No
PM-annual	RACM				
PM-annual	BACM				
Ozone	RACM	Target pollutant is not a precursor for ozone formation			

Potential Control Measure 9

Title

Lowering Emission Limit of Rule 462 for Gasoline Bulk Terminals

Target Pollutant

VOC

Synopsis

Bay Area, Regulation 8, Rule 33 (Amended 4/15/09) regulates VOC emissions from gasoline bulk terminals with an emission limit of 0.04 lbs per 1000 gallons of liquid loaded. The limit in SCAQMD Rule 462 (Organic Liquid Loading, Amended 5/14/99) is 0.08 lbs per 1000 gallons of liquid loaded for a Class A facility loading 20,000 gallons or more. This limit is not applicable to small facilities (Class B and C). Rule 462 regulates emissions from additional sources, including chemical plants that load organic liquid with a vapor pressure above 1.5 psia. The feasibility of lowering the emission limit from 0.08 to 0.04 lbs per 1000 gallons of liquid loaded for gasoline bulk terminals is evaluated.

Potential Emission Reduction

The 2019 baseline emission inventory is 0.29 tpd for this source category.
 The 2021 baseline emission inventory is 0.27 tpd for this source category.
 The 2025 baseline emission inventory is 0.24 tpd for this source category.
 The 2031 baseline emission inventory is 0.21 tpd for this source category.
 Potential emission reduction is 0.09 tpd.

Technological Feasibility

In the SCAQMD, Rule 462 applies to 23 major source bulk loading terminals. Currently, nearly all gasoline bulk terminals meet the lower emission limit of 0.04 lbs per 1,000 gallons of liquid loaded. Source test results show emission rates less than 0.04 lbs per 1,000 gallons of liquid loaded in all but one gasoline bulk terminal. However, some facilities report emission rates equal to the emission rate limits in their permit. There is one gasoline bulk terminal that would not meet the lower emission limit of 0.04 lbs per 1,000 gallons of liquid loaded as the most recent source test resulted in an emission rate of 0.042 lbs per 1,000 gallons of liquid loaded. At their current throughput, reducing emissions to meet the lower limit would result in 0.14 TPY of emission reduction.

Economic Feasibility

Any added costs for VOC reductions would result in very high cost per ton figures because of the negligible emission reductions realized. For example, for the facility described above, reducing the emission rate from 0.042 lbs per 1,000 gallons to 0.04 lbs per 1,000 gallons could cost between \$100,000 for modifications to the control device to several millions of dollars to replace the control device. Using the current throughput at that facility and the lowest cost estimate annualized over a ten year period, the cost per ton of VOC reduced is approximately \$95,000. In addition to the high costs, VOC reductions would likely be offset by increased NOx emissions from modifications to control devices which burn natural gas or propane to operate.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	0.09 tpd	Feasible	Not Feasible; \$95,000/ton	No
PM-annual	RACM	0.09 tpd			
PM-annual	BACM	0.09 tpd			
Ozone	RACM	0.09 tpd			

Potential Control Measure 10

Title

Emission Reductions from Non-Refinery Flares

Target Pollutant

VOC, NOx

Synopsis

This proposed control measure would seek reductions of NOx and VOC from flares from non-refinery sources such as organic liquid loading stations, tank farms, oil and gas production, landfills, and composting sources. Flare NOx emissions are regulated through new source review and BACT, but there are currently no source-specific rules regulating NOx emissions from flares at these sources. This control measure proposes that, consistent with all feasible control measures, all non-refinery flares meet current BACT for NOx emissions and thermal oxidation of VOC.

Potential Emission Reduction

The 2019 baseline inventory is 2.3 tpd for NOx for this source category.

The 2021 baseline inventory is 2.4 tpd for NOx for this source category.

The 2025 baseline inventory is 2.4 tpd for NOx for this source category.

The 2031 planning baseline inventory is 2.9 tpd for NOx for this source category.

Potential emission reduction is 1.5 tpd (based on 2031 planning inventory) for NOx.

The 2019 baseline inventory is 0.6 tpd for VOC for this source category.

The 2021 baseline inventory is 0.7 tpd for VOC for this source category.

The 2025 baseline inventory is 0.7 tpd for VOC for this source category.

The 2031 baseline inventory is 0.7 tpd for VOC for this source category.

Potential emission reduction is 0.4 tpd (based on 2031 planning inventory) for VOC.

Technological Feasibility

The most stringent current BACT limit is 0.025 pounds NOx per million BTU (MMBTU) of biogas. Staff estimates an average emission reduction of about 50 percent is achievable if all flares meet the most stringent current BACT limit. Lower emission levels of up to 0.018 lbs NOx/MMBTU, or 15 ppm NOx at 3 percent oxygen would be achieved with the installation of Clean Enclosed Burners (CEB). CEBs are designed to accommodate varying gas compositions and feed rates while maintaining emissions at low levels. These devices achieve the VOC destruction of the fuel stream, while producing lower NOx emissions.

Economic Feasibility

Based on cost information used for the 2006 SCAQMD BACT determination for biogas flares, the average cost effectiveness for meeting an emission limit of 0.025 pound per million BTU of biogas is less than \$20,000 per ton of NOx reduced. It is estimated that a similar cost effectiveness would pertain to other non-refinery sources.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	1.2 tpd of NOx by 2023 0.4 tpd of VOC by 2023	Feasible	Feasible; < \$20,000/ton	✓
PM-annual	RACM	1.2 tpd of NOx by 2023 0.4 tpd of VOC by 2023			
PM-annual	BACM	1.2 tpd of NOx by 2023 0.4 tpd of VOC by 2023			
Ozone	RACM	1.5 tpd of NOx 0.4 tpd of VOC			

Potential Control Measure 11

Title

Lowering Emission Limits of Rule 1115 to Meet 2008 EPA CTG for Auto and Light-Duty Truck Assembly.

Target Pollutant

VOC

Synopsis

Rule 1115 is not as stringent as the 2008 EPA CTGs for a few coating processes for facilities emitting > 15 lbs/day. CTG has more stringent limits for electro-deposition primer at 84 g/L (145 g/L in Rule 1115); sprayable primer, primer-surfacer, and topcoat at 1440 g/L (1800 g/L in Rule 1115); and trunk coatings, interior coatings, sealers, and deadeners at 650 g/L (Rule 1115 provides an exemption for these categories). The feasibility of lowering the emission limit to meet 2008 EPA CTG for Auto and Light-Duty Truck Assembly is evaluated.

Potential Emission Reduction

Because VOC is a precursor to PM2.5 and the ozone strategy has proven to be effective in meeting the PM2.5 standards, the emission inventory and reductions based on the PM2.5 attainment years, along with the 2008 8-hour ozone attainment year, have been provided below. Further, the inventory is based on facility-wide VOC emissions from the two known facilities potentially using the affected coatings although the affected coatings are a subset of the total VOC emission listed. Thus, the inventory is an overestimation and actual PTE would be lower.

The 2019 baseline inventory of is 0.04 tpd for VOC for this source category.

The 2021 baseline inventory of is 0.04 tpd for VOC for this source category.

The 2025 baseline inventory of is 0.04 tpd for VOC for this source category.

The 2031 planning baseline inventory of is 0.04 tpd for VOC for this source category.

Potential VOC emission reduction is 0.002 tpd.

Technological Feasibility

Lower VOC content reformulations for electro-deposition primer and trunk coating exist but current usage is known to be limited. As such, while not known, potential future usage is not anticipated to be expand substantially. Growth factors for overall auto refinishing and coatings industry range from 1.064 in 2019 in Los Angeles County to 1.945 in 2031 in Riverside County (Table III-2-13 thru 2-18, Appendix III). Again, as noted earlier, electro-deposition primer and trunk coating usage is a subset of the overall auto refinishing and coatings inventory, so no substantial change is anticipated. Regardless, there is potential technological feasibility because the CTG has identified known uses at lower VOC content limits.

Economic Feasibility

Two known facilities could be required to change their coating operations if the VOC limits are reduced. This involves approximately a two-year process to test multiple the new coating in the spray lines, conduct performance testing of new coatings, as well as training of technicians for proper application. Thus, the costs to successfully implement new coating limits for the affected coatings would include product capital, substrate costs, and labor costs to test, quality assurance, and training. The labor wage was based on a professional level rate since an educated and experienced background would be necessary. Staff estimates the cost effectiveness is approximately \$90,000 per ton based on the cost to fully implement the testing and transition compared to the very low emission reductions achieved by the small inventory of these coatings. This cost effectiveness value is three times higher than the VOC threshold of \$30,000 per ton per the 2016 AQMP, thus not economically feasible to implement at this time.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	0.002 tpd	Potentially Feasible	Not Feasible	No
PM-annual	RACM	0.002 tpd	Potentially Feasible	Not Feasible	No
PM-annual	BACM	0.002 tpd	Potentially Feasible	Not Feasible	No
Ozone	RACM	0.002 tpd	Potentially Feasible	Not Feasible	No

Potential Control Measure 12

Title

Further Emission Reductions from Commercial Cooking

Target Pollutant

PM

Synopsis

Rule 1138 (*Control of Emissions from Restaurant Operations, Adopted 11/14/97*) regulates VOC and PM emissions from restaurant operations by requiring the installation of flameless catalytic oxidizers, or equivalent control devices, to chain-driven charbroilers. The Rule covers chain-driven charbroilers cooking 875 pounds of meat or more per week, applicable to mostly large chain operations. Although under-fired charbroilers are another source of emissions from restaurant operations, no cost-effective control technology was identified for this type of equipment at the time of rule adoption. The rule required a report to the Governing Board within 18 months of its adoption, on the feasibility of achieving further restaurant operations emission reductions, specifically under-fired charbroilers and potentially other commercial restaurant cooking equipment. The Board received a report in May 1999, on emerging control technology for under-fired charbroilers and an overview of the work to date by the University of California Riverside, College of Engineering, Center for Environmental Research and Technology (CE-CERT). The report pointed out that a continuing effort to find cost-effective and technologically feasible controls for the restaurant industry had been ongoing since 1991. The earlier phases of this effort included the investment of significant resources in improving test methods and developing emission factors. In August 2000, staff reported to the Board that cost-effective controls for under-fired charbroilers were limited. Similar conclusions, that controls were infeasible, were made in a 2004 report. In 2008-09, staff reinitiated rule development for chain-driven charbroilers and held a series of working group meetings and a public workshop. Rule adoption was again concluded infeasible due to the lack of affordable control technologies.

SJVAPCD Rule 4692 reduces PM emissions by requiring catalytic oxidizers for chain-driven charbroilers cooking 400 pounds of meat or more per week. This threshold is more stringent than Rule 1138 which applies to chain-driven charbroilers cooking 875 pounds of meat or more per week. In its 2012 PM_{2.5} Plan, SJVAPCD committed to expand Rule 4692 applicability to include under-fired charbroilers in 2016 with an anticipated compliance date of 2017.

Potential Emission Reduction

The 2019 baseline inventory is 11.7 tpd for PM for this source category.
The 2021 baseline inventory is 11.9 tpd for PM for this source category.
The 2025 baseline inventory is 12.3 tpd for PM for this source category.

Potential emission reduction is 3.3 tpd of PM for installing control devices with a higher (e.g., 80 percent) and lower (e.g., 25 percent) efficiency combined depending on the level of activity at charbroiler restaurants.

Technological Feasibility

In 2009, SCAQMD initiated a study with University of California Riverside, in partnership with the U.S. EPA and other air agencies in PM_{2.5} nonattainment areas, to identify cost-effective and more affordable under-fired charbroiler controls. To date, screening tests have been conducted by CE-CERT on control device configurations provided by seven manufacturers. Protocol tests were then conducted on the most promising technologies, including technologies not commercially available at this time, and draft test results have been received on five control device configurations. Potential control technology includes commercially or near-commercially available technologies, including a multi-stage filter system, an Electrostatic Precipitator (ESP), an in-hood baffle filter, ceramic filtration with microwave regeneration, and a centrifugal separator/aerosol mist nebulizer.

Economic Feasibility

The cost-effectiveness associated with achieving 2 tons per day reduction by requiring high use under-fired charbroiler restaurants to install 80 percent efficient control devices has been estimated at approximately \$15,000 per ton PM_{2.5}. The cost-effectiveness of requirements for lower activity restaurants to install lower efficiency devices has been estimated at approximately \$18,000 per ton of PM_{2.5} reduced. SCAQMD staff continues to work with control device manufacturers and restaurants to quantify costs, especially for retrofit technologies. As expected, cost estimates for new installations represent a marginal increase in costs, whereas a retrofit device installed at an existing facility may require a complete system overhaul including fire suppression, ventilation, and electrical components, which can be significant. The added costs for retrofit installations combined with the lack of commercially available, low-cost/emerging technology devices means this control measure is not feasible in the short-term for existing sources. To encourage continued progress in control device development, the SCAQMD is considering implementation of a PM control program for new facilities with high-use under-fired charbroilers, provided appropriate control devices can be identified. SCAQMD staff would analyze industry cost impacts as part of any potential rule development process. In addition to cost-effectiveness, given that many restaurants are small businesses, affordability will also be assessed relative to capital and installation costs, as well as ongoing operational costs.

Summary Table

*Not feasible for retrofit installations at existing restaurants and therefore cannot contribute to attainment in the short-term

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	3.3 tpd	Not Feasible*	Not Feasible; \$15,000-\$18,000+/ton	No
PM-annual	RACM				
PM-annual	BACM				
Ozone	RACM	Target pollutant is not a precursor for ozone formation			

*Not feasible for retrofit installations at existing restaurants

Potential Control Measure 13

Title

Further Emission Reduction from Fugitive Dust Sources

Target Pollutant

PM

Synopsis

This control measure would seek further PM emission reductions from fugitive dust sources. Although fugitive dust emissions from agriculture and construction are primarily in the coarse size fraction (PM10-2.5), entrained road dust is still one of the major direct PM2.5 sources due to the large number of roadways and high traffic volumes in the region. SCAQMD Rule 1186 established requirements to prevent material from being deposited on roadways and also requires local jurisdictions to procure certified street sweeping equipment.

This control measure would seek to establish minimum street sweeping frequencies and enhanced street cleaning for roads with higher silt loadings. Enhanced best management practices could also be established to prevent material from being tracked out onto roads from vehicles exiting construction sites, certain industrial facilities (e.g., aggregate handling facilities), and landfills. Wheel washing systems could be required for higher activity sites with special consideration for systems that encourage use of reclaimed water or chemical stabilizers to reduce water demand.

Potential Emission Reduction

The baseline inventory of 2019 is 8.4 tpd for PM for this source category.

The baseline inventory of 2021 is 8.5 tpd for PM for this source category.

The baseline inventory of 2025 is 8.7 tpd for PM for this source category.

Currently, most cities in urban areas have regular street sweeping at the frequency of once or twice per week due to stormwater regulations. Existing National Pollution Discharge Elimination System (NPDES) permits required under the Clean Water Act currently specify street sweeping frequencies as part of a comprehensive program to reduce debris from entering the storm drain.^{iv} Accordingly, regulations are currently in place to require street sweeping, at specified frequencies, with SCAQMD-certified equipment. Therefore, potential emission reduction is expected to be minimal.

Technological Feasibility

Further emission reductions could be achieved by specifying the most effective track out prevention measures, such as use of a wheel washing system, for sites with high vehicular activity exiting the site, or those with repeated track-out violations. Rule 1186 requires that certified equipment be used on public roads currently subject to routine street sweeping but does not specify frequency. Accordingly, further paved road dust PM2.5 emission reductions could be sought by specifying the frequency of street sweeping. All street sweepers in use today by local governments are considered certified devices and thus, further reductions in paved road dust emissions are technically feasible.

Economic Feasibility

Basic wheel washer system costs for a site with 100 trucks exiting a day have been estimated to range from \$55,000 to \$63,000 (approximately \$12,500 for installation) and operational costs will vary with local utility rates. Wheel washing systems can also be leased for approximately \$3,000 per month. With one time installation/removal and transportation, costs is estimated at approximately \$14,000. Operational and maintenance costs will depend on site-specific conditions. Street sweeping costs vary greatly based on the number of miles and frequencies and whether the work is conducted with in-house or contracted resources. One local jurisdiction estimated twice weekly contract sweeping costs at \$25 per curb mile (Riverside County, 2015). Since most cities in the Basin have regular street sweeping schedules, emission reductions from mandating street sweeping frequency is expected to be minimal and not worth the cost.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	Minimal	Feasible	Not Feasible	No
PM-annual	RACM	Minimal	Feasible	Not Feasible	No
PM-annual	BACM	Minimal	Feasible	Not Feasible	No
Ozone	RACM	Target pollutant is not a precursor for ozone formation			

^{iv} City of Fullerton, 2015. Contact with Ty Richter, Street Supervisor, City of Fullerton, September 2015.

Potential Control Measure 14

Title

Lowering the VOC Limit of Rule 1125 for Three-piece and Two-piece Can Interior Body Sprays, and Add a VOC Limit and Corresponding Definition for Exterior Body Spray

Target Pollutant

VOC

Synopsis

Rule 1125 (Metal Container, Closure, and Coil Coating Operations, Amended 3/7/08) limits the emissions of VOCs from coating operations in manufacturing and/or reconditioning of metal cans, drums, pails, lids, and closures. The rule also applies to coating of the surface of flat metal sheets, strips, rolls, or coils. The analogous rules in SJVAPCD and BAAQMD have lower emission limits for three-piece can interior body sprays (360 g/l vs. 510 g/l in SCAQMD) and two-piece can interior body sprays (420 g/l vs. 440 g/l in SCAQMD). They also have a VOC limit and definition for the category of exterior body spray that is absent in Rule 1125. Thus, the feasibility of lowering the VOC content limit of Rule 1125 for three-piece can interior body sprays to 360 g/l; lowering the limit for two-piece can interior body sprays to 420 g/l; and adding a VOC limit and corresponding definition for the category of exterior body spray is examined.

Potential Emission Reduction

The 2019 baseline inventory is 0.006 tpd for VOC for this source category.

The 2021 baseline inventory is 0.006 tpd for VOC for this source category.

The 2025 baseline inventory is 0.007 tpd for VOC for this source category.

The 2031 planning baseline inventory is 0.007 tpd for VOC for this source category.

Potential VOC emission reduction is 0.0003 tpd.

Technological Feasibility

Lower VOC content reformulations for three- and two-piece can interior body sprays exist but current usage is known to be very limited. As such, while not known, potential future usage is not anticipated to be expand substantially. Growth factors for overall can, coil, metal parts and products coatings industry range from 1.085 in 2019 in San Bernardino County to 1.419 in 2031 in Riverside County (Table III-2-13 thru 2-18, Appendix III). Three- and two-piece can interior body sprays usage is a subset of the overall can, coil, metal parts and products coatings inventory, so no substantial change is anticipated. Regardless, there is potential technological feasibility because the CTG has identified known uses at lower VOC content limits.

Economic Feasibility

Three known facilities could be required to change their coating operations if the VOC limits are reduced. Similar to Proposed Control Measure 11, this involves approximately a yearlong process to test multiple the new coating in the spray lines, conduct performance testing of new coatings, as well as training of technicians for proper application. Thus, the costs to successfully implement new coating limits for the affected coatings would include product capital, substrate costs, and labor costs to test, quality assurance, and training. The labor wage was based on a professional level rate since an educated and experienced background would be necessary. Staff estimates the cost effectiveness is approximately \$200,000 per ton based on the cost to fully implement the testing and transition compared to the very low emission reductions achieved by the small inventory of these coatings. This cost effectiveness value is over six times higher than the VOC threshold of \$30,000 per ton per the 2016 AQMP, thus not economically feasible to implement at this time.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	0.0003 tpd	Potentially Feasible	Not Feasible	No
PM-annual	RACM	0.0003 tpd	Potentially Feasible	Not Feasible	No
PM-annual	BACM	0.0003 tpd	Potentially Feasible	Not Feasible	No
Ozone	RACM	0.0003 tpd	Potentially Feasible	Not Feasible	No

Potential Control Measure 15

Title

Further Emission Reductions from Wood Burning Fireplaces and Wood Stoves

Target Pollutant

PM

Synopsis

Rule 445 (Wood Burning Devices, Amended 5/3/13) is designed to reduce PM emission from wood-burning devices. The rule establishes requirements for the sale, operation, and installation of wood burning devices.

SJVAPCD Rule 4901 requires the replacement of uncertified wood burning heaters (stoves and inserts) upon sale or transfer of real property. SJVAPCD Rule 4901 also allows uncertified wood heaters to be

rendered permanently inoperable during the property transfer process.^v In the SCAQMD, there was a lack of data as to the number of uncertified wood heaters, but it has been estimated that in 2005 there could have been as many as approximately 42,000 such devices in use in the Basin.^{vi} Relative to the Basin, San Joaquin Valley is more rural and overall more highly impacted by wood burning. For example, January Heating Degree Days^{vii} (a measure for tracking energy use) for Fresno (578) are double or nearly double the values for Long Beach (267) and Riverside (303), which increases wood stove use. In addition, residential burning is more related to ambiance than temperature for the Basin. Furthermore, based on the experiences of other agencies, public outreach and education in combination with the gas log buy-down incentive program could have a further positive impact in the sub-region. The SCAQMD has implemented the Healthy Hearths™ program that includes a comprehensive education and outreach effort to encourage the public to switch to cleaner, gaseous-fueled hearth products. An incentive program for cleaner hearth appliances is ongoing to encourage the public to switch to cleaner hearth products (with over 10,000 conversions), including gaseous-fueled devices that are exempt from burning curtailments. It was determined that for these reasons, Rule 445 allows the transfer of real estate without removal or replacement of uncertified wood heaters.

In 2006, following the donation of stoves to low-income households and cash incentives for other homes, Lincoln County, Montana passed a regulation that banned the use of uncertified wood heaters. The local government decided that each home using a “Solid Fuel Burning Device” (e.g., wood stove or fireplace) must have an operating permit. To enforce the regulation, Lincoln County air program personnel periodically look for visible emissions from chimneys. Currently, SCAQMD Rule 445 does not allow sale or installation of uncertified wood heaters but use of such devices are allowed unless a no burn day has been forecast, whereas both certified and uncertified wood heaters are subject to the no burn day provisions of the rule.

Potential Emission Reduction

The 2019 baseline inventory is 4.9 tpd for PM for this source category (all wood heaters).
The 2021 baseline inventory is 4.9 tpd for PM for this source category (all wood heaters).
The 2025 baseline inventory is 4.9 tpd for PM for this source category (all wood heaters).
Potential emission reduction is 0.1 tons per day.

Assumptions:

- Wood burning rate – 0.95 cords per year (1.46 tons) per device (Sierra Research, 1989)
- PM2.5 Emission factors – uncertified (29.5 lbs./ton) certified (17.1 lbs./ton)^{viii}
- Annual Reductions – 18.1 lbs./device

^v SJVAPCD, 2003. San Joaquin Valley Air Pollution Control District (SJVAPCD), Final Draft Staff Report, Amendments to Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters), June 19, 2003

^{vi} CARB, 2011 http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-1_2011.pdf CARB, 2011. California Air Resources Board (CARB), Area Source Methodology, Section 7.1 Residential Wood Combustion (revised October 2015).

^{vii} National Oceanic and Atmospheric Administration (NOAA); Degree days are the difference between the daily temperature mean, (high temperature plus low temperature divided by two) and 65 degree F. If the temperature is below 65 degrees F, the mean is subtracted from 65 and the result is Heating Degree Days.

^{viii} U.S. EPA AP-42, 1996. Average of certified catalytic (19.6 lbs./ton) and non-catalytic (14.6 lbs./ton) emission rates

National rate for percentage of uncertified heaters (80 percent, U.S. EPA, 2005) is appropriate for the Basin

Household turnover rate – ten years (SJVAPCD, 2003)

PM2.5 Reductions

18.1 lbs. PM2.5 reductions/device/yr × 42,000 devices = 380.1 tons

380.1 tons × 0.1 turnover rate / 365 days per year = 0.1 ton/ annual average day

Technological Feasibility

Certified wood burning heaters are commercially available and it is technologically feasible to replace an uncertified heater with a certified (or equivalent) heater. It is also technologically feasible to render an uncertified wood heater as permanently inoperable.

Economic Feasibility

Presuming operational and maintenance costs are the same for certified devices and uncertified devices and the operational life (and emission reductions) are assumed at 20 years, a simplified cost effectiveness estimate is \$23,055 per ton of PM2.5 reduced.

\$4,150 uncertified to certified replacement (MARAMA, 2006):	\$4,150	= \$23,055/ton
18.1 lbs/yr./device × 20 years / 2000 lbs./ton:	0.18 tons	

The total capital cost based on the estimated 42,000 devices required for conversion would be roughly \$174 million.

SJVAPCD has a lower number of housing units (1,331,557)^{ix} relative to the Basin (5,554,896).^x Requiring an inspection upon each property transfer will be more labor and cost intensive in the Basin. More importantly, SJVAPCD Rule 4901 is a two-tiered control program. During a Level One Curtailment, triggered when PM2.5 concentrations are forecast to be between 20 and 65 µg/m³, U.S. EPA Phase II-certified wood burning heaters that have a current registration with SJVAPCD may be used. In contrast, SCAQMD prohibits the use of all solid fuel wood burning sources during its curtailment. The different approach between the curtailment programs of SJVAPCD and SCAQMD, combined with the higher number of housing units and the lower impact of residential wood smoke to the annual pm levels in the Basin, make this measure economically infeasible.

Although the banning of the use of uncertified devices has been implemented in Lincoln County Montana (11,477 housing units),^{xi} it is not considered practical for the Basin due to the Basin's significantly higher number of housing units (5,554,896) compared to Lincoln County Montana and the associated issues and costs surrounding the issuance of operating permits for all of the Basin's households with wood burning devices. Furthermore, the contribution of wood smoke to wintertime PM2.5 is much higher in Lincoln

^{ix} U.S. Census 2010 Quick Facts <http://www.census.gov/quickfacts/table/HSG030210/06031,06019,06107,06029>

U.S. Census 2010 Quick Facts <http://www.census.gov/quickfacts/table/HSG030210/06047,06039,06099,06077>

^x U.S. Census 2010 Quick Facts <http://www.census.gov/quickfacts/table/HSG030210/06071,06065,06059,06037,00>
Basin/County percentages: LA 97%, Orange 100%, Riverside and San Bernardino 77.6%

^{xi} U.S. Census 2014 Quick Facts, <http://quickfacts.census.gov/qfd/states/30/30053.html>

County (up to 80 percent)^{xii} than the Basin. Given the more diverse source composition of PM_{2.5} and the much higher number of housing units in the Basin, this control measure is not cost effective to be implemented.

Summary Table

* Under R445, all devices are subject to no-burn days.

**Upon full implementation, estimated no earlier than c/y 2028.

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	TBD*	Feasible	Not Feasible	No
PM-annual	RACM	0.1 tpd**	Feasible	Not Feasible	No
PM-annual	RACM	0.1 tpd**	Feasible	Not Feasible	No
Ozone	RACM	Target pollutant is not a precursor for ozone formation			

* Under R445, all devices are subject to no-burn days.

**Upon full implementation, estimated no earlier than c/y 2028.

Potential Control Measure 16

Title

Lowering the Curtailment Threshold in Rule 445

Target Pollutant

PM

Synopsis

The SJVAPCD recently amended the previous Rule 4901 episodic curtailment threshold (PM_{2.5} concentrations > 30 micrograms per cubic meter (µg/m³) or PM₁₀ > 135 µg/m³) and now implements a two-tiered curtailment program. During a Level One Curtailment, triggered when PM_{2.5} concentrations are forecast to be between 20 and 65 µg/m³, operation of a wood burning fireplace or an unregistered wood burning heater is prohibited. Properly operated wood burning heaters that meet certification requirements (U.S. EPA Phase II-certified or equivalent) and have a current registration with SJVAPCD may be used during a Level One Curtailment. During a Level Two Curtailment, which is triggered when PM_{2.5} concentration is forecast to be above 65 µg/m³ or PM₁₀ > 135 µg/m³, operation of any wood burning

^{xii} Ward, T.J., Rinehart, L.R., Lange, T., 2006. The 2003/2004 Libby, Montana PM_{2.5} source apportionment research study. *Aerosol Science and Technology* 40, 166–177.

device is prohibited.^{xiii} The staff report indicates that lowering the threshold level would increase the No Burn days from 35 days per wood burning season per County to 69 days per wood burning season per County. The increase in the number of SJVAPCD curtailment days could reduce emissions by 1.5 tpd of PM_{2.5}.

Under SCAQMD Rule 445 (Wood Burning Devices, Amended 5/3/13), curtailment is mandatory when the forecast level exceeds 30 $\mu\text{g}/\text{m}^3$ from November through February. The SCAQMD curtailment threshold applies to all solid fuel devices, including wood-based residential cooking devices. The threshold was lowered from 35 $\mu\text{g}/\text{m}^3$ to 30 $\mu\text{g}/\text{m}^3$ in the 2013 rule amendment to provide a margin of safety given the uncertainties associated with air quality forecasts and to be consistent with the wood smoke policies in Bay Area and Sacramento Metropolitan AQMD. It was anticipated that there may be an increase of up to 20 no-burn days with the lower threshold. San Joaquin Valley is a colder, inland climate when compared with the Basin. For example, January Heating Degree Days^{xiv} (a measure for tracking energy use) for Fresno (578) are double or nearly double the values for Long Beach (267) and Riverside (303). Because of the colder climate and the more rural nature of the San Joaquin Valley, the contribution of wood smoke to overall PM_{2.5} levels is considered to be much higher than it is the Basin. Specifically, it was estimated that on the worst winter days, wood smoke can be responsible for up to one-third of the Valley's particulate matter air pollution^{xv} (SJVAPCD, 2015) compared to <10 percent in the Basin^{xvi} (SCAQMD, 2012). It is acknowledged the Basin's wood smoke contributions can be higher on stagnant winter days but the current SCAQMD control program addresses emissions to the extent feasible during these conditions.

Potential Emission Reduction

The 2019 PM_{2.5} emissions inventory for the Basin's residential wood combustion is estimated at approximately 4.9 tons per annual average day and approximately 10 tons per winter day. Lowering the mandatory winter burning curtailment threshold to 20 $\mu\text{g}/\text{m}^3$ would be estimated to prohibit all wood burning on approximately 60% of the winter season days (i.e., 72 days per 120 day season). Note that the 24-hour PM_{2.5} standard is set to protect public health from short term episodic PM_{2.5} levels, and the standard is based on the 98th percentile of the daily average measurements averaged over three years. The 98th percentile of any given year is always one of the eight highest days of the year. The emission reductions from the curtailments called under the current 30 $\mu\text{g}/\text{m}^3$ threshold are already incorporated in the attainment demonstration of the 24-hour PM_{2.5} standard. Thus, lowering the No Burn threshold to 20 $\mu\text{g}/\text{m}^3$ will have a minimal impact on reducing PM levels on episodic no-burn days. Instead, lowering the curtailment threshold to 20 $\mu\text{g}/\text{m}^3$ could be anticipated to result in approximately 48 extra curtailment

^{xiii} Exemptions provided where natural gas service is not available or where a wood burning device is the sole source of heat in a residence.

^{xiv} National Oceanic and Atmospheric Administration (NOAA): Degree days are the difference between the daily temperature mean, (high temperature plus low temperature divided by two) and 65°F. If the temperature mean is below 65°F, the mean is subtracted from 65 and the result is Heating Degree Days.

^{xv} SJVAPCD, 2015. San Joaquin Valley Air Pollution Control District (SJVAPCD), FAQs about Residential Wood Burning, Rule 4901 and Check Before You Burn. January 5, 2015.

^{xvi} SCAQMD, 2012. South Coast Air Quality Management District (SCAQMD), 2012 Air Quality Management Plan, Appendix IV-A, Districts Stationary Source Control Measures. December 2012.

days which could reduce PM2.5 emissions by 0.9 ton per annual average day if use of certified devices is allowed (or 1.0 ton per annual average day if certified device use is also prohibited).

Technological Feasibility

It is technologically feasible to establish a lower wood burning curtailment threshold or to develop a two-tier control program which would allow use of the cleanest wood burning devices when use of fireplaces would be prohibited. Given the existing mandatory curtailment exemptions provided for low income households or those not serviced by natural gas, there are alternatives to burning wood such as gaseous-fueled or electrical heating appliances.

Economic Feasibility

Increasing the number of Rule 445 curtailment days would result in relatively little cost increases to the impacted community as there are cost-effective alternatives to burning wood such as gaseous-fueled or electrical heating appliances, given the proposed control measure does not change existing mandatory curtailment exemptions provided for low income households or those not serviced by natural gas. On the other hand, the proposed control measure would increase the number of no-burn days in the Basin considerably and could potentially result in the loss of sales by the firewood sellers.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	0 tpd	Feasible	Feasible	No
PM-annual	RACM	0.9 tpd	Feasible	Feasible	✓
PM-annual	BACM	0.9 tpd	Feasible	Feasible	✓
Ozone	RACM	Target pollutant is not a precursor for ozone formation			

Potential Control Measure 17

Title

Emission Reductions from Greenwaste Composting

Target Pollutant

VOC and NH3

Synopsis

This proposed control measure would seek emissions reductions of VOC and NH₃ from composting of greenwaste, foodwaste, and agricultural waste streams. Control approaches include improved emissions characterization via inventory and emission factor development, anaerobic digestion, pollution prevention technology, and restrictions for direct applications of un-composted, chipped or ground non-curbside greenwaste to public lands.

With the statewide 75 percent organic recycling goal by 2020, emissions from processing of food scraps and greenwaste is expected to grow via composting or anaerobic digestion. An emerging pollution prevention technology (*e.g.*, Regreen Technology) is in the process of becoming commercially available to process foodwaste, as well as greenwaste, into beneficial soil amendments, concurrently killing harmful pathogens and thereby minimizing VOC and ammonia generation.

Shredded non-curbside greenwaste, if un-composted, may cause air emissions or pathogen infections when used as ground cover. This control measure proposes restrictions for applying untreated greenwaste on public lands, as well as minimum compositing standards to eliminate pathogens and weed seeds prior to use. Staff previously estimated VOC emissions of 0.196 lbs/wet ton-day from curbside composting feedstock piles. Additional review may be warranted to address non-curbside waste impacts.

Potential Emission Reduction

The 2019 baseline inventory is 3.66 tpd of VOC for this source category.
The 2021 baseline inventory is 3.86 tpd of VOC for this source category.
The 2025 baseline inventory is 4.63 tpd of VOC for this source category.
The 2031 baseline inventory is 4.89 tpd of VOC for this source category.
Potential emission reduction is 1.78 tpd (based on 2031 baseline inventory).

The 2019 baseline inventory is 0.52 tpd of NH₃ for this source category.
The 2021 baseline inventory is 0.54 tpd of NH₃ for this source category.
The 2025 baseline inventory is 0.65 tpd of NH₃ for this source category.
Potential emission reduction is 0.10 tpd (based on 2031 baseline inventory).

Technological Feasibility

A sizable amount of VOC and NH₃ emissions are emitted during the first 15 days of greenwaste composting. Rule 1133.3 adopted in July 8, 2011 requires 80 percent control of VOC and NH₃ emissions for a greenwaste composting pile containing greater than 10 percent foodwaste. An emerging pollution prevention technology is also in the process of becoming commercially available. This technology is able to process these waste materials without the microbial decomposition of organic materials, concurrently killing harmful pathogens in the waste materials and thereby minimizing VOC and ammonia generation from the process. This machine is currently manufactured in Germany and expected to be manufactured in the U.S. in coming years.

Economic Feasibility

Estimated equipment costs for this emerging pollution prevention technology (e.g., Regreen Technology) is expected to range between \$300,000 and \$400,000 for a unit of half-ton per hour of feed (i.e., restaurant size). For full scale applications, a 5 tons per hour of feed unit costs up to \$3.6 million. The equipment cost is expensive for the complete 5 tons/hr system. Even a half-ton unit has relatively high cost. Cost recovery through the sale of end products and other savings was estimated by Regreen to be four years. The expensive capital cost would be a big disincentive for this machine to be widely used by entities. There may also be an indirect air quality benefit of reducing VOC and odor emissions from landfill or composting operations of foodwaste that could otherwise occur. Cost effectiveness calculation for this control measure is estimated based on the proposed best management practice (BMPs) as described in BCM-10; more details can be found in Appendix IV-A. Cost effectiveness is, on average, estimated to be \$3,400 per ton of VOC reduced and \$61,500 per ton of NH3 reduced as a co-benefit. Note that cost effectiveness figure for NH3 is high because emission reductions are low. However because the reductions are derived from the same control method targeted for VOC reductions, the concurrent co-benefit would not result in a net increase in overall cost for control.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	0.08 tpd of NH3 by 2021 1.4 tpd of VOC by 2021	Feasible	Feasible	✓
PM-annual	RACM	0.08 tpd of NH3 by 2021 1.4 tpd of VOC by 2021	Feasible	Feasible	✓
PM-annual	BACM	0.09 tpd of NH3 by 2025 1.68 tpd of VOC by 2025	Feasible	Feasible	✓
Ozone	RACM	1.78 tpd of VOC	Feasible	Feasible	✓

Potential Control Measure 18

Title

Emission Reduction of PM from Asphalt Manufacturing

Target Pollutant

PM

Synopsis

U.S. EPA compiled the Menu of Control Measures to provide information useful in the development of local emission reduction and NAAQS SIP scenarios, and to identify and evaluate potential control measures. U.S. EPA’s list of potential control measures for PM2.5 estimates a control efficiency of 99

percent in an asphalt manufacturing facility equipped with a fabric filter, or baghouse placed in parallel inside of an enclosure. U.S. EPA also estimates the cost effectiveness to be \$147–186 per ton of PM10 in 2006 dollars. Rule 1157 - PM10 Emission Reductions from Aggregate and Related Operations targets all aggregate and related operations, but does not require enclosure for all transfer points and activities. However, Rule 1155 regulates all baghouses (including those at asphalt manufacturing), except for those with a filter area less than 100 ft², and requires no visible emissions at any time except for start-up and shutdown.

Potential Emission Reduction

The 2019 baseline inventory is 0.01 tpd of PM for this source category.
 The 2021 baseline inventory is 0.01 tpd of PM for this source category.
 The 2025 baseline inventory is 0.01 tpd of PM for this source category.
 Potential emission reduction is not determined.

Technological Feasibility

Enclosures and baghouses are generally technologically feasible. The standard (0.01 gr/dscf) for baghouses in asphalt manufacturing facilities was set forth in Rule 1155 and was fully implemented in 2013.

Economic Feasibility

Asphalt manufacturing in the SCAQMD is currently regulated under Rule 1157 and Rule 1155, which require the use of bag filters. Baghouses are not considered economically feasible in the areas not covered by Rule 1157 and Rule 1155 based on the low emission inventory and the relative costs for bag replacement at \$27,000 every three to five years.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	<0.01 tpd	Feasible	Not Feasible	No
PM-annual	RACM	<0.01 tpd	Feasible	Not Feasible	No
PM-annual	BACM	<0.01 tpd	Feasible	Not Feasible	No
Ozone	RACM	Target pollutant is not a precursor for ozone formation			

Potential Control Measure 19

Title

Emission Reduction of PM from Wood Pulp and Paper

Target Pollutant

PM

Synopsis

The U.S. EPA compiled the Menu of Control Measures to provide information useful in the development of local emission reductions and NAAQS SIP scenarios, and to identify and evaluate potential control measures. U.S. EPA's list of potential control measures for PM_{2.5} estimates a control efficiency of 95 percent in wood pulp and paper facilities equipped with dry/wet electrostatic precipitators. The cost effectiveness is estimated to be \$156–313 per ton of PM₁₀ in 2006 dollars. Currently, there are five permitted paper and paperboard manufacturing facilities in SCAQMD, although all rely on recycled materials. There is no source-specific control measure targeting this source category.

Potential Emission Reduction

The 2019 baseline inventory is 2.80 tpd of PM_{2.5} for this source category.
The 2021 baseline inventory is 2.97 tpd of PM_{2.5} for this source category.
The 2025 baseline inventory is 3.16 tpd of PM_{2.5} for this source category.

Potential emission reduction is not determined. Emission reduction techniques may be considered on a site-specific basis where reductions are desirable.

Technological Feasibility

An ESP is predominantly used to control PM emissions from Kraft recovery furnaces used at paper manufacturing facilities that process virgin raw materials. SCAQMD has only recycled paper and paperboard manufacturing and not raw material paper manufacturing. For the recycled material manufacturing facilities, little or no PM is emitted from the pulp dryer, and control techniques for the paper machine vents are considered impractical because of the high moisture content, high volume of the vent exhaust gases, and the minimal pollutant concentrations.^{xvii} As such, ESP control on PM is not technically feasible for the recycled paper and paperboard manufacturing facilities located within SCAQMD.

^{xvii} A&WMA, 2000. Air Pollution Engineering Manual, Second Edition, Air & Waste Management Association, page 804.

Economic Feasibility

The control equipment for PM emissions is not expected to be cost effective for recycled paper and paperboard manufacturing because of very high air flow from the exhaust vents on the roof top of a building where paper machine is situated, and the low emission reduction potential.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	Not Determined	Not Feasible	Not Feasible	No
PM-annual	RACM	Not Determined	Not Feasible	Not Feasible	No
PM-annual	BACM	Not Determined	Not Feasible	Not Feasible	No
Ozone	RACM	Target pollutant is not a precursor for ozone formation			

Potential Control Measure 20

Title

Emission Reduction of VOC and NOx through Reformulation and Process Modification for Cutback Asphalt.

Target Pollutant

VOC and NOx

Synopsis

The U.S. EPA estimated a control efficiency of 100% based on the use of reformulated products and the modification of processes associated with cutback asphalt manufacturing to reduce fugitive VOC emissions. In addition, the proposed process would reduce natural gas use by an estimated 20 to 25 percent from reduced processing and transportation temperatures. Cost effectiveness is estimated to be \$24 per ton (in 2006 dollars) of VOC reduced. Cutback asphalt is regulated under Rule 1108 (Cutback Asphalt, Amended 2/1/85). It requires that cutback asphalt contains ≤ 0.5 percent by volume organic compounds at 260°C or lower.

Potential Emission Reduction

The 2019 baseline inventory is <0.1 tpd of VOC for this source category.
 The 2019 baseline inventory is 0.28 tpd of NOx for this source category.
 The 2021 baseline inventory is 0.29 tpd of NOx for this source category.
 The 2025 baseline inventory is 0.31 tpd of NOx for this source category.

The 2031 planning baseline inventory is 0.33 tpd of NO_x for this source category.
Potential emission reduction is 0.07 tpd of NO_x.

Technological Feasibility

Recent studies on warm-mix asphalt (WMA) have shown reductions in smoke and odors, lower emissions, improved workability, better working conditions and better performance.^{xviii} The study findings recommend that use of WMA be encouraged and that water-based WMA technologies should be closely monitored in mix-design and quality control/quality assurance testing to avoid moisture related issues. While WMA use may result in little or no reductions in VOC emissions, the reduced temperatures associated with WMA (approximately 20 percent lower than traditional hot-mix asphalt (HMA)) has been shown to result in a 20 to 25 percent reduction in energy usage.^{xix} WMA use is increasing throughout California, the U.S., and Europe. A survey by the National Asphalt Pavement Association found that nearly one third of all asphalt pavement mix production in the U.S. is WMA, an increase of 577 percent since 2009.^{xx}

Economic Feasibility

The cost of plant modifications to produce WMA range from \$30,000 to \$50,000. Additionally, the chemistry used to bind the aggregate is approximately \$3 to \$5 per ton more expensive than HMA. However, many facilities realize a cost savings from the process because of reduced fuel and labor costs. The WMA makes compaction easier and the lower temperatures result in reduced transportation costs. Additionally, facilities realize a cost savings from higher reclaimed asphalt pavement content. Overall, there is no expected cost increase.

Summary Table

	Type of Analysis	Emission Reduction	Technological Feasibility	Economic Feasibility	Feasible Measure
PM-24-hr	BACM	0.07 tpd of NO _x	Feasible	Feasible	✓
PM-annual	RACM	0.07 tpd of NO _x	Feasible	Feasible	✓
PM-annual	BACM	0.07 tpd of NO _x	Feasible	Feasible	✓
Ozone	RACM	0.07 tpd of NO _x	Feasible	Feasible	✓

^{xviii} D.Jones, F. Farshidi, J. Harvey; Warm-Mix Asphalt Study: Summary Report on Rubberized Warm-Mix Asphalt Research (Summary Report UCPRC-SR02013-03), March 2014.

^{xix} SCAQMD, Technology Assessment – Rule 1108 Cutback Asphalt, June 2008.

^{xx} National Asphalt Pavement Association, Steady Increase in Sustainability of Asphalt Pavements, http://www.asphalt pavement.org/index.php?option=com_content&view=article&id=1077:steady-increase-in-sustainability-of-asphalt-pavements&catid=24:napa-news4&Itemid=767, accessed January 19, 2016

FINAL 2016 AQMP
APPENDIX VI-A
ATTACHMENT VI-A-3

CALIFORNIA MOBILE SOURCE CONTROL PROGRAM
BEST AVAILABLE CONTROL MEASURES/REASONABLY
AVAILABLE CONTROL MEASURES ASSESSMENT

Overview

To fulfill Clean Air Act (CAA) control measure requirements for fine particulate matter (PM_{2.5}) and ozone nonattainment areas, assessment of control measures in the State Implementation Plans (SIP) must be performed. For “serious” PM_{2.5} areas, the control measures must be shown to be Best Available Control Measures (BACM), while Reasonably Available Control Measures (RACM) are required for ozone control. Since the California Air Resources Board (CARB) is responsible for measures to reduce emissions from mobile sources needed to attain the national ambient air quality standards (standards), this chapter will discuss how California’s mobile source measures meet both RACM and BACM.

Given the severity of California’s air quality challenges, CARB has implemented the most stringent mobile source emissions control program in the nation. CARB’s comprehensive strategy to reduce emissions from mobile sources includes stringent emissions standards for new vehicles, in-use programs to reduce emissions from existing vehicle and equipment fleets, cleaner fuels that minimize emissions, and incentive programs to accelerate the penetration of the cleanest vehicles beyond that achieved by regulations alone. Taken together, California’s mobile program meets both BACM for South Coast PM_{2.5} attainment and RACM in the context of ozone attainment.

RACM Requirements

Subpart 1, section 172(c)(1) of the CAA requires SIPs to provide for the implementation of RACM as expeditiously as practicable. U.S. EPA has interpreted RACM to be those emission control measures that are technologically and economically feasible and when considered in aggregate, would advance the attainment date by at least one year.

CARB developed its State SIP Strategy through a multi-step measure development process, including extensive public consultation, to develop and evaluate potential strategies for mobile source categories under CARB’s regulatory authority that could contribute to expeditious attainment of the standard. First, CARB developed a series of technology assessments for heavy-duty mobile source applications and the fuels necessary to power them^{xxi} along with ongoing review of advanced vehicle technologies for the light-duty sector in collaboration with U.S. EPA and the National Highway Traffic Safety Administration. CARB staff then used a scenario planning tool to examine the magnitude of technology penetration necessary, as well as how quickly technologies need to be introduced to meet attainment of the standard.

CARB staff released a discussion draft Mobile Source Strategy^{xxii} for public comment in October 2015. This strategy specifically outlined a coordinated suite of proposed actions to not only meet federal air quality standards, but also achieve greenhouse gas emission reduction targets, reduce petroleum consumption, and decrease health risk from transportation emissions over the next 15 years. CARB staff held a public workshop on October 16, 2015 in Sacramento, and on October 22, 2015, CARB held a public Board meeting in Diamond Bar to update the Board and solicit public comment on the Mobile Source Strategy.

Staff continued to work with stakeholders to refine the measure concepts for incorporation into related planning efforts including the 75 ppb 8-hour ozone SIPs. On May 16, 2016, CARB released an updated

^{xxi} Technology and Fuel assessments <http://www.arb.ca.gov/msprog/tech/tech.htm>

^{xxii} 2016 Mobile Source Strategy <http://www.arb.ca.gov/planning/sip/2016sip/2016mobsr.htm>

Mobile Source Strategy and on May 17, 2016, CARB released the proposed State SIP strategy for a 45-day public comment period.

The current mobile source program and proposed measures included in the State SIP Strategy provide attainment of the ozone standard as expeditiously as practicable and meet RFP requirements.

BACM Requirements

Subpart 4, section 189(b)(1)(B) requires a BACM level of control for serious PM_{2.5} nonattainment areas. U.S. EPA defines BACM as more stringent than RACM and the maximum degree of emission reductions achievable from a source or source category determined on a case-by-case basis considering energy, economic, and environmental impacts.

CARB conducted a BACM assessment for mobile source categories under CARB's regulatory authority including regulations, waivers and authorizations, and incentive programs and initiatives that go beyond regulatory requirements to further reduce emissions. A BACM assessment of these programs is described below.

Waiver Approvals

While the CAA preempts most states from adopting emission standards and other emission-related requirements for new motor vehicles and engines, it allows California to seek a waiver or authorization from the federal preemption to enact emission standards and other emission-related requirements for new motor vehicles and engines and new and in-use off-road vehicles and engines that are at least as protective as applicable federal standards, except for locomotives and engines used in farm and construction equipment which are less than 175 horsepower (hp).

Over the years, California has received waivers and authorizations for over 100 regulations. The most recent California standards and regulations that have received waivers and authorizations are Advanced Clean Cars (including ZEV and LEV III) for Light-Duty vehicles, and On-Board Diagnostics, Heavy-Duty Idling, Malfunction and Diagnostics System, In-Use Off-Road Diesel Fleets, Large Spark Ignition Fleet, Mobile Cargo Handling Equipment for Heavy-Duty engines. Other authorizations include Off-Highway Recreational Vehicles and the Portable Equipment Registration Program.

Finally, CARB obtained an authorization from U.S. EPA to enforce adopted emission standards for off-road engines used in yard trucks and two-engine sweepers. CARB adopted the off-road emission standards as part of its "Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles," (Truck and Bus Regulation). The bulk of the regulation applies to in-use heavy-duty diesel on-road motor vehicles with a gross vehicle weight rating in excess of 14,000 pounds, which are not subject to preemption under section 209(a) of the CAA and do not require a waiver under section 209(b).

Light- and Medium-Duty Vehicles

Light- and medium-duty vehicles are currently regulated under California's Advanced Clean Cars program including the Low-Emission Vehicle III (LEV III) and Zero-Emission Vehicle (ZEV) programs. Other California programs such as the 2012 Governor Brown Executive Order to put 1.5 million zero-emission vehicles on

the road by 2025, and California's Reformulated Gasoline program (CaRFG) will produce substantial and cost-effective emission reductions from gasoline-powered vehicles.

CARB is also active in implementing programs for owners of older dirtier vehicles to retire them early. The "car scrap" programs, like the Enhanced Fleet Modernization Program, and Clean Vehicle Rebate Project provide monetary incentives to replace old vehicles with zero-emission vehicles. The Air Quality Improvement Program (AQIP) is a voluntary incentive program to fund clean vehicles.

Taken together, California's comprehensive suite of emission standards, fuel specifications, and incentive programs for on-road light- and medium-duty vehicles represent not only all measures that are technologically and economically feasible within California, but also the most stringent level of control to achieve the maximum feasible emission reductions for this category.

Heavy-Duty Vehicles

California's heavy-duty vehicle emissions control program includes requirements for increasingly tighter new engine standards and address vehicle idling, certification procedures, on-board diagnostics, emissions control device verification, and in-use vehicles. This program is designed to achieve an on-road heavy-duty diesel fleet with 2010 engines emitting 98 percent less NOx and PM2.5 than trucks sold in 1986.

Most recently in the ongoing efforts to go beyond federal standards and achieve further reductions, CARB adopted the Optional Reduced Emissions Standards for Heavy-Duty Engines regulation in 2014 that establishes the new generation of optional NOx emission standards for heavy-duty engines.

The recent in-use control measures include On-Road Heavy-Duty Diesel Vehicle (In-Use) Regulation, Drayage (Port or Rail Yard) Regulation, Public Agency and Utilities Regulation, Solid Waste Collection Vehicle Regulation, Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation, ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling, Heavy-Duty Diesel Vehicle Inspection Program, Periodic Smoke Inspection Program, Fleet Rule for Transit Agencies, Lower-Emission School Bus Program, and Heavy-Duty Truck Idling Requirements. In addition, CARB's significant investment in incentive programs provides an additional mechanism to achieve maximum emission reductions from this source sector.

Taken together, California's comprehensive suite of emission standards, fuel specifications, and incentive programs for heavy-duty vehicles represent not only all measures that are technologically and economically feasible within California, but also the most stringent level of control to achieve the maximum feasible emission reductions for this category.

Off-Road Vehicles and Engines

California regulations for off-road equipment include not only increasingly stringent standards for new off-road diesel engines, but also in-use requirements and idling restrictions.

The Off-Road Regulation is an extensive program designed to accelerate the penetration of the cleanest equipment into California's fleets, and impose idling limits on off-road diesel vehicles. The program goes beyond emission standards for new engines through comprehensive in-use requirements for legacy fleets.

Engines and equipment used in agricultural processes are unique to each process and are often re-designed and tailored to their particular use. Fleet turnover to cleaner engines is the focus for these engines.

Taken together, California's comprehensive suite of emission standards, fuel specifications, and incentive programs for off-road vehicles and engines represent not only all measures that are technologically and economically feasible within California, but also the most stringent level of control to achieve the maximum feasible emission reductions for this category.

Other Sources and Fuels

The emission limits established for other mobile source categories, coupled with U.S. EPA waivers and authorization of exemption from preemption establish that California's programs for motorcycles, recreational boats, off-road recreational vehicles, cargo handling equipment, and commercial harbor craft sources meet the requirements for RACM and BACM.

Cleaner burning fuels also play an important role in reducing emissions from motor vehicles and engines as CARB has adopted a number of more stringent standards for fuels sold in California, including the Reformulated Gasoline program, low sulfur diesel requirements, and the Low Carbon Fuel Standard. These fuel standards, in combination with engine technology requirements, ensure that California's transportation system achieves the most effective emission reductions possible.

Taken together, California's comprehensive suite of emission standards, fuel specifications, and incentive programs for other mobile sources and fuels represent not only all measures that are technologically and economically feasible within California, but also the most stringent level of control to achieve the maximum feasible emission reductions for this category.

Summary

California's long history of comprehensive and innovative emissions control has resulted in the most stringent mobile source control program in the nation. U.S. EPA has previously acknowledged the strength of the program in their approval of CARB's regulations and through the waiver process. In its 2011 approval of the South Coast's 8-hour ozone plan which included the State's current program and new measure commitments, U.S. EPA found that there were no further reasonably available control measures that would advance attainment of the standard in the South Coast.

In addition, U.S. EPA has provided past determinations that CARB's mobile source control programs meet RACM and BACM requirements as part of their 2004 approval of the San Joaquin Valley's 2003 PM10 Plan:

"We believe that the State's control programs constitute BACM at this time for the mobile source and fuels categories, since the State's measures reflect the most stringent emission control programs currently available, taking into account economic and technological feasibility."

Since then, CARB has continued to substantially enhance and accelerate reductions from the mobile source control programs through the implementation of more stringent engine emissions standards, in-use requirements, incentive funding, and other policies and initiatives as described in the preceding sections.

The CARB process for developing the proposed State measures included an extensive public process and is consistent with U.S. EPA RACM guidance. Through this process, CARB found that with the current mobile source control program and proposed measures, there are no additional reasonable available control measures that would advance attainment of the 75 ppb 8-hour ozone standard in the South Coast. There are no reasonable regulatory control measures excluded from use in this plan; therefore, there are no emissions reductions associated with unused regulatory control measures. As a result, California's mobile source control programs fully meet the requirements for BACM and RACM.

**FINAL 2016 AQMP
APPENDIX VI-B**

**IMPRACTICABILITY DEMONSTRATION
FOR REQUEST FOR “SERIOUS” CLASSIFICATION FOR 2012
ANNUAL PM2.5 STANDARD**

MARCH 2017

Introduction

The South Coast Air Basin was designated a “moderate” nonattainment area for the 2012 annual PM_{2.5} standard of 12 µg/m³ on April 15, 2015. This designation sets an attainment deadline of December 31, 2021. The Basin maximum 2012–2014 annual average design value was 14.6 µg/m³, which is above the annual PM standard of 12 µg/m³, but below 15 µg/m³, the previous 1997 annual PM_{2.5} standard. Air quality modeling is used to estimate air quality benefits resulting from the SCAQMD ozone and PM control strategies outlined in Chapter 4. The future PM_{2.5} level is analyzed for the year 2021, the annual PM_{2.5} attainment date for the “moderate” nonattainment status. The modeling analysis demonstrates that the District cannot practically attain the 2012 annual PM_{2.5} standard by December 31, 2021. Acknowledging the challenges in meeting the stringent health-based standard, including the feasibility of proposed measures, uncertainties in drought conditions, and the potential inability to claim all ozone strategy reductions toward PM_{2.5} attainment, if approved under CAA Section 182 (e)(5), SCAQMD is requesting a voluntary bump up to the “serious” category. Modeling analysis supporting the request for the reclassification is summarized below. Detailed information on the modeling approach, data retrieval, model development and enhancement, model application, emissions inventory development, and interpretation of results can be found in Chapter 5 and Appendix V.

Ambient PM_{2.5} Level

The District began regular monitoring of PM_{2.5} in 1999 following the U.S. EPA's adoption of the national PM_{2.5} standards in 1997. In 2014, ambient PM_{2.5} concentrations were monitored at 27 locations throughout the Basin, although two of these stations (Burbank and Ontario Fire Station) were closed during 2014. Filter-based Federal Reference Method (FRM) PM_{2.5} sampling was employed at 20 of these stations and eight of those stations are also equipped with collocated continuous monitors (Federal Equivalent Method (FEM)). The FRM measurements are taken either at a daily, every third day, or every sixth day frequency depending on the level of PM_{2.5} at a monitoring station. Anaheim, central Los Angeles, Long Beach, Mira Loma, and Rubidoux have a daily sampling schedule due to the high PM levels observed in those areas. The rest of the stations take FRM based PM_{2.5} measurements in the 1-in-3 day or 1-in-6 day frequency.

The 2014 annual average PM_{2.5} concentrations from the FRM measurements are summarized in Table VI-B-1. The maximum annual average of 14.5 µg/m³ was measured in the Metropolitan Riverside County area at the Mira Loma station. The Basin maximum 2012–2014 annual average design value was 14.6 µg/m³. This indicates that the Basin is in violation of the 2012 annual PM_{2.5} standard (122 percent of the standard), even though it is in attainment of the previous 1997 annual PM_{2.5} standard.

TABLE VI-B-1
2014 Maximum Annual Average PM_{2.5} Concentrations and
2012–2014 Design Values by Basin and County

Basin/County	2014 Max. Annual Average ($\mu\text{g}/\text{m}^3$)*	2012–2014 PM _{2.5} Annual Design Value ($\mu\text{g}/\text{m}^3$)*#
South Coast Air Basin		
Los Angeles	12.6	12.3
Orange	10.5	10.5
Riverside	14.5	14.6
San Bernardino	13.2	12.8
Salton Sea Air Basin		
Riverside	8.3	8.1

* Based on FRM filter data (federal FEM waiver applied)

The federal design value is the average of annual PM_{2.5} averages over a three-year period

PM_{2.5} Modeling

The 2016 AQMP annual PM_{2.5} modeling employs the site- and species-specific quarterly-averaged relative response factor (RRF) approach per U.S. EPA guidance (U.S. EPA, 2014). This is similar to the methodology employed in the 2012 AQMP except for updates in the modeling platform, input databases and emissions inventory.

The annual PM_{2.5} design value is based on the four quarterly average PM_{2.5} concentrations, averaged by year over a three-year period. U.S. EPA guidance recommends the use of multiple year averages of design values, where appropriate, to dampen the effects of single year anomalies in the air quality trend due to factors such as adverse or favorable meteorology or radical changes in the local emissions profile. Consistent with U.S. EPA guidance, the 2016 AQMP relies on a five-year weighted annual average centered on 2012, the base year selected for the emissions inventory development, model simulations and the anchor year for the future year projections.

PM_{2.5} speciation data measured at four sites (Central Los Angeles, Anaheim, Rubidoux and Fontana) during 2012 provided the chemical characterization for evaluation and validation of the CMAQ model predictions. With one site in each county, the four sites are strategically located to represent aerosol characteristics in the four counties of the Basin. Riverside-Rubidoux was traditionally the Basin maximum location. Fontana and Anaheim experience high concentrations within their respective counties, and the Central Los Angeles site was intended to capture the emission characteristics of metropolitan LA downtown source area. The close proximity of Mira Loma to Rubidoux and the general in-Basin air flow and transport patterns enable the use of the Rubidoux speciated data as representative of the particulate speciation at Mira Loma. Both sites are directly downwind of the dairy production areas in Chino and the warehouse distribution centers located in the northwestern corner of Riverside

County. Model species predictions were compared to ammonium, nitrates, sulfates, secondary organic matter, elemental carbon, primary and total mass of PM_{2.5} measured at the four monitoring sites (Rubidoux, Central Los Angeles, Anaheim, and Fontana).

CMAQ simulations were conducted for 366 days from January 1st to December 31st of 2012. The simulations included 8,784 consecutive hours from which daily 24-hour average PM_{2.5} concentrations were calculated. A set of RRFs were generated for each future year simulation. RRFs were generated for the ammonium (NH₄), nitrate (NO₃), sulfate (SO₄), organic carbon (OC), elemental carbon (EC), sea salts (Salt) and a combined grouping of crustal and metals (Others). A total of 16 relative response factors (RRFs) were generated for each future year simulation (4 seasons and 4 monitoring sites). Future year design values were calculated by multiplying the species- and site-specific RRFs by the corresponding quarterly mean component concentration. The quarterly mean components were summed to get quarterly mean PM_{2.5} levels, which were then averaged to determine the annual design values.

Future PM_{2.5} Air Quality

Annual PM_{2.5} concentrations were simulated for the base year of 2012 and the attainment deadline of 2021. For 2021, both baseline and control scenarios were included in the analysis. Mira Loma, the design site for the base year, is projected to remain as the highest PM_{2.5} site in 2021. The baseline case, which does not include additional controls beyond already adopted measures, projects a future design value of 12.6 µg/m³, which is not low enough to meet the standard. The control scenario incorporating SCAQMD stationary source PM_{2.5} measures was simulated for 2021 as well. The Basin maximum PM_{2.5} concentration is projected to be 12.3 µg/m³ at Mira Loma, thus indicates that controls for the PM_{2.5} emission are not sufficient to attain the standard in 2021 (Table VI-B-2). The control measures included in the future scenario are BCM-01 (Further Emission Reductions from Commercial Cooking) of 1.7 tpd of directly emitted PM and BCM-10 (Emission Reductions from Greenwaste Composting) of NH₃ emissions which are a precursor to PM. The rest of the PM_{2.5} measures do not have significant quantified emission reductions prior to 2021. It should be noted that BCM-01 is being considered for contingency due to the technological and economic challenges in implementing in the near future, in which case the 2021 controlled presented below would result in higher concentrations than listed in Table VI-B-2. Thus, the scenario below is a “best case” scenario proving a 2021 attainment demonstration is impracticable.

TABLE VI-B-2
Annual Average PM_{2.5} Design Concentrations (µg/m³)

Station	2012	2021 Baseline	2021 Controlled
Los Angeles	12.4	10.9	10.6
Anaheim	10.6	9.4	9.1
Rubidoux	13.2	11.2	10.9
Mira Loma	14.9	12.6	12.3
Fontana	12.6	10.6	10.4

Figures VI-B-1 and VI-B-2 provide the Basin-wide spatial extent of annual PM_{2.5} projected for 2021 baseline and controlled scenarios. With and without additional controls in 2021, the number of grid cells with concentrations exceeding the federal standard is restricted to a small region around the Mira Loma monitoring station in northwestern Riverside County.

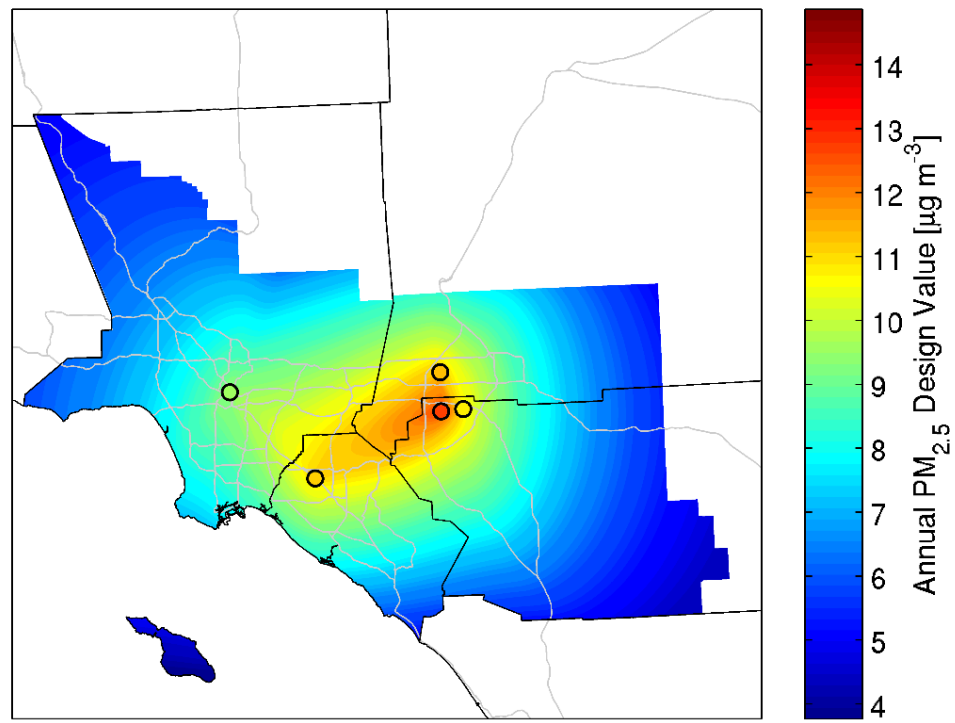


FIGURE VI-B-1
2021 Uncontrolled Annual PM_{2.5} Design Concentrations (µg/m³)

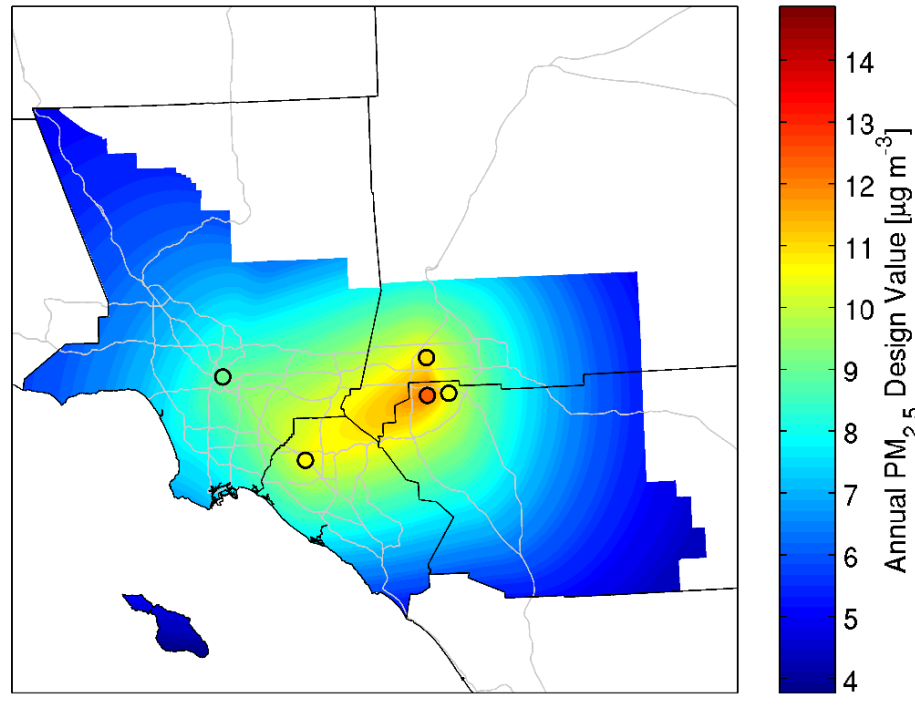


FIGURE VI-B-2

2021 Controlled Annual PM_{2.5} Design Concentrations ($\mu\text{g}/\text{m}^3$)

To assess co-benefits of the ozone strategy on PM attainment and the practicability of an earlier PM_{2.5} attainment date, a series of control scenarios were developed using the SCAQMD VOC and NO_x control measures proposed in Chapter 4 and Appendix IV.

First, a scenario with a full ozone attainment strategy for 2023 to attain the 1997 8-hour ozone standard (80 ppb) was evaluated. The 2023 ozone attainment scenario includes 45 percent of additional NO_x reduction from the baseline. This scenario yields a PM_{2.5} annual design value of 11.1 $\mu\text{g}/\text{m}^3$ in 2023, indicating attainment of the standard. However, the ozone strategy may include 182(e)(5) measures that are allowed in the SIP for ozone “extreme” nonattainment area, but are counted towards PM_{2.5} attainment. Thus, only a portion of emission reductions, identified as non-182(e)(5) measure reductions, were incorporated in the PM_{2.5} simulation for 2023 (23 TPD of NO_x reductions and accompanying VOC reductions). See Chapter 4 and Appendix IV for detailed control measure categories eligible for 182(e)(5) and Chapter 5 and Appendix V for the detailed emission control scenario and its incorporation in the CMAQ modeling. The resulting PM_{2.5} level is 12.2 $\mu\text{g}/\text{m}^3$ at Mira Loma, which is still above the standard. Lastly, PM_{2.5} concentrations were evaluated for 2025, the final attainment year for “serious” nonattainment status. Similar to the 2023 simulation, emission reductions associated with only non-182(e)(5) measures (37 TPD of NO_x reduction) were included. With this, the annual PM_{2.5} concentration was projected to be 11.8 $\mu\text{g}/\text{m}^3$, ensuring the attainment of the annual PM_{2.5} standard in 2025.

This concludes the impracticability to demonstrate attainment in 2021, even though annual PM_{2.5} attainment will occur with the full implementation of the ozone strategy in 2023. The Annual PM_{2.5}

standard is expected to be attained in 2025 with non-182(e)(5) measures only, as discussed in a greater detail in Appendix V. Implementation of the full ozone attainment strategy should result in attainment of the annual PM_{2.5} standard by 2023 or earlier.

Effects of Extreme Weather Conditions

Southern California has experienced a severe drought for the past several years with 2013 annual rainfall total measured at Downtown Los Angeles of 3.6 inches, far below the 14.9 inch long-term average. Rainfall events of 0.01 inches of rain or more were 25 percent lower than the average of 28 days typically occurring during the 1st and 4th quarters of the year. Limited rain means there is less crusting and wetting of soil and road surfaces. Thus, more road dust and fugitive dust emissions are generated. A reduced frequency of storms translates to fewer days of enhanced pollution dispersion. Without such dispersion, there is no deep mixing of the atmosphere, rainfall induced deposition of particulate matter or wind to transport the pollution away from the region.

The three-year weighted design value was intended to reduce the impact of meteorological anomalies prone to a single year, but meteorological variables used in the attainment demonstration are single year data. The Weather Research and Forecasting (WRF) model provided meteorological data that facilitated chemical reactions, dispersion and transport of air pollutant for both 2012 base year and future years. In other words, the 2021 projected PM_{2.5} design value for Mira Loma assumed the same frequency of precipitation events and rainfall totals as in 2012. Since 2012 is not as severely impacted by the drought conditions as 2013 or 2014, the future year design values calculated in the above demonstration do not fully capture the impact of the severe drought observed in the 2013–2014 period. It is estimated that drought conditions could elevate annual PM levels by approximately 0.5 µg/m³ (more details in Appendix V). As such, the projected PM design levels could be underestimated in the case of an extended period of dry weather, leading to a higher PM_{2.5} annual average in 2021 than the current projection of 12.3 µg/m³. This supports the need for a bump up to “serious” nonattainment and the later attainment date.

Conclusions

In summary, the proposed SCAQMD control measures will not lead to attainment of the 2012 Annual PM standard by the “moderate” attainment date of December 31, 2021. Staff proposes to request that U.S. EPA reclassify the Basin as a “serious” PM_{2.5} nonattainment area based on the impracticability of attaining the 2012 Annual PM_{2.5} standard by the “moderate” attainment deadline. This action necessitates the development of a “serious” area SIP for the annual PM_{2.5} NAAQS, which is included in the 2016 AQMP. An attainment demonstration presenting how the region will achieve the 2012 annual PM_{2.5} NAAQS as early as practicable but no later than December 31, 2025 can be found in Chapter 5 and Appendix V. A BACM/BACT demonstration, a CAA requirement for a “serious” nonattainment SIP, is included in Appendix VI-A, and the RFP is presented in Appendix VI-C. The PM precursor analysis can be found in Appendix VI-F. Furthermore, the “serious” classification will require SCAQMD rule amendments to lower the New Source Review (NSR) threshold for PM_{2.5} and precursor emissions from 100 tons per year (TPY) to 70 TPY within 12 months after reclassification is finalized. This requirement is addressed in Appendix VI-G.

**FINAL 2016 AQMP
APPENDIX VI-C**

REASONABLE FURTHER PROGRESS (RFP) AND MILESTONE YEARS

MARCH 2017

Reasonable Further Progress (RFP) and Milestone Years

The CAA requires that SIPs for most nonattainment areas demonstrate reasonable further progress (RFP) towards attainment through emission reductions phased in from the time of the SIP submission until the attainment date. The RFP requirements in the CAA are intended to ensure that there are sufficient PM_{2.5}/ozone and precursor emission reductions in each nonattainment area to attain the NAAQS by the applicable attainment date.

Per CAA Section 171(1), RFP is defined as “such annual incremental reductions in emissions of the relevant air pollutant as are required by this part or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date.” As stated in subsequent federal regulation, the goal of the RFP requirements is for areas to achieve generally linear progress toward attainment. To determine RFP for the attainment date, EPA guidance states that the plan should rely only on emission reductions achieved from sources within the nonattainment area.

Section 172(c)(2) of the CAA requires that nonattainment area plans show ongoing annual incremental emissions reductions toward attainment, which is commonly expressed in terms of benchmark emissions levels or air quality targets to be achieved by certain interim milestone years. The U.S. EPA recommends that the RFP inventories include direct PM_{2.5}, and also PM precursors (such as SO_x, NO_x, and VOCs) that have been determined to be significant.

Ozone

Subpart 2 sections 182 (b)(1) and 182(c)(2)(B) contain specific emission reduction targets to ensure that each ozone nonattainment area provides for sufficient precursor emission reductions to attain the ozone national ambient air quality standard. Section 182(b)(1)(A) requires that each “moderate” or above area provide for VOC reductions of at least 15 percent from baseline emissions within six years after November 15, 1990. The U.S. EPA final rule of *Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements* (80 FR 12263) states that if an area has already met the 15 percent requirement for VOC under either the 1-hour ozone NAAQS or the 1997 ozone NAAQS, such requirement under 182(b)(1) would not have to be fulfilled again. Instead, such areas would need to meet the CAA requirements under Section 182(c)(2)(B), which requires that “serious” and above areas provide VOC and/or NO_x reductions (CAA, Section 182(c)(2)(C)) of 18 percent over the first 6 years after the baseline year for the 2008 ozone NAAQS, and an additional 3 percent per year averaged over each consecutive 3-year period until the attainment date. Tables VI-C-1A and VI-C-1B summarize the RFP calculations. Figure 6-1A depicts the target level and projected baseline VOC emissions for the RFP demonstration. For each of the milestone years, the District is able to show that the required progress is met on the basis of reductions from the existing regulatory program using a combination of VOC and NO_x reductions. No reductions from the proposed control measures in the Plan are needed for RFP purposes. Up until the year 2018, projected VOC baseline emissions are sufficient to meet the CAA

requirements. For the milestone years 2021, 2024, 2027, 2030 and 2031, the baseline VOC emission levels are below the target levels. Beginning in 2021, projected NOx baseline emission reductions are needed to show compliance with the targeted VOC thresholds. For the attainment years 2022 (1979 1-hour NAAQS; 0.12 ppm) and 2023 (1997 8-hour NAAQS; 0.08 ppm), compliance is shown using projected NOx baseline emission reductions. The CAA, Section 182(c)(2)(C) provides for NOx reductions to substitute for RFP reductions not achieved by VOC emissions. The following demonstration will take advantage of that allowance and show compliance with RFP requirements as well as contingency requirements.

TABLE VI-C-1A
Summary of Reasonable Further Progress Calculations - VOCs

ROW	CALCULATION STEP ^a	2012 ^b	2018	2021	2022 ^c	2023 ^c	2024 ^d	2027 ^e	2030 ^e	2031 ^c
1	Baseline VOC Emissions (tpd)	499.6	405.2	386.2	382.7	378.7	375.5	368.6	364.4	361.5
2	Required Percent Change Since Previous Milestone Year (%)	--	18	9	3	3	3	9	9	3
3	Target VOC Level (tpd)	--	409.7	372.8	361.6	350.8	340.3	309.6	281.8	273.3
4	Cumulative Milestone Year Shortfall (tpd)	--	-4.5	13.4	21.0	27.9	35.3	58.9	82.6	88.2
5	Cumulative Shortfall in VOC (%)	--	-0.90	2.7	4.2	5.6	7.1	11.8	16.5	17.7
6	Incremental Milestone Year Shortfall (%)	--	0	2.7	1.5	1.4	1.5	4.7	4.7	1.1

^a Units are in tons per day (summer planning) unless otherwise noted

^b Base Year (2012)

^c Attainment Year

^d Emissions derived from linear interpolation between the modeled emissions of 2023 and 2025

^e Emissions derived from linear interpolation between the modeled emissions of 2026 and 2031

ROW 1: Projected baseline emissions shown in Appendix III taking into account existing rules and projected growth

ROW 2: Required 18% reduction 6 years after Base Year; future milestone years are every 3 years until attainment year; and required reductions are 3% per year for each milestone year (e.g., for every 3 years, required 9% reduction)

ROW 3: $[(1 - \text{Row 2}/100) \times \text{Row 1 or Row 3}] - \text{Base Year Row 1}$ for first milestone year, and previous milestone year's target level (Row 3) for remaining milestone years

ROW 4: $[(\text{Row 1}) - (\text{Row 3})]$ or $(\text{Baseline} - \text{Target})$ - negative number meets target level and positive number is shortfall of target level

ROW 5: $[(\text{Row 4}) / (\text{Base Year Row 1}) \times 100]$

ROW 6: Negative (Row 5) is zero shortfall; positive number is a shortfall. Incremental milestone year shortfall is determined by subtracting the previous year's shortfall from the cumulative (e.g., for 2023, cumulative 5.6 - previous shortfall 4.2 = 1.4)

FIGURE VI-C1A
Reasonable Further Progress - VOC

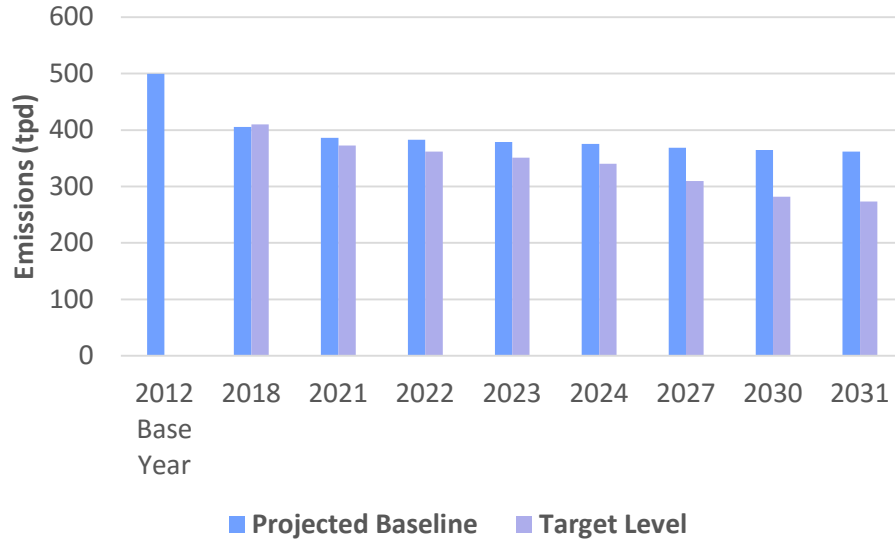


TABLE VI-C-1B
Summary of Reasonable Further Progress Calculations - NOx

ROW	CALCULATION STEP ^a	2012 ^b	2018	2021	2022 ^c	2023 ^c	2024 ^d	2027 ^e	2030 ^e	2031 ^c
1	Baseline NOx Emissions (tpd)	522.4	366.2	305.2	286.8	254.6	247.2	228.5	217.3	213.7
2	Reductions in NOx Emissions since Base Year (tpd)	--	156.2	217.2	235.6	267.8	275.2	293.9	305.1	308.7
3	Percent Reductions in NOx Emissions since Base Year (%)	--	29.9	41.6	45.1	51.3	52.7	56.3	58.4	59.1
4	Contingency plus previous NOx substitution (%)	--	3	3	5.7	7.2	8.6	10.1	14.8	19.5
5	Percent Available for NOx Substitution (%)	--	26.9	38.6	39.4	44.1	44.1	46.2	43.6	39.5
6	Incremental Milestone Year VOC Shortfall (%)	--	0	2.7	1.5	1.4	1.5	4.7	4.7	1.1
7	Percent Surplus Reduction (%)	--	26.9	35.9	37.9	42.7	42.6	41.5	38.9	38.4
8	RFP Compliance	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	Contingency Compliance	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

^a Units are in tons per day (summer) unless otherwise noted

^b Base Year (2012)

^c Attainment Year

^d Emissions derived from linear interpolation between the modeled emissions of 2023 and 2025

^e Emissions derived from linear interpolation between the modeled emissions of 2026 and 2031

ROW 1: Projected baseline emissions shown in Appendix III taking into account existing rules and projected growth

ROW 2: Reductions achieved in Baseline: [(Row 1 Base Year) – (Row 1 – milestone year)] – e.g., for 2018: 528.8 – 376.5 = 152.3

ROW 3: % Reductions achieved since Base Year: [(Row 2) / (Row 1- Base Year)] x 100 – e.g., for 2018: (152.3/528.8) x 100 = 28.8

ROW 4: Reserves 3% (1 year worth of CAA RFP reductions) for contingency measure implementation plus the previous year(s)'s incremental milestone year VOC shortfall from Table VI-C-1A

ROW 5: [(Row 3) - (Row 4)]

ROW 6: Incremental milestone year VOC shortfall from Table VI-C-1A

ROW 7: Surplus reductions achieved [(Row 5) - (Row 6)]

ROW 8: Positive number in Row 7 is percent surplus for each milestone year, thus meeting RFP target levels

ROW 9: Surplus includes 3% contingency carryover and VOC shortfall, and still meets RFP target levels

Baseline emissions, as shown in Tables VI-C-1A and VI-C-1B, incorporate emission reductions generated from control measures that are already adopted. For example, baseline emissions in 2018 is derived from the projected emissions from 2012 which includes all adopted control measures that will be implemented (partially or fully) by December 31, 2018. Therefore, the difference between baseline emissions of 2012 and 2018 is driven by control measures that are either partially implemented in 2012 or control measures with implementation date after 2012. Table VI-C-2 provides a list of the SCAQMD adopted rules and regulations for stationary sources that is scheduled to be implemented from 2012, accounting for the emission reductions in the baseline emissions of the future milestone/attainment years. The corresponding information for CARB's mobile source control measures can be found in the Attachment of this Appendix (Attachment VI-C-1).

TABLE VI-C-2

Implementation Schedule of SCAQMD Adopted Rules and Regulations for Reasonable Further Progress Per Milestone/Attainment Year

	2018	2021	2022	2023	2024	2027	2030	2031
NOx	R1110.2*							
	R1110	R1110	R1110	R1110	R1110	R1110	R1110	R1110 [#]
	R1121*							
	R1146*							
	R1146.1*							
	R1146.2*	R1146.2 [^]						
	R1147	R1147	R1147	R1147				
VOC	R1113*							
	R1114							
	R1177*							

* Partial implementation from 2006-2016 with full implementation achieved in 2014, 2015 or 2016

[^] Partial implementation from 2018 with full implementation achieved in 2020

[#] Reductions achieved annually with full implementation in 2035

PM2.5

For PM2.5 nonattainment areas, in addition to the CAA Title I, Part D, Subpart 1 (*General Requirements*) RFP requirements, Subpart 4 (*Provisions for PM*) §189(c)(1) introduces the requirement for states to submit quantitative milestones for both “moderate” and “serious” areas. Milestones are to be achieved every three years until the area is re-designated attainment and demonstrate reasonable further progress. As stated in the U.S. EPA’s final rule for “*Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements*” (81 FR 58010), the statutory “serious” area attainment plan would have to contain quantitative milestones to be achieved by 7.5 years from the area’s date of designation of nonattainment. This date would be three years after the first quantitative milestones for the area to be met 4.5 years from the designation date. In the case of the 2006 24-hour PM2.5, the milestone year is 2017. For the 2012 annual PM2.5 NAAQS, the first quantitative milestones is 4.5 years after the designation date of April 2015, or the year 2019. The next quantitative milestone is 7.5 years after the designation date or three years after the first quantitative milestone, or the year 2022. The next quantitative milestone is three years later or year 2025, which is also the same year as attainment for a “serious” nonattainment area for the annual PM2.5.

The final rule (81 FR 58010) also requires that all “serious” area attainment plans to contain one additional quantitative milestone to be met in the 3-year period beyond the attainment date. As a result, the year 2022 is added as a milestone year for the 24-hour PM2.5 standard and the year 2028 is added as a milestone year for the annual PM2.5 standard.

Emission reductions required under an RFP plan for PM2.5 may be either directly emitted PM2.5 or an applicable precursor air pollutant such as NOx or SOx. The base year for purposes of tracking RFP is 2012,

which is the same base year as the 2016 AQMP emission inventory. The 2006 24-hour PM2.5 NAAQS baseline emissions for milestones years are shown in Table VI-C-3. Table VI-C-3A summarizes the RFP calculations.

Table VI-C-3
 24-hr PM2.5 Baseline Emissions for Base Year and Milestone Years
 (Annual Average - Tons per Day)

Pollutant	2012	2017 (Quantitative Milestone)	2019 (Attainment Deadline)	2020 (Quantitative Milestone)
PM2.5	66.4	63.8	63.9	63.9
NOx	540	398	353	330
SOx	18.4	17.1	16.6	16.7
VOC	470	392	376	370
NH3	81.1	75.5	74.0	73.3

TABLE VI-C-3A
Summary of 24-hour PM_{2.5} Reasonable Further Progress Calculations

ROW	CALCULATION STEP	PM _{2.5}	NO _x	SO _x	VOC	NH ₃
1	2012 Base Year Emissions (tpd)	66.4	540	18.4	470	81.1
2	Annual Percent Change Needed to Show Linear Progress (%)	0.55	4.9	1.4	2.9	1.2
3	2017 Target Needed to Show Linear Progress (tpd)	64.6	406	17.1	403	76.0
4	2017 Baseline Emissions* (tpd)	63.8	398	17.1	392	75.5
5	Projected Shortfall (tpd)	0	0	0	0	0
6	Surplus in 2017 (tpd)	0.85	8.6	0.05	10.4	0.48
7	Emissions Equivalent to 1 Year Worth of RFP (tpd)	0.36	26.7	0.25	13.5	1.0
8	2019 Baseline Emissions (tpd)	63.9	353	16.6	376	74.0

ROW 1: The 2012 Base Year emissions can be found in Appendix III taking into account existing rules and projected growth

ROW 2: $[(\text{Row 1}) - (\text{Row 9})] / (\text{Row 1}) / 7$

ROW 3: $(\text{Row 1}) - ((\text{Row 1}) \times (\text{Row 2}) \times 5)$

ROW 4: The projected 2017 quantitative milestone baseline emissions can be found in Appendix III taking into account existing rules and projected growth

ROW 5: $(\text{Row 4}) - (\text{Row 3})$; Negative numbers are denoted as zeros, representing no shortfall

ROW 6: $(\text{Row 3}) - (\text{Row 4})$

ROW 7: $(\text{Row 1}) \times (\text{Row 2})$

ROW 8: The projected 2019 attainment deadline baseline emissions can be found in Appendix III taking into account existing rules and projected growth

Table VI-C-4 provides a list of the SCAQMD adopted rules and regulations for stationary sources that is scheduled to be implemented from 2012, accounting for the emission reductions in the baseline emissions of the future milestone/attainment years of the 24-hour PM_{2.5} standard. The corresponding information for CARB's mobile source control measures can be found in Attachment VI-C-1.

TABLE VI-C-4
Implementation Schedule of SCAQMD Adopted Rules and Regulations for Reasonable Further Progress Per Milestone/Attainment Year

	2017	2019	2020
NOx	R1110.2 ^a		
	R1110	R1110	R1110 ^c
	R1121 ^a		
	R1146 ^a		
	R1146.1 ^a		
	R1146.2 ^a	R1146.2	R1146.2
	R1147	R1147	R1147 ^d
VOC	R1113a		
	R1114	R1114 ^b	
	R1177		
PM	R444 ^a		

^a Partial implementation from 2006-2016 with full implementation achieved in 2014, 2015 or 2016

^b Partial implementation from 2013 with full implementation achieved in 2018

^c Reductions achieved annually from 2013 with full implementation in 2035

^d Partial implementation from 2010 with full implementation in 2023

Table VI-C-5 provides the emissions for milestones years for the 2012 annual PM2.5 and corresponding RFP calculations are summarized in Table VI-C-5A. The tables demonstrate RFP compliance for both PM2.5 standards based on projected emission inventory incorporating emission reductions from the non 182(e)(5) control measures committed in the 2016 AQMP.

TABLE VI-C-5
Annual PM2.5 Emissions for Base Year and Milestone Years
(Annual Average - Tons per Day)

Pollutant	2012 Baseline	2019 Baseline (Quantitative Milestone)	2022* (Quantitative Milestone)	2025* (Attainment Deadline)	2028** (Quantitative Milestone)
PM2.5	66.4	63.9	64.1	64.1	64.7
NOx	540	353	275	206	180
SOx	18.4	16.6	17.0	17.4	17.8
VOC	470	376	348	336	325
NH3	81.1	74.0	72.6	72.3	72.7

*Based on controlled emissions with emission reductions from non 182(e)(5) control measures committed in the 2016 AQMP

Emissions derived from linear interpolation between the modeled emissions of 2025 and 2031

TABLE VI-C-5A
Summary of Annual PM2.5 Reasonable Further Progress Calculations

ROW	CALCULATION STEP	PM2.5	NOx	SOx	VOC	NH3
1	2012 Base Year Emissions (tpd)	66.4	540	18.4	470	81.1
2	Annual Percent Change Needed to Show Linear Progress (%)	0.27	4.8	0.43	2.2	0.83
3	2019 Target Needed to Show Linear Progress (tpd)	65.2	360	17.8	398	76.4
4	2019 Baseline Emissions (tpd)	63.9	353	16.6	376	74.0
5	Projected Shortfall (tpd)	0	0	0	0	0
6	Surplus in 2019 (tpd)	1.3	6.8	1.2	22.2	2.4
7	2022 Target Needed to Show Linear Progress (%)	64.6	283	17.6	367	74.4
8	2022 Emissions (tpd) *	64.1	275	17.0	348	72.6
9	Projected Shortfall (tpd)	0	0	0	0	0
10	Surplus in 2022 (tpd)	0.56	8.0	0.59	18.5	1.7
11	2025 Emissions (tpd) *	64.1	206	17.4	336	72.3

* Based on controlled emissions with emission reductions from non 182(e)(5) control measures committed in the 2016 AQMP

ROW 1: The 2012 Base Year emissions can be found in Appendix III taking into account existing rules and projected growth

ROW 2: $(((\text{Row 1}) - (\text{Row 11})) / (\text{Row 1})) / 1316$

ROW 3: $(\text{Row 1}) - [(\text{Row 1}) \times (\text{Row 2}) \times 7]$

ROW 4: The projected 2019 quantitative milestone baseline emissions can be found in Appendix III taking into account existing rules and projected growth

ROW 5: $(\text{Row 4}) - (\text{Row 3})$; Negative numbers are denoted as zeros, representing no shortfall

ROW 6: $(\text{Row 3}) - (\text{Row 4})$

ROW 7: $(\text{Row 1}) - [(\text{Row 1}) \times (\text{Row 2}) \times 10]$

ROW 8: The projected 2022 quantitative milestone emissions can be found in Table VI-C-8

ROW 9: $(\text{Row 8}) - (\text{Row 7})$; Negative numbers are denoted as zeros, representing no shortfall

ROW 10: $(\text{Row 7}) - (\text{Row 8})$

ROW 11: The projected 2025 attainment deadline emissions can be found in Table VI-C-9

More details about the adoption and implementation of the 2016 AQMP control measures can be found in Chapter 4 – Control Strategy and Implementation. The SCAQMD proposed contingency measures for the PM_{2.5} NAAQS are also presented in Chapter 4. Table 4-8 in Chapter 4 provides a list of the emission reduction commitment to be achieved by 2025 for the annual PM_{2.5} standard. Table 4-11 in Chapter 4 provides the corresponding information for the 2008 8-hour Ozone standard, presenting the emission reduction commitment of SCAQMD regulatory programs to be achieved by 2031. These reductions account for the reductions of the future milestone/attainment years through SCAQMD regulatory programs. Tables 4-8 and 4-11 are reproduced below as Table VI-C-6 and Table VI-C-7, respectively. The implementation schedule for CARB’s proposed mobile source control measures can be found in Table 4-5 and 4-12 from Chapter 4 and Appendix IV-B.

TABLE VI-C-6#
 Annual PM2.5 (12 µg/m³) SIP Basin-wide Emission Reduction Commitment
 to be Achieved by 2025 through SCAQMD Regulatory Programs
 (Annual Average Inventory, tons per day)

YEAR	PM2.5		NOx**	
	Based on Adoption Date	Based on Implementation Date ^a	Based on Adoption Date	Based on Implementation Date ^a
2016				
2017			MOB-10 (1.9) MOB-11 (2.9) MOB-14 (11) 15.8	
2018	BCM-01 (3.3)		CMB-01 (2.5) CMB-02 (1.1) CMB-03 (1.4) CMB-04 (0.8) ECC-02 (0.3) ECC-03 (1.2) 7.3	
2019	BCM-04 (0.2) ^Δ BCM-10 (0.1) ^Δ			
2020		BCM-04 (0.2) ^Δ BCM-10 (0.1) ^Δ		CMB-03 (1.4) CMB-02 (1.1) 2.5
2021				
2022			CMB-05 (5)	CMB-04 (0.8)
2023				ECC-02 (0.3) ECC-03 (1.2) CMB-01 (2.5) MOB-10 (1.9) MOB-11 (2.9) MOB-14 (11) 19.8
2024				
2025		BCM-01 (3.3)		CMB-05 (5)
TOTAL	3.3*	3.3*	28	28

Table is from Table 4-8 in the 2016 AQMP

^a Represents the final, full implementation date; typically a rule contains multiple implementation dates

^Δ NH3 measure as PM2.5 precursor

* For contingency measure purposes only

** Summer planning inventory

TABLE VI-C-7#

2008 8-hour Ozone (75 ppb) SIP Emission Reduction Commitment to be Achieved by 2031 through SCAQMD Stationary and Mobile Source Regulatory Programs (Summer Planning Inventory, tons per day)

YEAR	VOC		NOx	
	Based on Adoption Date	Based on Implementation Date ^a	Based on Adoption Date	Based on Implementation Date ^a
2016				
2017			MOB-10 (1.9) MOB-11 (1.0) MOB-14 (7.8) 10.7	
2018	ECC-02 (0.3) ECC-03 (0.3) CMB-01 (2.8) CMB-03 (0.4) 3.8		CMB-04 (1.6) ECC-02 (1.1) ECC-03 (2.1) CMB-01 (6.0) CMB-02 (2.8) CMB-03 (1.5) 15.1	
2019	FUG-01 (2) BCM-10 (1.8) 3.8			
2020		CMB-03 (0.4)		CMB-03 (1.5)
2021	CTS-01 (2)			
2022		FUG-01 (2)	CMB-05 (5)	CMB-04 (1.6)
2023		ECC-02 (0.3)		ECC-02 (1.1)
2024				
2025				CMB-05 (5)
2026–2030				
2031		ECC-03 (0.3) CMB-01 (2.8) BCM-10 (1.8) CTS-01 (2) 6.9		ECC-03 (2.1) CMB-01 (6.0) CMB-02 (2.8) MOB-10 (1.9) MOB-11 (1.0) MOB-14 (7.8) 21.6
TOTAL	9.6	9.6	31.0	31.0

Table is from Table 4-11 in the 2016 AQMP

^a Represents the final, full implementation date; typically a rule contains multiple implementation dates

Tables VI-C-8, VI-C-9 and VI-C-10 present the controlled emission inventory, segregated by source types, in the quantitative milestone/attainment years of 2022, 2025 and 2028 for the 2012 annual PM2.5 standard. Emission reductions from the non-182(e)(5) control measures, as presented in Chapter 4 – Control Strategy and Implementation, are incorporated in the inventory.

TABLE VI-C-8

2022 Emission Inventory Incorporating Emission Reductions from Non-182(e)(5) Control Measures Committed in the 2016 AQMP

	VOC	NOx	SOx	PM2.5	NH3
Point source	28.0	4.9	2.5	8.5	7.6
Area source	186	26.0	1.3	39.6	52.1
RECLAIM	0	14.5	6.1	0	0
On-road	68.0	118	1.7	10.2	12.7
Off-road	62.4	94.4	3.5	5.1	0.17
Aircraft	3.9	16.9	2.0	0.7	0
TOTAL (TPD)	348	275	17.0	64.1	72.6

TABLE VI-C-9

2025 Emission Inventory Incorporating Emission Reductions from Non-182(e)(5) Control Measures Committed in the 2016 AQMP

	VOC	NOx	SOx	PM2.5	NH3
Point source	28.5	4.8	2.5	8.6	7.7
Area source	187	22.3	1.3	40.2	52.5
RECLAIM	0	13.3	6.1	0	0
On-road	57.4	73.5	1.6	10.0	12.0
Off-road	58.8	73.6	3.7	4.6	0.18
Aircraft	4.2	18.2	2.2	0.7	0.0
TOTAL (TPD)	336	206	17.4	64.1	72.3

TABLE VI-C-10

2028 Emission Inventory Incorporating Emission Reductions from Non-182(e)(5) Control Measures Committed in the 2016 AQMP*

	VOC	NOx	SOx	PM2.5	NH3
Point source	28.9	4.7	2.6	8.7	7.7
Area source	187	18.8	1.3	40.8	53.0
RECLAIM	0	11.4	6.1	0	0
On-road	50.1	60.1	1.5	10.0	11.8
Off-road	55.4	68.3	4.0	4.5	0.19
Aircraft	4.3	19.2	2.3	0.8	0.0
TOTAL (TPD)	325	180	17.8	64.7	72.7

* Emissions derived from linear interpolation between modeled emissions of 2025 and 2031

FINAL 2016 AQMP
APPENDIX VI-C
ATTACHMENT VI-C-1

CALIFORNIA EXISTING MOBILE SOURCE CONTROL PROGRAM

Key Mobile Source Regulations and Programs Providing Emission Reductions

Given the severity of California's air quality challenges and the need for ongoing emission reductions, the Air Resources Board (ARB) has implemented the most stringent mobile source emissions control program in the nation. ARB's comprehensive program relies on four fundamental approaches:

- stringent emissions standards that minimize emissions from new vehicles and equipment;
- in-use programs that target the existing fleet and require the use of the cleanest vehicles and emissions control technologies;
- cleaner fuels that minimize emissions during combustion; and,
- incentive programs that remove older, dirtier vehicles and equipment and pay for early adoption of the cleanest available technologies.

This multi-faceted approach has spurred the development of increasingly cleaner technologies and fuels and achieved significant emission reductions across all mobile source sectors that go far beyond national programs or programs in other states. These efforts extend back to the first mobile source regulations adopted in the 1960s, and pre-date the federal Clean Air Act Amendments (Act) of 1970, which established the basic national framework for controlling air pollution. In recognition of the pioneering nature of ARB's efforts, the Act provides California unique authority to regulate mobile sources more stringently than the federal government by providing a waiver of preemption for its new vehicle emission standards under Section 209(b). This waiver provision preserves a pivotal role for California in the control of emissions from new motor vehicles, recognizing that California serves as a laboratory for setting motor vehicle emission standards. Since then, the ARB has consistently sought and obtained waivers and authorizations for its new motor vehicle regulations. ARB's history of progressively strengthening standards as technology advances, coupled with the waiver process requirements, ensures that California's regulations remain the most stringent in the nation. A list of regulatory actions ARB has taken since 1985 is provided at the end of this analysis to highlight the scope of ARB's actions to reduce mobile source emissions.

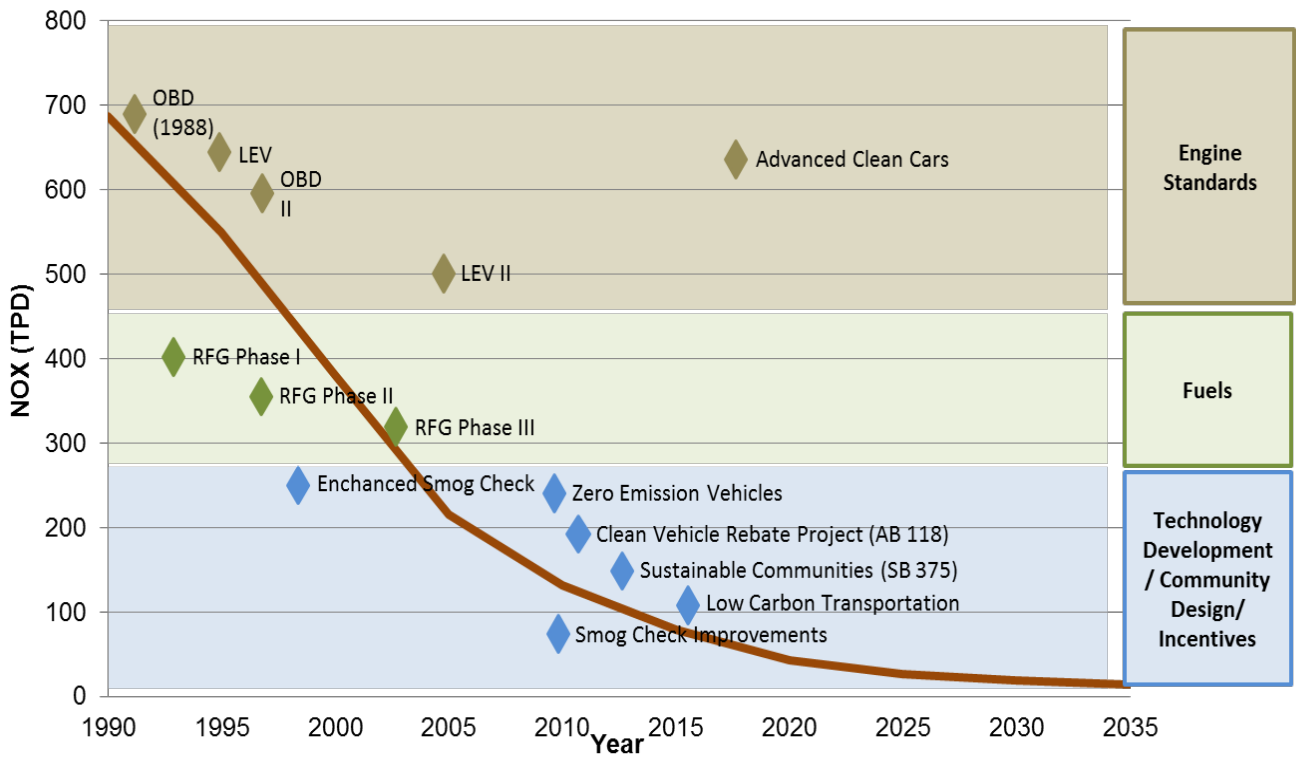
Recently, ARB adopted numerous regulations aimed at reducing exposure to diesel particulate matter and oxides of nitrogen, from freight transport sources like heavy duty diesel trucks, transportation sources like passenger cars and buses, and off-road sources like large construction equipment. Phased implementation of these regulations will produce increasing emission reduction benefits from now until 2031 and beyond, as the regulated fleets are retrofitted, and as older and dirtier portions of the fleets are replaced with newer and cleaner models at an accelerated pace.

Further, ARB and the South Coast Air Management District (SCAQMD) staff work closely on identifying and distributing incentive funds to accelerate cleanup of engines. Key incentive programs include: the Carl Moyer Program; the Goods Movement Program; the Lower-Emission School Bus Program; and the Air Quality Improvement Program (AQIP). These incentive-based programs work in tandem with regulations to accelerate deployment of cleaner technology.

Light-Duty Vehicles

Figure 1 illustrates the trend in NOx emissions from light-duty vehicles and key programs contributing to those reductions. As a result of these efforts, light-duty vehicle emissions in the SCAQMD have been reduced significantly since 1990 and will continue to go down through 2022 due to the benefits of ARB’s longstanding light-duty mobile source program. From today, light-duty vehicle NOx emissions are reduced by about 50 percent in 2022. Key light-duty programs include Advanced Clean Cars, On-Board Diagnostics, Reformulated Gasoline, Incentive Programs, and the Enhanced Smog Check Program.

Figure 1
Key Programs to Reduce Light-Duty NOx Emissions



Since setting the nation’s first motor vehicle exhaust emission standards in 1966 that led to the first pollution controls, California has dramatically tightened emission standards for light-duty vehicles. Through ARB regulations, today’s new cars pollute 99 percent less than their predecessors did thirty years ago. In 1970, ARB required auto manufacturers to meet the first standards to control NOx emissions along with hydrocarbon emissions. The simultaneous control of emissions from motor vehicles and fuels led to the use of cleaner-burning reformulated gasoline (RFG) that has removed the emissions equivalent of 3.5 million vehicles from California’s roads. Since ARB first adopted it in 1990, the Low Emission Vehicle Program (LEV and LEV II) and Zero-Emission Vehicle (ZEV) Program have resulted in the production and sales of hundreds of thousands of zero-emission vehicles (ZEVs) in California.

Advanced Clean Cars

ARB's groundbreaking Advanced Clean Cars (ACC) program is now providing the next generation of emission reductions in California, and ushering in a new zero emission passenger transportation system. The success of these programs is evident: California is the world's largest market for Zero Emission Vehicles (ZEVs), with over 21 models available today, and a wide variety are now available at lower price points, attracting new consumers. As of January 2015, Californians drive 40 percent of all ZEVs on the road in the United States, while the U.S. makes up about half of the world market. This movement towards commercialization of advanced clean cars has occurred due to ARB's ZEV regulation, part of ACC, which affects passenger cars and light-duty trucks.

ARB's ACC Program, approved in January 2012, is a pioneering approach of a 'package' of regulations, that although separate in construction, are related in terms of the synergy developed to address both ambient air quality needs and climate change. The ACC program combines the control of smog, soot causing pollutants and greenhouse gas emissions into a single coordinated package of requirements for model years 2015 through 2025. The program assures the development of environmentally superior cars that will continue to deliver the performance, utility, and safety vehicle owners have come to expect.

The ACC program approved by ARB in January 2012 also included amendments affecting the current ZEV regulation through the 2017 model year in order to enable manufacturers to successfully meet 2018 and subsequent model year requirements. These ZEV amendments are intended to achieve commercialization through simplifying the regulation and pushing technology to higher volume production in order to achieve cost reductions. The ACC Program benefits will increase over time as new cleaner cars enter the fleet displacing older and dirtier vehicles.

On Board Diagnostics

California's first OBD regulation required manufacturers to monitor some of the emission control components on vehicles starting with the 1988 model year. In 1989, ARB adopted OBD II, which required 1996 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles and engines to be equipped with second generation OBD systems. OBD systems are designed to identify when a vehicle's emission control systems or other emission-related computer-controlled components are malfunctioning, causing emissions to be elevated above the vehicle manufacturer's specifications. ARB subsequently strengthened OBD II requirements and added OBD II specific enforcement requirements for 2004 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles and engines.

Reformulated Gasoline

Since 1996, ARB has been regulating the formulation of gasoline resulting in California gasoline being the cleanest in the world. California's cleaner-burning gasoline regulation is one of the cornerstones of the State's efforts to reduce air pollution and cancer risk. Reformulated gasoline is fuel that meets specifications and requirements established by ARB. The specifications reduced motor vehicle toxics by about 40 percent and reactive organic gases by about 15 percent. The results from cleaning up fuel can have an immediate impact as soon as it is sold in the State. Vehicle manufacturers design low-emission emission vehicle to take full advantage of cleaner-burning gasoline properties.

Incentive Programs

There are a number of different incentive programs focusing on light-duty vehicles that produce extra emission reductions beyond traditional regulations. The incentive programs work in two ways, encouraging the retirement of dirty older cars and encouraging the purchase of a cleaner vehicle.

Voluntary accelerated vehicle retirement or “car scrap” programs provide monetary incentives to vehicle owners to retire older, more polluting vehicles. The purpose of these programs is to reduce fleet emissions by accelerating the turnover of the existing fleet and subsequent replacement with newer, cleaner vehicles. Both State and local vehicle retirement programs are available.

California’s voluntary vehicle retirement program is administered by the Bureau of Automotive Repair (BAR) and provides \$1,000 per vehicle and \$1,500 for low-income consumers for unwanted vehicles that have either failed or passed their last Smog Check Test and that meet certain eligibility guidelines. This program is referred to as the Consumer Assistance Program.

The Enhanced Fleet Modernization Program (EFMP) was approved by the AB 118 legislation to augment the State’s existing vehicle retirement program. Approximately \$30 million is available annually through 2015 to fund the EFMP via a \$1 increase in vehicle registration fees. ARB developed the program in consultation with BAR. The program is jointly administered by both BAR for vehicle retirement, and local air districts for vehicle replacement.

Other programs, in addition to vehicle retirement programs, help to clean up the light-duty fleet. The AQIP, established by AB 118, is an ARB voluntary incentive program to fund clean vehicle and equipment projects. The Clean Vehicle Rebate Project (CVRP) is one of the current projects under AQIP. CVRP, started in 2009, is designed to accelerate widespread commercialization of zero-emission vehicles and plug-in hybrid electric vehicles by providing consumer rebates up to \$2,500 to partially offset the higher cost of these advanced technologies. The CVRP is administered statewide by the California Center for Sustainable Energy. In Fiscal Years 2009–2012, \$26.1 million, including \$2 million provided by the California Energy Commission, funded approximately 8,000 rebates. In June 2012, the ARB allocated up to \$15–21 million to the CVRP as outlined in the AQIP FY2012–2013 Funding Plan.

California Enhanced Smog Check Program

BAR is the state agency charged with administration and implementation of the Smog Check Program. The Smog Check Program is designed to reduce air pollution from California registered vehicles by requiring periodic inspections for emission-control system problems, and by requiring repairs for any problems found. In 1998, the Enhanced Smog Check program began in which Smog Check stations relied on the BAR-97 Emissions Inspection System (EIS) to test tailpipe emissions with either a Two-Speed Idle (TSI) or Acceleration Simulation Mode (ASM) test depending on where the vehicle was registered. For instance, vehicles registered in urbanized areas received an ASM test, while vehicles in rural areas or received a TSI test.

In 2009, the following requirements were added in to improve and enhance the Smog Check Program, making it more inclusive of motor vehicles and effective on smog reductions:

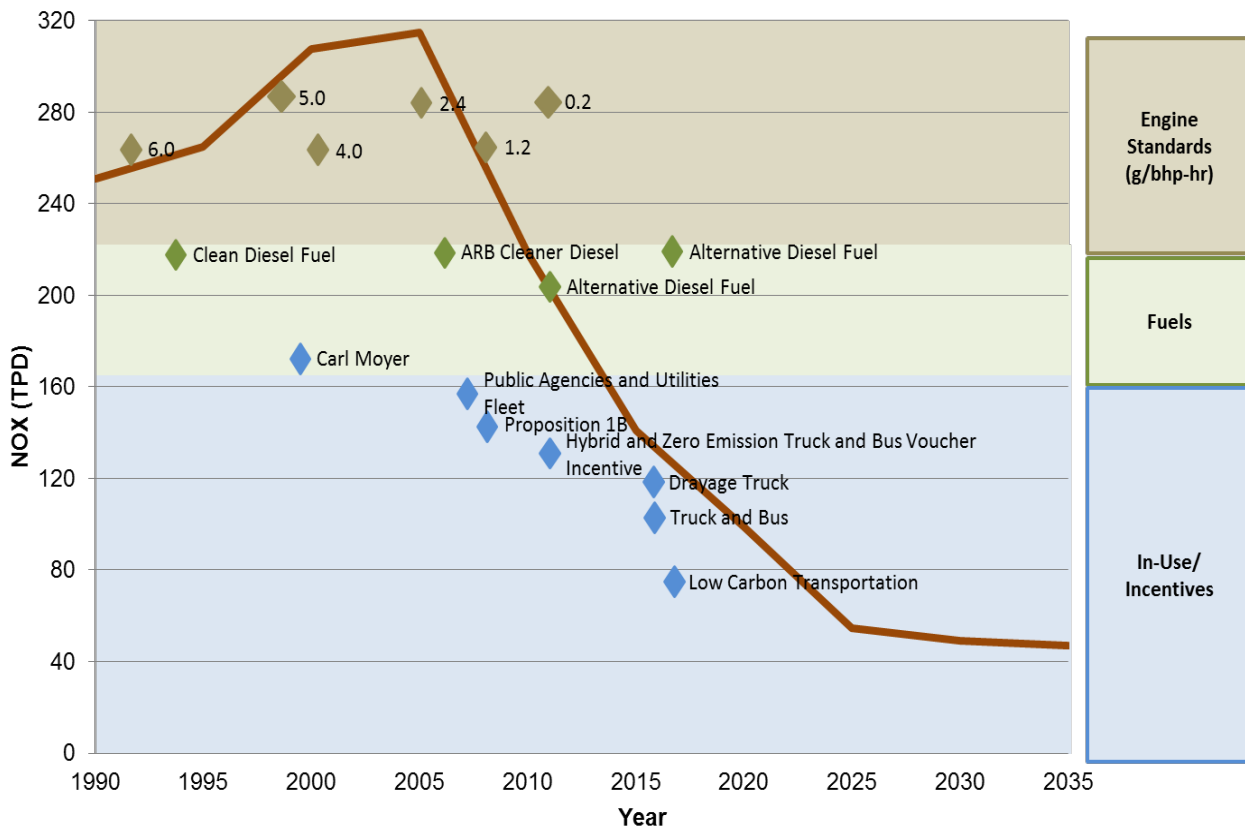
- Low pressure evaporative test;
- More stringent pass/fail cutpoints;
- Visible smoke test; and
- Inspection of light- and medium-duty diesel vehicles.

The next major change was due to AB 2289, adopted in October 2010, a new law restructuring California’s Smog Check Program, streamlining and strengthening inspections, increasing penalties for misconduct, and reducing costs to motorists. This new law sponsored by ARB and BAR, promised faster and less expensive Smog Check inspections by taking advantage of OBD software installed on all vehicles since 2000. The new law also directs vehicles without this equipment to high-performing stations, helping to ensure that these cars comply with current emission standards. This program will reduce consumer costs by having stations take advantage of diagnostic software that monitors pollution-reduction components and tailpipe emissions. Beginning mid-2013, testing of passenger vehicles using OBD was required on all vehicles model years 2000 or newer.

Heavy-Duty Trucks

Figure 2 illustrates the trend in NOx emissions from heavy-duty vehicles and key programs contributing to those reductions. As a result of these efforts, heavy-duty vehicle emissions in the SCAQMD have been reduced significantly since 1990 and will continue to go down through 2022 due to the benefits of ARB’s longstanding heavy-duty mobile source program. From today, heavy-duty NOx emissions are reduced by about 40 percent in 2022. Key programs include Heavy-Duty Engine Standards, Clean Diesel Fuel, Truck and Bus Regulation and Incentive Programs.

Figure 2
Key Programs to Reduce Heavy-Duty Emissions



Heavy-Duty Engine Standards

Since 1990, heavy-duty engine NO_x emission standards have become dramatically more stringent, dropping from 6 grams per brake horsepower-hour (g/bhp-hr) in 1990 down to the current 0.2 g/bhp-hr standard, which took effect in 2010. In addition to mandatory NO_x standards, there have been several generations of optional lower NO_x standards put in place over the past 15 years. Most recently in 2015, engine manufacturers can certify to three optional NO_x emission standards of 0.1 g/bhp-hr, 0.05 g/bhp-hr, and 0.02 g/bhp-hr (i.e., 50 percent, 75 percent, and 90 percent lower than the current mandatory standard of 0.2 g/bhp-hr). The optional standards allow local air districts and ARB to preferentially provide incentive funding to buyers of cleaner trucks, to encourage the development of cleaner engines.

Clean Diesel Fuel

Since 1993, ARB has required that diesel fuel have a limit on the aromatic hydrocarbon content and sulfur content of the fuel. Diesel powered vehicles account for a disproportionate amount of the diesel particulate matter which is considered a toxic air contaminant. In 2006, ARB required a low-sulfur diesel fuel to be used not only by on-road diesel vehicles but also for off-road engines. The diesel fuel regulation allows alternative diesel formulations as long as emission reductions are equivalent to the ARB formulation.

Cleaner In-Use Heavy-Duty Trucks (Truck and Bus Regulation)

The Truck and Bus Regulation was first adopted in December 2008. This rule represents a multi-year effort to turn over the legacy fleet of engines and replace them with the cleanest technology available. In December 2010, ARB revised specific provisions of the in-use heavy-duty truck rule, in recognition of the deep economic effects of the recession on businesses and the corresponding decline in emissions.

Starting in 2012, the Truck and Bus Regulation phases in requirements applicable to an increasingly larger percentage of the truck and bus fleet over time, so that by 2023 nearly all older vehicles would need to be upgraded to have exhaust emissions meeting 2010 model year engine emissions levels. The regulation applies to nearly all diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds that are privately or federally owned, including on-road and off-road agricultural yard goats, and privately and publicly owned school buses. Moreover, the regulation applies to any person, business, school district, or federal government agency that owns, operates, leases or rents affected vehicles. The regulation also establishes requirements for any in-state or out-of-state motor carrier, California-based broker, or any California resident who directs or dispatches vehicles subject to the regulation. Finally, California sellers of a vehicle subject to the regulation would have to disclose the regulation's potential applicability to buyers of the vehicles. Approximately 170,000 businesses in nearly all industry sectors in California, and almost a million vehicles that operate on California roads each year are affected. Some common industry sectors that operate vehicles subject to the regulation include: for-hire transportation, construction, manufacturing, retail and wholesale trade, vehicle leasing and rental, bus lines, and agriculture.

ARB compliance assistance and outreach activities that are key in support of the Truck and Bus Regulation include:

- The Truck Regulations Upload and Compliance Reporting System, an online reporting tool developed and maintained by ARB staff;
- The Truck and Bus regulation's fleet calculator, a tool designed to assist fleet owners in evaluating various compliance strategies;

- Targeted training sessions all over the State; and
- Out-of-state training sessions conducted by a contractor.

ARB staff also develops regulatory assistance tools, conducts and coordinates compliance assistance and outreach activities, administers incentive programs, and actively enforces the entire suite of regulations. Accordingly, ARB's approach to ensuring compliance is based on a comprehensive outreach and education effort.

Incentive Programs

There are a number of different incentive programs focusing on heavy-duty vehicles that produce extra emission reductions beyond traditional regulations. The incentive programs encourage the purchase of a cleaner truck.

Several State and local incentive funding pools have been used historically -- and remain available -- to fund the accelerated turnover of on-road heavy-duty vehicles. Since 1998, the Carl Moyer Program (Moyer Program) has provided funding for replacement, new purchase, repower and retrofit of trucks. Beginning in 2008, the Goods Movement Emission Reduction Program funded by Proposition 1B has funded cleaner trucks for the region's transportation corridors; the final increment of funds will implement projects in through 2018.

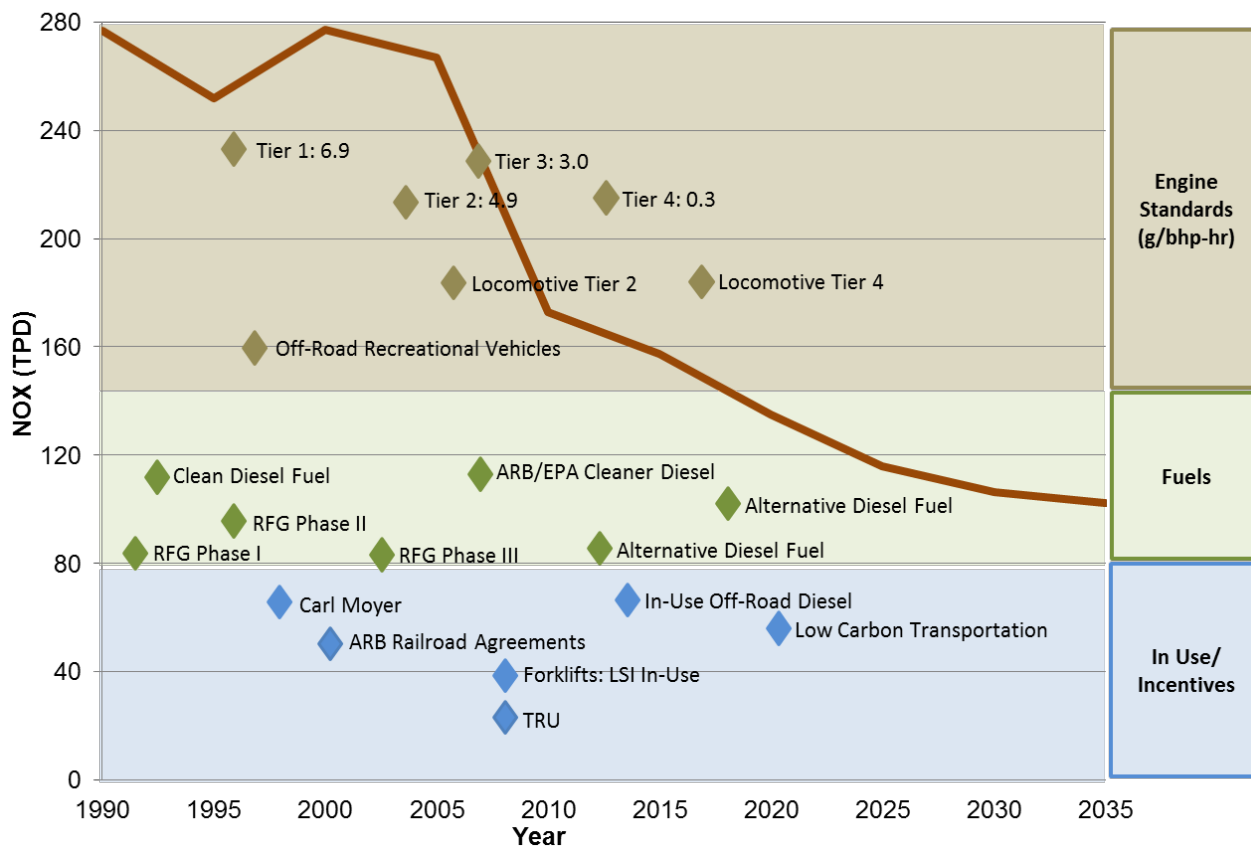
The Air Quality Improvement Program has funded the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) since 2010, and continued San Joaquin Valley participation is expected. ARB has also administered a Truck Loan Assistance Program since 2009.

Off-Road Sources

Off-road sources encompass equipment powered by an engine that does not operate on the road. Sources vary from ships to lawn and garden equipment and for example, include sources like locomotives, aircraft, tractors, harbor craft, off-road recreational vehicles, construction equipment, forklifts, and cargo handling equipment.

Figure 3 illustrates the trend in NOx emissions from off-road equipment and key programs contributing to those reductions. As a result of these efforts, off-road emissions in the SCAQMD have been reduced significantly since 1990 and will continue to go down through 2022 due to the benefits of ARB's and U.S. EPA longstanding programs. From today, off-road NOx emissions are reduced by about 20 percent in 2022. Key programs include Off-Road Engine Standards, Locomotive Engine Standards, Clean Diesel Fuel, Cleaner In-Use Off-Road Regulation and In-Use LSI Fleet Regulation.

Figure 3
Key Programs to Reduce Off-Road Emissions



Off-Road Engine Standards

The Clean Air Act preempts states, including California, from adopting requirements for new off-road engines less than 175 HP used in farm or construction equipment. California may adopt emission standards for in-use off-road engines pursuant to Section 209(e)(2), but must receive authorization from U.S. EPA before it may enforce the adopted standards.

The Board first approved regulations to control exhaust emissions from small off-road engines (SORE) such as lawn and garden equipment in December 1990 with amendments in 1998 and 2003. These regulations were implemented through three tiers of progressively more stringent exhaust emission standards that were phased in between 1995 and 2008.

Manufacturers of forklift engines are subject to new engine standards for both diesel and Large Spark Ignition (LSI) engines. Off-road diesel engines were first subject to engine standards and durability requirements in 1996 while the most recent Tier 4 Final emission standards were phased in starting in 2013. Tier 4 emission standards are based on the use of advanced after-treatment technologies such as diesel particulate filters and selective catalytic reduction. LSI engines have been subject to new engine standards that include both criteria pollutant and durability requirements since 2001 with the cleanest requirements phased-in starting in 2010.

Locomotive Engine Standards

The Clean Air Act and the U.S. EPA national locomotive regulations expressly preempt states and local governments from adopting or enforcing “any standard or other requirement relating to the control of emissions from new locomotives and new engines used in locomotives” (U.S. EPA interpreted new engines in locomotives to mean remanufactured engines, as well). U.S. EPA has approved two sets of national locomotive emission regulations (1998 and 2008). In 1998, U.S. EPA approved the initial set of national locomotive emission regulations. These regulations primarily emphasized NO_x reductions through Tier 0, 1, and 2 emission standards. Tier 2 NO_x emission standards reduced older uncontrolled locomotive NO_x emissions by up to 60 percent, from 13.2 to 5.5 g/bhphr.

In 2008, U.S. EPA approved a second set of national locomotive regulations. Older locomotives upon remanufacture are required to meet more stringent particulate matter (PM) emission standards which are about 50 percent cleaner than Tier 0-2 PM emission standards. U.S. EPA refers to the PM locomotive remanufacture emission standards as Tier 0+, Tier 1+, and Tier 2+. The new Tier 3 PM emission standard (0.1 g/bhphr), for model years 2012–2014, is the same as the Tier 2+ remanufacture PM emission standard. The 2008 regulations also included new Tier 4 (2015 and later model years) locomotive NO_x and PM emission standards. The U.S. EPA Tier 4 NO_x and PM emission standards further reduced emissions by approximately 95 percent from uncontrolled levels.

Clean Diesel Fuel

Since 1993, ARB has required that diesel fuel have a limit on the aromatic hydrocarbon content and sulfur content of the fuel. Diesel powered vehicles account for a disproportionate amount of the diesel particulate matter which is considered a toxic air contaminant. In 2006, ARB required a low-sulfur diesel fuel to be used not only by on-road diesel vehicles but also for off-road engines. The diesel fuel regulation allows alternative diesel formulations as long as emission reductions are equivalent to the ARB formulation.

Cleaner In-Use Off-Road Equipment (Off-Road Regulation)

The Off-Road Regulation which was first approved in 2007 and subsequently amended in 2010 in light of the impacts of the economic recession. These off-road vehicles are used in construction, manufacturing, the rental industry, road maintenance, airport ground support and landscaping. In December 2011, the Off-Road Regulation was modified to include on-road trucks with two diesel engines.

The Off-Road Regulation will significantly reduce emissions of diesel PM and NO_x from the over 150,000 in-use off-road diesel vehicles that operate in California. The regulation affects dozens of vehicle types used in thousands of fleets by requiring owners to modernize their fleets by replacing older engines or vehicles with newer, cleaner models, retiring older vehicles or using them less often, or by applying retrofit exhaust controls.

The Off-Road Regulation imposes idling limits on off-road diesel vehicles, requires a written idling policy, and requires a disclosure when selling vehicles. The regulation also requires that all vehicles be reported to ARB and labeled, restricts the addition of older vehicles into fleets, and requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing verified exhaust retrofits. The requirements and compliance dates of the Off-Road Regulation vary by fleet size.

Fleets will be subject to increasingly stringent restrictions on adding older vehicles. The regulation also sets performance requirements. While the regulation has many specific provisions, in general by each compliance

deadline, a fleet must demonstrate that it has either met the fleet average target for that year, or has completed the Best Available Control Technology requirements. The performance requirements of the Off-Road Regulation are phased in from January 1, 2014 through January 1, 2019.

Compliance assistance and outreach activities in support of the Off-Road Regulation include:

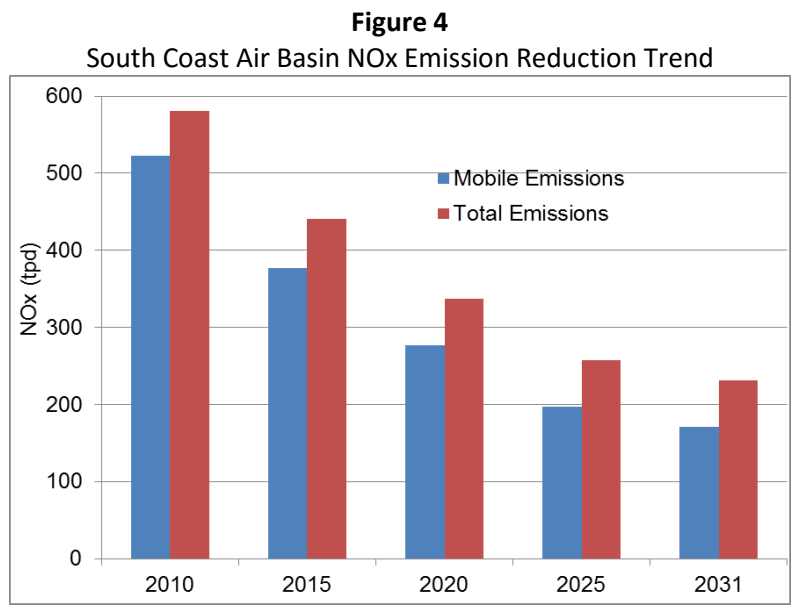
- The Diesel Off-road On-line Reporting System, an online reporting tool developed and maintained by ARB staff.
- The Diesel Hotline (866-6DIESEL), which provides the regulated public with questions about the regulations and access to ARB staff. Staff is able to respond to questions in English, Spanish and Punjabi.
- The Off-road Listserv, providing equipment owners and dealerships with timely announcement of regulatory changes, regulatory assistance documents, and reminders for deadlines.

LSI In-Use Fleet Regulation

Forklift fleets can be subject to either the LSI fleet regulation, if fueled by gasoline or propane, or the off-road diesel fleet regulation. Both regulations require fleets to retire, repower, or replace higher-emitting equipment in order to maintain fleet average standards. The LSI fleet regulation was originally adopted in 2007 with requirements beginning in 2009. While the LSI fleet regulation applies to forklifts, tow tractors, sweeper/scrubbers, and airport ground support equipment, it maintains a separate fleet average requirement specifically for forklifts. The LSI fleet regulation requires fleets with four or more LSI forklifts to meet fleet average emission standards.

I. Emission Reduction Benefits of Existing Mobile Source Control Program

Air quality modeling has demonstrated that the substantial reductions from implementation of the existing mobile source control program will provide the majority of the NOx reductions needed for attainment of both the 80 ppb ozone standard in 2023, and the 75 ppb ozone standard in 2031. As shown in Figure 4, these programs will reduce NOx emissions in the South Coast Air Basin over 200 tpd of NOx between 2015 and 2031.



Board Action	Hearing Date
Amendments to the Portable Fuel Container Regulation Amendments to the Portable Fuel Container (PFC) regulation, which include requiring certification fuel to contain 10 percent ethanol, harmonizing aspects of the Board's PFC certification and test procedures with those of the U.S. EPA, revising the ARB's certification process, and streamlining, clarifying, and increasing the robustness of ARB's certification and test procedures.	2/18/16
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) Amendments to the OBD II regulations that update requirements to account for LEV III applications and monitoring requirements for gasoline and diesel vehicles, and clarify and improve the regulation; also, 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.	9/25/15
2015 Low Carbon Fuel Standard (LCFS) Amendments (2 of 2) 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 modifications to the proposal.	9/24/15
Proposed Regulation on the Commercialization of Alternative Diesel Fuels (2 of 2) Regulation governing the introduction of alternative diesel fuels into the California commercial market, including special provisions for biodiesel.	9/24/15
CA Cap on GHG Emissions and Market-Based Compliance Mechanisms (2 of 2) Amendments to the Cap and Trade Regulation to include a new Rice Cultivation Compliance Offset Protocol and an update to the United States Forest Compliance Offset Protocol that would include project eligibility in parts of Alaska.	6/25/15
Intermediate Volume Manufacturer Amendments to the Zero Emission Vehicle Regulation Amendments regarding intermediate volume manufacturer compliance obligations under the Zero Emission Vehicle regulation.	5/21/15
2015 Amendments to Certification Procedures for Vapor Recovery Systems at Gasoline Dispensing Facilities—Aboveground Storage Tanks and Enhanced Conventional Nozzles Amendments would establish new performance standards and specifications for nozzles used at fleet facilities that exclusively refuel vehicles equipped with onboard vapor recovery systems, would provide regulatory relief for owners of certain existing aboveground storage tanks, and would ensure that mass-produced vapor recovery equipment matches the specifications of equipment evaluated during the ARB certification process.	4/23/15
Proposed Regulation for the Commercialization of Alternative Diesel Fuels (1 of 2) Regulation governing the introduction of alternative diesel fuels into the California commercial market, including special provisions for biodiesel. This is the first of two hearings on the item, and the Board will not take action to approve the proposed regulation.	2/19/15
Evaporative Emission Control Requirements for Spark-Ignition Marine Watercraft Regulation for controlling evaporative emissions from spark-ignition marine watercraft. The proposed regulation will harmonize, to the extent feasible, with similar federal requirements, while adding specific provisions needed to support California's air quality needs.	2/19/15
2015 Low Carbon Fuel Standard (LCFS) Amendments (1 of 2) Regulation for a Low Carbon Fuel Standard that includes re- adoption of the existing Low Carbon Fuel Standard with updates and revisions. This is the first of two hearings on the item, and the Board will not take action to approve the proposed regulation.	2/19/15
CA Cap on GHG Emissions and Market-Based Compliance Mechanisms to Add the Rice Cultivation Projects and Updated U.S. Forest Projects Protocols (1 of 2) Updates to the Cap and Trade Regulation to include a new Rice Cultivation Compliance Offset Protocol and an update to the United States Forest Compliance Offset Protocol that would include project eligibility in parts of Alaska.	12/18/14
2014 Amendments to ZEV Regulation Additional compliance flexibility to ZEV manufacturers working to bring advanced technologies to market.	10/23/14
LEV III Criteria Pollutant Requirements for Light- and Medium-Duty Vehicles the Hybrid Electric Vehicle Test Procedures, and the HD Otto-Cycle and HD Diesel Test Procedures Applies to the 2017 and subsequent model years.	10/23/14
Amendments to Mandatory Reporting Regulation for Greenhouse Gases Further align reporting methods with U.S. EPA methods and factors, and modify reporting requirements to fully support implementation of California's Cap and Trade program.	9/19/14

Board Action	Hearing Date
<p>Amendments to the California Cap on Greenhouse Gas Emissions and Market Based Compliance Mechanisms Technical revisions to Mandatory Reporting of Greenhouse Gas Emissions Regulation to further align reporting methods with U.S. EPA update methods and factors, and modify reporting requirements to fully support implementation of California's Cap and Trade program.</p>	<p>9/18/14</p>
<p>Amendments to the AB 32 Cost of Implementation Fee Regulation Amendments to the regulation to make it consistent with the revised mandatory reporting regulation, to add potential reporting requirements, and to incorporate requirements within the mandatory reporting regulation to streamline reporting.</p>	<p>9/18/14</p>
<p>Low Carbon Fuel Standard 2014 Update As a result of a California Court of Appeal decision, ARB will revisit the LCFS rulemaking process to meet certain procedural requirements of the APA and CEQA. Following incorporation of any modifications to the regulation, the Board will consider the proposed regulation for adoption at a second hearing held in the spring of 2015.</p>	<p>7/24/14</p>
<p>Revisions to the Carl Moyer Memorial Air Quality Standards Attainment Program Guidelines for On-Road Heavy-Duty Trucks Revisions to 1) reduce surplus emission reduction period, 2) reduce minimum CA usage requirement, 3) prioritize on-road funding to small fleets, 4) include light HD vehicles 14000-19500 lbs, and 5) clarify program specifications.</p>	<p>7/24/14</p>
<p>Amendments to Enhanced Fleet Modernization (Car Scrap) Program Amendments consistent with SB 459 which requires ARB to increase benefits for low-income California residents, promote cleaner replacement vehicles, and enhance emissions reductions.</p>	<p>6/26/14</p>
<p>Proposed Approval of Amendments to CA Cap on GHG Emissions and Market-Based Compliance Mechanisms Second hearing of two, continued from October 2013.</p>	<p>4/24/14</p>
<p>Truck and Bus Rule Update Amendments to the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen, and Other Criteria Pollutants From In-Use On-Road Diesel-Fueled Vehicles: increasing low-use vehicle thresholds, allowing owners to newly opt-in to existing flexibility provisions, adjusting "NOx exempt" vehicle provisions, and granting additional time for fleets in certain areas to meet PM filter requirements.</p>	<p>4/24/14</p>
<p>Heavy-Duty GHG Phase I: On-Road Heavy-Duty GHG Emissions Rule, Tractor-Trailer Rule, Commercial Motor Vehicle Idling Rule, Optional Reduced Emission Standards, Heavy-Duty Hybrid-Electric Vehicles Certification Procedure New GHG standards for MD and HD engines and vehicles identical to those adopted by the U.S. EPA in 2011 for MYs 2014-18.</p>	<p>12/12/13</p>
<p>Agricultural equipment SIP credit rule Incentive-funded projects must be implemented using Carl Moyer Program Guidelines; must be surplus, quantifiable, enforceable, and permanent, and result in emission reductions that are eligible for SIP credit.</p>	<p>10/25/13</p>
<p>Mandatory Report of Greenhouse Gas Emissions Approved a regulation that establishes detailed specifications for emissions calculations, reporting, and verification of GHG emission estimates from significant sources.</p>	<p>10/25/13</p>
<p>CA Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Technical revisions to the Mandatory Reporting of Greenhouse Gas Emissions Regulation to further align reporting methods with U.S.EPA, update factors, and modify definitions to maintain consistency with the Cap and Trade program.</p>	<p>10/25/13</p>
<p>Zero emission vehicle test procedures Existing certification test procedures for plug-in hybrid vehicles need to be updated to reflect technology developments. The ZEV regulation will require minor modifications to address clarity and implementation issues.</p>	<p>10/24/13</p>
<p>Consumer Products: Antiperspirants, Deodorants, Test Method 310, Aerosol Coatings, Proposed Repeal of Hairspray Credit) Amendments to require various consumer products to reformulate to reduce VOC or reactivity content to meet specified limits, and to clarify various regulatory provisions, improve enforcement, and add analytical procedures.</p>	<p>9/26/13</p>
<p>Alternative fuel certification procedures Amendments to current alternative fuel conversion certification procedures for motor vehicles and engines that will allow small volume conversion manufacturers to reduce the upfront demonstration requirements and allow systems to be sold sooner with lower certification costs than with the current process, beginning with MY 2018.</p>	<p>9/26/13</p>

Board Action	Hearing Date
Vapor Recovery for Gasoline Dispensing Facilities Amendments to certification and test procedures for vapor recovery equipment used on cargo tanks and at gasoline dispensing facilities.	7/25/13
Off-highway recreational vehicle evaporative emission control Staff proposes to set evaporative emission standards to control hydrocarbon emissions from Off-Highway Recreational Vehicles. The running loss, hot soak, and diurnal performance standards can be met by using proven automobile type control technology.	7/25/13
Gasoline and diesel fuel test standards Adopted amendments to add test standards for the measurement of prohibited oxygenates at trace levels specified in existing regulations.	1/25/13
LEV III and ZEV Programs for Federal Compliance Option Adopted amendments to deem compliance with national GHG new vehicle standards in 2017-2025 as compliance with California GHG standards for the same model years.	11/15/12 12/6/12 EO
Consumer products (automotive windshield washing fluid) Adopted amendments to add portions of 14 California counties to the list of areas with freezing temperatures where 25% VOC content windshield washing fluid could be sold.	10/18/2012 EO 03/15/13
GHG mandatory reporting, Fee Regulation, and Cap and Trade 2012 Adopted amendments to eliminate emission verification for facilities emitting less than 25,000 MTCO _{2e} and make minor changes in definitions and requirements.	9/20/12 11/2/12 EO
Amendments to Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines Approved amendments to the verification procedure used to evaluate diesel retrofits through emissions, durability, and field testing. Amendments will lower costs associated with required in-use compliance testing, streamline the in-use compliance process, and will extend time allowed to complete verifications.	8/23/2012 EO 07/02/13
Amendments to On-Board Diagnostics (OBD I and II) Regulations Approved amendments to the light- and medium-duty vehicle and heavy-duty engine OBD regulations.	8/23/2012 EO 06/26/13
Cap and Trade: Amendments to CA Cap on GHG Emissions and Market-Based Compliance Mechanisms, and Amendments Allowing Use of Compliance Instruments Issued by Linked Jurisdictions Amends Cap-and-Trade and compliance mechanisms to add security to the market system and to aid staff in implementation. Amendments include first auction rules, offset registry, market monitoring provisions, and information gathering necessary for the financial services operator.	6/28/12 7/31/12 EO
Vapor recovery defect list Adopted amendments to add defects and verification procedures for equipment approved since 2004, and make minor changes to provide clarity	6/11/12 EO
Tractor-Trailer GHG Regulation: Emergency Amendment Adopted emergency amendment to correct a drafting error and delay the registration date for participation in the phased compliance option	2/29/2012 2/29/12 EO
Advanced Clean Cars (ACC) Regulation: Low-Emission Vehicles and GHG Adopted more stringent criteria emission standards for MY 2015-2025 light and medium duty vehicles (LEV III), amended GHG emission standards for model year 2017-2025 light and medium duty vehicles (LEV GHG), amended ZEV Regulation to ensure the successful market penetration of ZEVs in commercial volumes, amended hydrogen fueling infrastructure mandate of the Clean Fuels Outlet regulation, and amended cert fuel for light duty vehicles from an MTBE-containing fuel to an E10 certification fuel.	1/26/12
Zero Emission Vehicle (ZEV) Adopted amendments to increase compliance flexibility, add two new vehicle categories for use in creating credits, increase credits for 300 mile FCVs, increase requirements for ZEVs and TZEVs, eliminate credit for PZEVs and AT PZEVs, expand applicability to smaller manufacturers, base ZEV credits on range, and make other minor changes in credit requirements	1/26/12
Amendments to Low Carbon Fuel Standard Regulation The amendments address several aspects of the regulation, including: reporting requirements, credit trading, regulated parties, opt-in and opt-out provisions, definitions, and other clarifying language.	12/16/11 10/10/12 EO

Board Action	Hearing Date
Amendments to Small Off-Road Engine and Tier 4 Off-Road Compression-Ignition Engine Regulations And Test Procedures; also "Recreational Marine" Spark-Ignition Marine Engine Amendments (Recreational Boats) adopted. Aligns California test procedures with U.S. EPA test procedures and requires off-road CI engine manufacturers to conduct in-use testing of their entire product lines to confirm compliance with previously established Not-To-Exceed emission thresholds.	12/16/2011 10/25/12 EO
Regulations and Certification Procedures for Engine Packages used in Light-Duty Specially Constructed Vehicles (Kit Cars) Ensures that certified engine packages, when placed into any Kit Car, would meet new vehicle emission standards, and be able to meet Smog Check requirements.	11/17/11 9/21/12 EO
Amendments to the California Reformulated Gasoline Regulations Corrects drafting errors in the predictive model, deletes outdated regulatory provisions, updates the notification requirements, and changes the restrictions on blending CARBOB with other liquids.	10/21/11 8/24/12 EO
Amendments to the In-Use Diesel Transport Refrigeration Units (TRU) ATCM Mechanisms to improve compliance rates and enforceability.	10/21/11 8/31/12 EO
Amendments to the AB 32 Cost of Implementation Fee Regulation Clarifies requirements and regulatory language, revises definitions.	10/20/11 8/21/12 EO
Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation, Including Compliance Offset Protocols Greenhouse Gas Emissions Cap-and-Trade Program, including compliance offset protocols and multiple pathways for compliance.	10/21/11 8/21/12 EO
Amendments to the Regulation for Cargo Handling Equipment (CHE) at Ports and Intermodal Rail Yards (Port Yard Trucks Regulation) Provides additional compliance flexibility, and maintains anticipated emissions reductions. As applicable to yard trucks and two-engine sweepers.	9/22/11 8/2/12 EO
Amendments to the Enhanced Vapor Recovery Regulation for Gasoline Dispensing Facilities New requirement for low permeation hoses at gasoline dispensing facilities.	9/22/11 7/26/12 EO
Amendments to Cleaner Main Ship Engines and Fuel for Ocean-Going Vessels Adjusts the offshore regulatory boundary. Aligns very low sulfur fuel implementation deadlines with new federal requirements.	6/23/11 9/13/12 EO
Particulate Matter Emissions Measurement Allowance For Heavy-Duty Diesel In-Use Compliance Regulation Emission measurement allowances provide for variability associated with the field testing required in the regulation.	6/23/11
Low Carbon Fuel Standard Carbon Intensity Lookup Table Amendments Adds new pathways for vegetation-based fuels	2/24/11
Amendments to Cleaner In-Use Heavy-Duty On-Road Diesel Trucks and LSI Fleets Regulations Amends five regulations to provide relief to fleets adversely affected by the economy, and take into account the fact that emissions are lower than previously predicted.	12/16/10 9/19/11 EO
Tractor-Trailer GHG Regulation Amendment Enacts administrative changes to increase compliance flexibility and reduce costs	12/16/10
Amendments to Cleaner In-Use Off-Road Diesel-Fueled Fleets Regulation Amendments provide relief to fleets adversely affected by the economy, and take into account the fact that emissions are lower than previously predicted.	12/16/10 10/28/11 EO
In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at Ports and Rail Yard Facilities Amendments add flexibility to fleets' compliance schedules, mitigate the use of noncompliant trucks outside port and rail properties, and provide transition to the Truck and Bus regulation.	12/16/10 9/19/11 EO
Amendments to the Regulation for Mandatory Reporting of Greenhouse Gas Emissions Changes requirements to align with federal greenhouse gas reporting requirements adopted by US EPA.	12/16/10 10/28/11 EO
Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation Establishes framework and requirements for Greenhouse Gas Emissions Cap-and-Trade Program, including compliance offset protocols.	12/16/10 10/26/11 EO
Amendments to the Consumer Products Regulation Amendments set new or lower VOC limits for some categories, prohibit certain toxic air contaminants, high GWP compounds, and surfactants toxic to aquatic species. Also changes Method 310, used to determine aromatic content of certain products.	11/18/10 9/29/11 EO
Amendment of the ATCM for Diesel Transportation Refrigeration Units (TRU) Amendments expand the compliance options and clarify the operational life of various types of TRUs.	11/18/10 2/2/11 EO
Amendments to the ATCM for Stationary Compression Ignition Engines Approved amendments to closely align the emission limits for new emergency standby engines in the ATCM with the emission standards required by the federal Standards of Performance.	10/21/10 3/25/11 EO

Board Action	Hearing Date
Diesel Vehicle Periodic Smoke Inspection Program Adopted amendments to exempt medium duty diesel vehicles from smoke inspection requirements if complying with Smog Check requirements.	10/21/10 8/23/11 EO
Renewable Electricity Standard Regulation Approved a regulation that will require electricity providers to obtain at least 33% of their retail electricity sales from renewable energy resources by 2020.	9/23/10
Energy Efficiency at Industrial Facilities Adopted standards for the reporting of GHG emissions and the feasibility of emissions controls by the largest GHG-emitting stationary sources.	7/22/10 5/9/11 EO
Accelerated Introduction of Cleaner Line-Haul Locomotives Agreement with railroads sets prescribed reductions in diesel risk and target years through 2020 at four major railyards.	6/24/10
Amendments to Commercial Harbor Craft Regulation Approved amendments to require the use of cleaner engines in diesel-fueled crew and supply, barge, and dredge vessels.	6/24/10 4/11/11 EO
Amendments to New Passenger Motor Vehicle Greenhouse Gas Emission Standards Approved amendments deeming compliance with EPA's GHG standards as compliance with California's standards in 2012 through 2016 model years.	2/25/2010 03/29/10
Sulfur Hexafluoride (SF6) Regulation Regulation to reduce emissions of sulfur hexafluoride (SF6), a high-GWP GHG, from high-voltage gas-insulated electrical switchgear.	2/25/10 12/15/10 EO
Amendments to the Statewide Portable Equipment Registration Regulation and Portable Engine ATCM Approved amendments that extend the deadline for removal of certain uncertified portable engines for one year.	1/28/10 8/27/10 EO 12/8/10 EO
Diesel Engine Retrofit Control Verification, Warranty, and Compliance Regulation Amendments Approved amendments to require per-installation compatibility assessment, performance data collection, and reporting of additional information, and enhance enforceability.	1/28/10 12/6/10 EO
Stationary Equipment High-GWP Refrigerant Regulation Approved a regulation to reduce emissions of high-GWP refrigerants from stationary non-residential equipment.	12/1/09 9/14/10 EO
Amendments to Limit Ozone Emissions from Indoor Air Cleaning Devices Adopted amendments to delay the labeling compliance deadlines by one to two years and to make minor changes in testing protocols.	12/9/09
Emission Warranty Information Reporting Regulation Amendments Repealed the 2007 regulation and readopted the 1988 regulation with amendments to implement adverse court decision.	11/19/09 9/27/10 EO
Amendments to Maximum Incremental Reactivity Tables Added many new compounds and modified reactivity values for many existing compounds in the tables to reflect new research data.	11/3/09 7/23/10 EO
AB 32 Cost of Implementation Fee Regulation AB 32 authorizes ARB to adopt by regulation a schedule of fees to be paid by sources of greenhouse gas emissions regulated pursuant to AB 32. ARB staff will propose a fee regulation to support the administrative costs of AB 32 implementation.	9/24/2009 05/06/10 EO
Passenger Motor Vehicle Greenhouse Gas Limits Amendments Approved amendments granting credits to manufacturers for compliant vehicles sold in other states that have adopted California regulations.	9/24/09 2/22/10 EO
Consumer Products Amendments Approved amendments that set new VOC limits for multi-purpose solvent and paint thinner products and lower the existing VOC limit for double phase aerosol air fresheners.	9/24/09 8/6/10 EO
Amendments to In-Use Off-Road Diesel-Fueled Fleets Regulation Approved amendments to implement legislatively directed changes and provide additional incentives for early action.	7/23/09 12/2/09 EO 6/3/10 EO
Methane Emissions from Municipal Solid Waste Landfills Approved a regulation to require smaller and other uncontrolled landfills to install gas collection and control systems, and also requires existing and newly installed systems to operate optimally.	6/25/09 5/5/10 EO
Cool Car Standards Approved a regulation requiring the use of solar management window glass in vehicles up to 10,000 lb GVWR.	6/25/09

Board Action	Hearing Date
Enhanced Fleet Modernization (Car Scrap) Approved guidelines for a program to scrap up to 15,000 light duty vehicles statewide.	6/25/09 7/30/10 EO
Amendments to Heavy-Duty On-Board Diagnostics Regulations Approved amendments to the light and medium-duty vehicle and heavy duty engine OBD regulations.	5/28/2009 4/6/10 EO
Smog Check Improvements BAR adopted amendments to implement changes in state law and SIP commitments adopted by ARB between 1996 and 2007.	5/7/09 by BAR 6/9/09 EO
AB 118 Air Quality Improvement Program Guidelines The Air Quality Improvement Program provides for up to \$50 million per year for seven years beginning in 2009-10 for vehicle and equipment projects that reduce criteria pollutants, air quality research, and advanced technology workforce training. The AQIP Guidelines describe minimum administrative, reporting, and oversight requirements for the program, and provide general criteria for how the program shall be implemented.	04/23/09 08/28/09 EO
Pesticide Element Reduce volatile organic compound (VOC) emissions from the application of agricultural field fumigants in the South Coast, Southeast Desert, Ventura County, San Joaquin Valley, and Sacramento Metro federal ozone nonattainment areas.	4/20/09 10/12/09 EO (2) 8/2/11 EO
Low Carbon Fuel Standard Approved new standards to lower the carbon content of fuels.	4/20/09 11/25/09 EO
Pesticide Element for San Joaquin Valley DPR Director approved pesticide ROG emission limit of 18.1 tpd and committed to implement restrictions on non-fumigant pesticide use by 2014 in the San Joaquin Valley.	4/7/09 DPR
Tire Pressure Inflation Regulation Approved a regulation requiring automotive service providers to perform tire pressure checks as part of every service.	3/26/09 2/4/10 EO
Sulfur Hexafluoride from Non-Utility and Non-Semiconductor Applications Approved a regulation to phase out use of Sulfur Hexafluoride over the next several years.	2/26/09 11/12/09 EO
Semiconductor Operations Approved a regulation to set standards to reduce fluorinated gas emissions from the semiconductor and related devices industry.	2/26/09 10/23/09 EO
Plug-In Hybrid Electric Vehicles Test Procedure Amendments Amends test procedures to address plug-in-hybrid electric vehicles.	1/23/09 12/2/09 EO
In-Use Off-Road Diesel-Fueled Fleets Amendments Makes administrative changes to recognize delays in the supply of retrofit control devices.	1/22/09
Small Containers of Automotive Refrigerant Approved a regulation to reduce leakage from small containers, adopt a container deposit and return program, and require additional container labeling and consumer education requirements.	1/22/09 1/5/10 EO
Aftermarket Critical Emission Parts on Highway Motorcycles Allows for the sale of certified critical emission parts by aftermarket manufacturers.	1/22/09 6/19/09 EO
Heavy-Duty Tractor-Trailer Greenhouse Gas (GHG) Reduction Approved a regulation to reduce greenhouse gas emissions by improving long haul tractor and trailer efficiency through use of aerodynamic fairings and low rolling resistance tires.	12/11/08 10/23/09 EO
Cleaner In-Use Heavy-Duty Diesel Trucks (Truck and Bus Regulation) Approved a regulation to reduce diesel particulate matter and oxides of nitrogen through fleet modernization and exhaust retrofits. Makes enforceability changes to public fleet, off-road equipment, and portable equipment regulations.	12/11/08 10/19/09 EO 10/23/09 EO
Large Spark-Ignition Engine Amendments Approved amendments to reduce evaporative, permeation, and exhaust emissions from large spark-ignition (LSI) engines equal to or below 1 liter in displacement.	11/1/08 3/12/09 EO
Small Off-Road Engine (SORE) Amendments Approved amendments to address the excessive accumulation of emission credits.	11/21/08 2/24/10 EO
Proposed AB 118 Air Quality Guidelines for the Air Quality Improvement Program and the Alternative and Renewable Fuel and Vehicle and Technology Program. The California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (AB 118) requires ARB to develop guidelines for both the Alternative and Renewable Fuel and Vehicle Technology Program and the Air Quality Improvement Program to ensure that both programs do not adversely impact air quality.	09/25/08 EO 05/20/09

Board Action	Hearing Date
Portable Outboard Marine Tanks and Components (part of Additional Evaporative Emission Standards) Approved a regulation that establishes permeation and emission standards for new portable outboard marine tanks and components.	9/25/08 7/20/09 EO
Cleaner Fuel in Ocean Going Vessels Approved a regulation that requires use of low sulfur fuel in ocean-going ship main engines, and auxiliary engines and boilers.	7/24/08 4/16/09 EO
Spark-Ignition Marine Engine and Boat Amendments Provides optional compliance path for > 500 hp sterndrive/inboard marine engines.	7/24/08 6/5/09 EO
Consumer Products Amendments Approved amendments that add volatile organic compound (VOC) limits for seven additional categories and lower limits for twelve previously regulated categories.	6/26/08 5/5/09 EO
Zero emission vehicles Updated California's ZEV requirements to provide greater flexibility with respect to fuels, technologies, and simplifying compliance pathways. Amendments give manufacturers increased flexibility to comply with ZEV requirements by giving credit to plug-in hybrid electric vehicles and establishing additional ZEV categories in recognition of new developments in fuel cell vehicles and battery electric vehicles.	3/27/08 12/17/08 EO
Amendments to the Verification Procedure, Warranty, and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines Adds verification requirements for control technologies that only reduce NOx emissions, new reduction classifications for NOx reducing technologies, new testing requirements, and conditional extensions for verified technologies.	1/24/08 12/4/08 EO
Mandatory Report of Greenhouse Gas Emissions Approved a regulation that establishes detailed specifications for emissions calculations, reporting, and verification of GHG emission estimates from significant sources.	12/6/07 10/12/08 EO
Gaseous Pollutant Measurement Allowances for In-Use Heavy-Duty Diesel Compliance Measurement accuracy margins are to be determined through an ongoing comprehensive testing program performed by an independent contractor. Amendments include these measurement accuracy margins into the regulation.	12/6/07 10/14/08 EO
Ocean-Going Vessels While at Berth (aka Ship Hoteling) - Auxiliary Engine Cold Ironing and Clean Technology Approved a regulation that reduces emissions from auxiliary engines on ocean-going ships while at-berth.	12/6/07 10/16/08 EO
In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at Ports and Rail Yard Facilities Approved a regulation that establishes emission standards for in-use, heavy-duty diesel-fueled vehicles that transport cargo to and from California's ports and intermodal rail facilities.	12/6/07 10/12/08 EO
Commercial Harbor Craft Approved a regulation that establishes in-use and new engine emission limits for both auxiliary and propulsion diesel engines on ferries, excursion vessels, tugboats, and towboats.	11/15/07 9/2/08 EO
Suggested Control Measure for Architectural Coatings Amendments Approved amendments to reduce the recommended VOC content of 19 categories of architectural coatings.	10/26/07
Aftermarket Catalytic Converter Requirements Approved amendments that establish more stringent emission performance and durability requirements for used and new aftermarket catalytic converters offered for sale in California.	10/25/07 2/21/08 NOD
Limiting Ozone Emissions from Indoor Air Cleaning Devices Approved ozone emission limit of 0.050 ppm for portable indoor air cleaning devices in response to requirements of AB 2276 (2006).	9/27/07 8/7/08 EO
Pesticide Commitment for Ventura County in 1994 SIP Approved substitution of excess ROG emission reductions from state motor vehicle program for 1994 SIP reduction commitment from pesticide application in Ventura County.	9/27/07 11/30/07 EO
In-Use Off-Road Diesel Equipment Approved a regulation that requires off-road diesel fleet owners to modernize their fleets and install exhaust retrofits.	7/26/07 4/4/08 EO
Emission Control and Environmental Performance Label Regulations Approved amendments to add a Global Index Label and modify the formal of the Smog Index Label on new cars.	6/21/07 5/2/08 EO
Vapor Recovery from Aboveground Storage Tanks Approved a regulation to establish new performance standards and specifications for the vapor recovery systems and components used with aboveground storage tanks.	6/21/07 5/2/08 EO

Board Action	Hearing Date
CaRFG Phase 3 amendments Approved amendments to mitigate the increases in evaporative emissions from on-road motor vehicles resulting from the addition of ethanol to gasoline.	6/14/07 4/25/08 EO 8/7/08 EO
Formaldehyde from Composite Wood Products Approved an ATCM to limit formaldehyde emissions from hardwood plywood, particleboard, and medium density fiberboard to the maximum amount feasible.	4/26/07 3/5/08 EO
Portable equipment registration program (PERP) and airborne toxic control measure for diesel-fueled portable engines Approved amendments to allow permitting of Tier 0 portable equipment engines used in emergency or low use duty and to extend permitting of certain Tier 1 and 2 "resident" engines to 1/1/10.	3/22/07 7/31/07 EO
Perchloroethylene Control Measure Amendments Approved amendments to the Perchloroethylene ATCM to prohibit new Perc dry cleaning machines beginning 2008 and phase out all Perc machines by 2023.	1/25/07 11/7/07 EO
Amendments to Emission Warranty Information Reporting & Recall Regulations Approved amendments that tighten the provisions for recalling vehicles for emissions-related failures, helping ensure that corrective action is taken to vehicles with defective emission control devices or systems.	12/7/06 3/22/07 10/17/07 EO
Voluntary accelerated vehicle retirement regulations Approved amendments that authorize the use of remote sensing to identify light-duty high emitters and that establish protocols for quantifying emissions reductions from high emitters proposed for retirement.	12/7/06
Emergency regulation for portable equipment registration program (PERP), airborne toxic control measures for portable and stationary diesel-fueled engines	12/7/06
Amendments to the Hexavalent Chromium ATCM Approved amendments that require use of best available control technology on all chrome plating and anodizing facilities.	12/7/06
Consumer Products Regulation Amendments Approved amendments that set lower emission limits in 15 product categories.	11/17/06 9/25/07 EO
Requirements for Stationary Diesel In-Use Agricultural Engines Approved amendments to the stationary diesel engine ATCM which set emissions standards for in-use diesel agricultural engines.	11/16/06 7/3/07 NOD
Ships - Onboard Incineration Approved amendments to cruise ship incineration ATCM to include all oceangoing ships of 300 gross registered tons or more.	11/16/06 9/11/07 EO
Zero Emission Bus Approved amendments postponing the 15 percent purchase requirement three years for transit agencies in the diesel path and one to two years for transit agencies in the alternative fuel path, in order to keep pace with developments in zero emission bus technology, and adding an Advanced Demonstration requirement to offset emission losses.	10/19/06 8/27/07 EO
Distributed generation certification Approved amendments improving the emissions durability and testing requirements, adding waste gas emission standards, and eliminating a redundant PM standard in the current 2007 emission standards.	10/19/06 5/17/07 NOD
Heavy-Duty Diesel In-Use Compliance Regulation Approved amendments to the heavy-duty diesel engine regulations and test procedures to create a new in-use compliance program conducted by engine manufacturers. The amendments would help ensure compliance with applicable certification standards throughout an engine's useful life.	9/28/06 7/19/07 NOD
Revisions to OBD II and the Emission Warranty Regulations Approved amendments to the OBD II regulation to provide for improved emission control monitoring including air-fuel cylinder imbalance monitoring, oxygen sensor monitoring, catalyst monitoring, permanent fault codes for gasoline vehicles and new thresholds for diesel vehicles.	9/28/06 8/9/07 EO
Off-Highway Recreational Vehicle Amendments Approved amendments to the Off-Highway Recreational Vehicle Regulations including harmonizing evaporative emission standards with federal regulations, expanding the definition of ATVs, modifying labeling requirements, and adjusting riding seasons.	7/20/06 6/1/07 EO
Portable Equipment Registration Program (PERP) Amendments Approved amendments to the Statewide Portable Equipment Registration program that include installation of hour meters on equipment, and revisions to recordkeeping, reporting, and fees.	6/22/06 11/13/06 NOD
Heavy Duty Vehicle Service Information Approved amendments to the Service Information Rule to require manufacturers to make available diagnostic equipment and information for sale to the aftermarket.	6/22/06 5/3/07 EO

Board Action	Hearing Date
LEV II technical amendments Approved amendments to evaporative emission test procedures, four-wheel drive dynamometer provisions, and vehicle label requirements.	6/22/06 9/27/06 NOD
Dry Cleaning ATCM Amendments Approved amendments to the Dry Cleaning ATCM to limit siting of new dry cleaners, phase out use of Perc at co-residential facilities, phase out higher emitting Perc sources at other facilities, and require enhanced ventilation at existing and new Perc facilities.	5/25/06
Forklifts and other Large Spark Ignition (LSI) Equipment Adopted a regulation to reduce emissions from forklifts and other off-road spark-ignition equipment by establishing more stringent standards for new equipment, and requiring retrofits or engine replacement on existing equipment. Adopts EPA's standards for 2007; adopts more stringent standards for 2010.	5/25/06 3/2/07 EO
Enhanced Vapor Recovery Amendments Approved amendments to the vapor recovery system regulation and adopted revised test procedures.	5/25/06
Diesel Retrofit Technology Verification Procedure Approved amendments to the Diesel Emission In-use Control Strategy Verification Procedure to substitute a 30% increase limit in NOx concentration for an 80% reduction requirement from PM retrofit devices.	3/23/06 12/21/06 NOD
Heavy duty vehicle smoke inspection program amendments Approved amendments to impose a fine on trucks not displaying a current compliance certification sticker.	1/26/06 12/4/06 EO
Ocean-going Ship Auxiliary Engine Fuel Approved a regulation to require ships to use cleaner marine gas oil or diesel to power auxiliary engines within 24 nautical miles of the California coast.	12/8/05 10/20/06 EO
Diesel Cargo Handling Equipment Approved a regulation to require new and in-use cargo handling equipment at ports and intermodal rail yards to reduce emissions by utilizing best available control technology.	12/8/05 6/2/06 EO
Public and Utility Diesel Truck Fleets Approved a regulation to reduce diesel particulate matter emissions from heavy duty diesel trucks in government and private utility fleets.	12/8/05 10/4/06 EO
Cruise ships – Onboard Incineration Adopted an Air Toxic Control Measure to prohibit cruise ships from conducting onboard incineration within three nautical miles of the California coast.	11/17/05 2/1/06 NOD
Inboard Marine Engine Rule Amendments Approved amendments to the 2001 regulation to include additional compliance options for manufacturers.	11/17/05 9/26/06 EO
Heavy-Duty Diesel Truck Idling Technology Approved a regulation to limit sleeper truck idling to 5 minutes. Allows alternate technologies to provide cab heating/cooling and power.	10/20/05 9/1/06 EO
Automotive Coating Suggested Control Measure Approved an SCM for automotive coatings for adoption by air districts. The measure will reduce the VOC content of 11 categories of surface protective coatings.	10/20/05
2007-09 Model-year heavy duty urban bus engines and the fleet rule for transit agencies Adopted amendments to align urban bus emission limits with on-road heavy duty truck emission limits and allow for the purchase of non-complying buses under the condition that bus turnover increase to offset NOx increases.	10/20/05 10/27/05 7/28/06 EO
Portable fuel containers (part 2 of 2) Approved amendments to revise spout and automatic shutoff design.	9/15/05 7/28/06 EO
Portable Fuel Containers (part 1 of 2) Approved amendments to include kerosene containers in the definition of portable fuel containers.	9/15/05 11/9/05 NOD
2007-09 Model-year heavy duty urban bus engines and the fleet rule for transit agencies Adopted amendments to require all transit agencies in SCAQMD to purchase only alternate fuel versions of new buses.	9/15/05 Superseded by 10/20/05
Reid vapor pressure limit emergency rule Approved amendments to relax Reid vapor pressure limit to accelerate fuel production for Hurricane Katrina victims.	9/8/05 Operative for September and October 2005 only

Board Action	Hearing Date
Heavy-Duty Truck OBD Approved a regulation to require on-board diagnostic (OBD) systems for new gas and diesel trucks, similar to the systems on passenger cars.	7/21/05 12/28/05 EO
Definition of Large Confined Animal Facility Adopted a regulation to define the size of a large CAF for the purposes of air quality permitting and reduction of ROG emissions to the extent feasible.	6/23/05 4/13/06 EO
ATCM for stationary compression ignition engines Approved emergency amendments (3/17/05) and permanent amendments (5/26/05) to relax the diesel PM emission limits on new stationary diesel engines to current off-road engine standards to respond to the lack of availability of engines meeting the original ATCM standard.	3/17/05 5/26/05 7/29/05 EO
Transit Fleet Rule Approved amendments to add emission limits for non-urban bus transit agency vehicles, require lower bus and truck fleet-average NOx and PM emission limits, and clarify emission limits for CO, NMHC, and formaldehyde.	2/24/05 10/19/05 NOD
Thermal Spraying ATCM Approved a regulation to reduce emissions of hexavalent chromium and nickel from thermal spraying operations.	12/9/04 7/20/05 EO
Tier 4 Standards for Small Off-Road Diesel Engines (SORE) Approved new emission standards for off-road diesel engines to be phased in between 2008 and 2015.	12/9/04 10/21/05 EO
Emergency Regulatory Amendment Delaying the January 1, 2005 Implementation Date for the Diesel Fuel Lubricity Standard Adopted an emergency regulation delaying the lubricity standard compliance deadline by five months to respond to fuel pipeline contamination problems.	11/24/04 12/10/04 EO
Enhanced vapor recovery compliance extension Approved amendments to the EVR regulation to extend the compliance date for onboard refueling vapor recovery compatibility to the date of EVR compliance.	11/18/04 2/11/05 EO
CaRFG Phase 3 amendments Approved amendments correcting errors and streamlining requirements for compliance and enforcement of CaRFG Phase 3 regulations adopted in 1999.	11/18/04
Clean diesel fuel for harborcraft and intrastate locomotives Approved a regulation that required harborcraft and locomotives operating solely within California to use clean diesel fuel.	11/18/04 3/16/05 EO
Nonvehicular Source, Consumer Product, and Architectural Coating Fee Regulation Amendment Approved amendments to fee regulations to collect supplemental fees when authorized by the Legislature.	11/18/04
Greenhouse gas limits for motor vehicles Approved a regulation that sets the first ever greenhouse gas emission standards on light and medium duty vehicles starting with the 2009 model year.	9/24/04 8/4/05 EO
Gasoline vapor recovery system equipment defects list Approved the addition of defects to the VRED list for use by compliance inspectors.	8/24/04 6/22/05 EO
Unihose gasoline vapor recovery systems Approved an emergency regulation and an amendment to delay the compliance date for unihose installation to the date of dispenser replacement.	7/22/04 11/24/04 EO
General Idling Limits for Diesel Trucks Approved a regulation that limits idling of heavy-duty diesel trucks operating in California to five minutes, with exceptions for sleeper cabs.	7/22/04
Consumer Products Approved a regulation to reduce ROG emissions from 15 consumer products categories, prohibit the use of 3 toxic compounds in consumer products, ban the use of PDCB in certain products, allow for the use of Alternative Control Plans, and revise Test Method 310.	6/24/04 5/6/05 EO
Urban bus engines/fleet rule for transit agencies Approved amendments to allow for the purchase of hybrid diesel buses and revise the zero emission bus demonstration and purchase timelines.	6/24/04
Engine Manufacturer Diagnostics Approved a regulation that would require model year 2007 and later heavy duty truck engines to be equipped with engine diagnostic systems to detect malfunctions of the emission control system.	5/20/04

Appendix VI-C: Reasonable Further Progress

Board Action	Hearing Date
Chip Reflash Approved a voluntary program and a backstop regulation to reduce heavy duty truck NOx emissions through the installation of new software in the engine's electronic control module.	3/25/04 3/21/05 EO
Portable equipment registration program (PERP) Approved amendments to allow uncertified engines to be registered until December 31, 2005, to increase fees, and to modify administrative requirements.	2/26/04 1/7/05 EO 6/21/05 EO
Portable Diesel Engine ATCM Adopted a regulation to reduce diesel PM emissions from portable engines through a series of emission standards that increase in stringency through 2020.	2/26/04 1/4/05 EO
California motor vehicle service information rule Adopted amendments to allow for the purchase of heavy duty engine emission-related service information and diagnostic tools by independent service facilities and aftermarket parts manufacturers.	1/22/04 5/20/04
Transportation Refrigeration Unit ATCM Adopted a regulation to reduce diesel PM emissions from transport refrigeration units by establishing emission standards and facility reporting requirements to streamline inspections.	12/11/03 2/26/04 11/10/04 EO
Diesel engine verification procedures Approved amendments that reduced warranty coverage to the engine only, delayed the NOx reduction compliance date to 2007, added requirements for proof-of-concept testing for new technology, and harmonized durability requirements with those of U.S. EPA.	12/11/03 2/26/04 10/17/04
Chip Reflash Approved a voluntary program and a backstop regulation to reduce heavy duty truck NOx emissions through the installation of new software in the engine's electronic control module.	12/11/03 3/27/04 3/21/05 EO
Revised tables of maximum incremental reactivity values Approved the addition of 102 more chemicals with associated maximum incremental reactivity values to existing regulation allowing these chemicals to be used in aerosol coating formulations.	12/3/03
Stationary Diesel Engines ATCM Adopted a regulation to reduce diesel PM emissions from stationary diesel engines through the use of clean fuel, lower emission standards, operational practices.	11/20/03 12/11/03 2/26/2004 9/27/04 EO
Solid waste collection vehicles Adopted a regulation to reduce toxic diesel particulate emissions from solid waste collection vehicles by over 80 percent by 2010. This measure is part of ARB's plan to reduce the risk from a wide range of diesel engines throughout California.	9/25/03 5/17/04 EO
Small off-road engines (SORE) Adopted more stringent emission standards for the engines used in lawn and garden and industrial equipment, such as string trimmers, leaf blowers, walk-behind lawn mowers, generators, and lawn tractors.	9/25/03 7/26/04 EO
Off-highway recreational vehicles Changes to riding season restrictions.	7/24/03
Clean diesel fuel Adopted a regulation to reduce sulfur levels and set a minimum lubricity standard in diesel fuel used in vehicles and off-road equipment in California, beginning in 2006.	7/24/03 5/28/04 EO
Ozone Transport Mitigation Amendments Adopted amendments to require upwind districts to (1) have the same no-net-increase permitting thresholds as downwind districts, and (2) Adopt "all feasible measures."	5/22/03 10/2/03 NOD
Zero emission vehicles Updated California's ZEV requirements to support the fuel cell car development and expand sales of advanced technology partial ZEVs (like gasoline-electric hybrids) in the near-term, while retaining a role for battery electric vehicles.	3/27/03 12/19/03 EO
Heavy duty gasoline truck standards Aligned its existing rules with new, lower federal emission standards for gasoline-powered heavy-duty vehicles starting in 2008.	12/12/02 9/23/03 EO
Low emission vehicles II Minor administrative changes.	12/12/02 9/24/03 EO
Gasoline vapor recovery systems test procedures Approved amendments to add advanced vapor recovery technology certification and testing standards.	12/12/02 7/1/03 EO 10/21/03 EO
CaRFG Phase 3 amendments Approved amendments to allow for small residual levels of MTBE in gasoline while MTBE is being phased out and replaced by ethanol.	12/12/02 3/20/03 EO

Board Action	Hearing Date
School bus Idling Adopted a measure requiring school bus drivers to turn off the bus or vehicle engine upon arriving at a school and restart it no more than 30 seconds before departure in order to limit children's exposure to toxic diesel particulate exhaust.	12/12/02 5/15/03 EO
California Interim Certification Procedures for 2004 and Subsequent Model Year Hybrid-Electric Vehicles in the Urban Transit Bus and Heavy-Duty Vehicle Classes Regulation Amendment Adopted amendments to allow diesel-path transit agencies to purchase alternate fuel buses with higher NOx limits, establish certification procedures for hybrid buses, and require lower fleet-average PM emission limits.	10/24/02 9/2/03 EO
CaRFG Phase 3 amendments Approved amendments delaying removal of MTBE from gasoline by one year to 12/31/03.	7/25/02 11/8/02 EO
Diesel retrofit verification procedures, warranty, and in-use compliance requirements Adopted regulations to specify test procedures, warranty, and in-use compliance of diesel engine PM retrofit control devices.	5/16/02 3/28/03 EO
On-board diagnostics for cars Adopted changes to the On-Board Diagnostic Systems (OBD II) regulation to improve the effectiveness of OBD II systems in detecting motor vehicle emission-related problems.	4/25/02 3/7/03 EO
Voluntary accelerated light duty vehicle retirement regulations Establishes standards for a voluntary accelerated retirement program.	2/21/02 11/18/02 EO
Residential burning Adopted a measure to reduce emissions of toxic air contaminants from outdoor residential waste burning by eliminating the use of burn barrels and the outdoor burning of residential waste materials other than natural vegetation.	2/21/02 12/18/02 EO
California motor vehicle service information rule Adopted regulations to require light- and medium-duty vehicle manufacturers to offer for sale emission-related service information and diagnostic tools to independent service facilities and aftermarket parts manufacturers.	12/13/01 7/31/02 EO
Vapor recovery regulation amendments Adopted amendments to expand the list of specified defects requiring equipment to be removed from service.	11/15/01 9/27/02 EO
Distributed generation guidelines and regulations Adopted regulations requiring the permitting by ARB of distributed generation sources that are exempt from air district permitting and approved guidelines for use by air districts in permitting non-exempt units.	11/15/01 7/23/02 EO
Low emission vehicle regulations (LEV II) Approved amendments to apply PM emission limits to all new gasoline vehicles, extend gasoline PZEV emission limits to all fuel types, and streamline the manufacturer certification process.	11/15/01 8/6/02 EO
Gasoline vapor recovery systems test methods and compliance procedures Adopted amendments to add test methods for new technology components, streamline test methods for liquid removal equipment, and***.	10/25/01 7/9/02 EO
Heavy-duty diesel trucks Adopted amendments to emissions standards to harmonize with EPA regulations for 2007 and subsequent model year new heavy-duty diesel engines.	10/25/01
Automotive coatings Adopted Air Toxic Control Measure which prohibits the sale and use in California of automotive coatings that contain hexavalent chromium or cadmium.	9/20/01 9/2/02 EO
Inboard and sterndrive marine engines Lower emission standards for 2003 and subsequent model year inboard and sterndrive gasoline-powered engines in recreational marine vessels.	7/26/01 6/6/02 EO
Asbestos from construction, grading, quarrying, and surface mining Adopted an Airborne Toxic Control Measure for construction, grading, quarrying, and surface mining operations requiring dust mitigation for construction and grading operations, road construction and maintenance activities, and quarries and surface mines to minimize emissions of asbestos-laden dust.	7/26/01 6/7/02 EO
Zero emission vehicle infrastructure and standardization of electric vehicle charging equipment Adopted amendments to the ZEV regulation to alter the method of quantifying production volumes at joint-owned facilities and to add specifications for standardized charging equipment.	6/28/01 5/10/02 EO

Board Action	Hearing Date
Enhanced vapor recovery emergency regulation Adopted a four-year term for equipment certifications.	5/22/01 EO
Pollutant transport designation Adopted amendments to add two transport couples to the list of air basins in which upwind areas are required to adopt permitting thresholds no less stringent than those adopted in downwind areas.	4/26/01
Zero emission vehicle regulation amendments Adopted amendments to reduce the numbers of ZEVs required in future years, add a PZEV category and grant partial ZEV credit, modify the ZEV range credit, allow hybrid-electric vehicles partial ZEV credit, grant ZEV credit to advanced technology vehicles, and grant partial ZEV credit for several other minor new programs.	1/25/01 12/7/01 EO 4/12/02 EO
Heavy duty diesel engines supplemental test procedures Approved amendments to extend "Not-To-Exceed" and EURO III supplemental test procedure requirements through 2007 when federal requirements will include these tests.	12/7/00
Light and medium duty low emission vehicle alignment with federal standards Approved amendments that require light and medium duty vehicles sold in California to meet the more restrictive of state or federal emission standards.	12/7/00 12/27/00 EO
Exhaust emission standards for heavy duty gas engines Adopted amendments that establish 2005 emission limits for heavy duty gas engines that are equivalent to federal limits.	12/7/00 12/27/00 EO
CaRFG Phase 3 amendments Approved amendments to regulate the replacement of MTBE in gasoline with ethanol.	11/16/00 4/25/01 EO
CaRFG Phase 3 test methods Approved amendments to gasoline test procedures to quantify the olefin content and gasoline distillation temperatures.	11/16/00 7/11/01 EO 8/28/01 EO
Antiperspirant and deodorant regulations Adopted amendments to relax a 0% VOC limit to 40% VOC limit for aerosol antiperspirants.	10/26/00
Diesel risk reduction plan Adopted plan to reduce toxic particulate from diesel engines through retrofits on existing engines, tighter standards for new engines, and cleaner diesel fuel.	9/28/00
Conditional rice straw burning regulations Adopted regulations to limit rice straw burning to fields with demonstrated disease rates reducing production by more than 5 percent.	9/28/00
Asbestos from unpaved roads Tightened an existing Air Toxic Control Measure to prohibit the use of rock containing more than 0.25% asbestos on unsurfaced roads.	7/20/00
Aerosol Coatings Approved amendments to replace mass-based VOC limits with reactivity-based limits, add a table of Maximum Incremental Reactivity values, add limits for polyolefin adhesion promoters, prohibit use of certain toxic solvents, and make other minor changes.	6/22/00 5/1/01 EO
Consumer products aerosol adhesives Adopted amendments to delete a 25% VOC limit by 2002, add new VOC limits for six categories of adhesives, prohibit the use of toxic solvents, and add new labeling and reporting requirements.	5/25/00 3/14/01 EO
Automotive care products Approved an Air Toxic Control Measure to eliminate use of perchloroethylene, methylene chloride, and trichloroethylene in automotive products such as brake cleaners and degreasers.	4/27/00 2/28/01 EO
Enhanced vapor recovery Adopted amendments to require the addition of components to reduce spills and leakage, adapt to onboard vapor recovery systems, and continuously monitor system operation and report equipment leaks immediately.	3/23/00 7/25/01 EO
Agricultural burning smoke management Adopted amendments to add marginal burn day designations, require day-specific burn authorizations by districts, and smoke management plans for larger prescribed burn projects.	3/23/00 1/22/01 EO
Urban transit buses Adopted a public transit bus fleet rule and emissions standards for new urban buses that mandates a lower fleet-average NOx emission limit, PM retrofits, lower sulfur fuel use, and purchase of specified percentages of zero emission buses in future years.	1/27/00 2/24/00 11/22/00 EO 5/29/01 EO

Board Action	Hearing Date
Small Off-Road (diesel) Equipment (SORE) Adopted amendments to conform with new federal requirements for lower and engine power-specific emission limits, and for the averaging, banking, and trading of emissions among SORE manufacturers.	1/28/00
CaRFG Phase 3 MTBE phase out Adopted regulations to enable refiners to produce gasoline without MTBE while preserving the emissions benefits of Phase 2 cleaner burning gasoline.	12/9/99 6/16/00 EO
Consumer products – mid-term measures II Adopted a regulation which adds emission limits for 2 new categories and tightens emission limits for 15 categories of consumer products.	10/28/99
Portable fuel cans Adopted a regulation requiring that new portable fuel containers, used to refuel lawn and garden equipment, motorcycles, and watercraft, be spill-proof beginning in 2001.	9/23/99 7/6/00 EO
Clean fuels at service stations Adopted amendments rescinding requirements applicable to SCAB in 1994-1995, modifying the formula for triggering requirements, and allowing the Executive Officer to make adjustments to the numbers of service stations required to provide clean fuels.	7/22/99
Gasoline vapor recovery Adopted amendments to certification and test methods.	6/24/99
Reformulated gasoline oxygenate Adopted amendments rescinding the requirement for wintertime oxygenate in gasoline sold in the Lake Tahoe Air Basin and requiring the statewide labeling of pumps dispensing gasoline containing MTBE.	6/24/99
Marine pleasurecraft Adopted regulations to control emissions from spark-ignition marine engines, specifically, outboard marine engines and personal watercraft.	12/11/98 2/17/00 EO 6/14/00 EO
Voluntary accelerated light duty vehicle retirement Adopted regulation setting standards for voluntary accelerated retirement program.	12/10/98 10/22/99 EO
Off-highway recreational vehicles and engines Approved amendments to allow non-complying vehicles to operate in certain seasons and in certain ORV-designated areas.	12/10/98 10/22/99 EO
On-road motorcycles Amended on-road motorcycle regulations, to lower the tailpipe emission standards for ROG and NOx.	12/10/98
Portable equipment registration program (PERP) Approved amendments to exclude non-dredging equipment operating in OCS areas and equipment emitting hazardous pollutants, include NSPS Part OOO rock crushers, require SCR emission limits and onshore emission offsets from dredging equipment operating in OCS areas, set catalyst emission limits for gasoline engines, and relieve certain retrofitted engines from periodic source testing.	12/10/98
Liquid petroleum gas motor fuel specifications Approved amendment rescinding 5% propene limit and extending 10% limit indefinitely.	12/11/98
Reformulated gasoline Approved amendments to rescind the RVP exemption for fuel with 10% ethanol and allow for oxygen contents up to 3.7% if the Predictive Model weighted emissions to not exceed original standards.	12/11/98
Consumer products Adopted amendments to add new VOC test methods, to modify Method 310 to quantify low vapor pressure VOC (LVP-VOC) constituents, and to exempt LVP-VOC from VOC content limits	11/19/98
Consumer products Approved amendments to extend the 1999 VOC compliance deadline for several aerosol coatings, antiperspirants and deodorants, and other consumer products categories to 2002, to exempt methyl acetate from the VOC definition, and make other minor changes.	11/19/98
Low-emission vehicle program (LEV II) Adopted regulations adding exhaust emission standards for most sport utility vehicles, pick-up trucks and mini-vans, lowering tailpipe standards for cars, further reducing evaporative emission standards, and providing additional means for generating zero-emission vehicle credits.	11/5/98 9/17/99 EO
Off-road engine aftermarket parts Approved implementation of a new program to test and certify aftermarket parts in gasoline and diesel, light-duty through heavy duty, engines used in off-road vehicles and equipment.	11/19/98 10/1/99 EO 7/18/00 EO

Board Action	Hearing Date
Off-road spark ignition engines Adopted new emission standards for small and large spark ignition engines for off-road equipment, a new engine certification program, an in-use compliance testing program, and a three-year phase-in for large LSI.	10/22/98
Gasoline deposit control additives Adopted amendments to decertify pre-RFG additives, tighten the inlet valve deposit limits, add a combustion chamber deposit limit, and modify the test procedures to align with the characteristics of reformulated gasoline formulations.	9/24/98 4/5/99 EO
Stationary source test methods Adopted amendments to stationary source test methods to align better with federal methods.	8/27/98 7/2/99 EO
Locomotive MOA for South Coast Memorandum of agreement (MOA) signed by ARB, U.S. EPA and major railroads to concentrate cleaner locomotives in the South Coast by 2010 and fulfill 1994 ozone SIP commitment.	7/2/98
Reformulated gasoline Approved amendments to rescind the wintertime oxygenate requirement, allow for sulfur content averaging, and make other minor technical amendments.	8/27/98
Gasoline vapor recovery Adopted amendments to certification and test methods to add methods for onboard refueling vapor recovery, airport refuelers, and underground tank interconnections, and make minor changes to existing methods.	5/21/98 8/27/98
Ethylene oxide sterilizers Adopted amendments to the ATCM to streamline source testing requirements, add EtO limits in water effluent from control devices, and make other minor changes.	5/21/98
Chrome platers Adopted amendments to ATCM to harmonize with requirements of federal NESHAP standards for chrome plating and chromic acid anodizing facilities.	5/21/98
On-road heavy-duty vehicles Approved amendments to align on-road heavy duty vehicle engine emission standards with EPA's 2004 standards and align certification, testing, maintenance, and durability requirements with those of U.S. EPA.	4/23/98 2/26/99 EO
Small off-road engines (SORE) Approved amendments to grant a one-year delay in implementation, relaxation of emissions standards for non-handheld engines, emissions durability requirements, averaging/banking/trading, harmonization with the federal diesel engine regulation, and modifications to the production line testing requirements.	3/26/98
Heavy duty vehicle smoke inspection program Adopted amendments to require annual smoke testing, set opacity limits, and exempt new vehicles from testing for the first four years.	12/11/97 3/2/98 EO
Consumer products (hairspray credit program) Adopted standards for the granting of tradable emission reduction credits achieved by sales of hairspray products having VOC contents less than required limits.	11/13/97
Light-duty vehicle off-cycle emissions Adopted standards to control excess emissions from aggressive driving and air conditioner use in light duty vehicles and added two light duty vehicle test methods for certification of new vehicles under these standards.	7/24/97 3/19/98 EO
Consumer products Adopted amendments to add VOC limits to 18 categories of consumer products used in residential and industrial cleaning, automobile maintenance, and commercial poisons.	7/24/97
Enhanced evaporative emissions standards Adopted amendments extending the compliance date for ultra-small volume vehicle manufacturers by one year.	5/22/97
Emission reduction credit program Adopted standards for District establishment of ERC programs including certification, banking, use limitation, and reporting requirements.	5/22/97
Lead as a toxic air contaminant Adopted an amendment to designate inorganic lead as a toxic air contaminant.	4/24/97
Consumer products (hair spray) Adopted amendments to (1) delay a January 1, 1998, compliance deadline to June 1, 1999, (2) require progress plans from manufacturers, and (3) authorize the Executive Officer to require VOC mitigation when granting variances from the June 1, 1999 deadline.	3/27/97

Board Action	Hearing Date
Portable engine registration program (PERP) Adopted standards for (1) the permitting of portable engines by ARB and (2) District recognition and enforcement of permits.	3/27/97
Liquefied petroleum gas Adopted amendments to extend the compliance deadline from January 1, 1997, to January 1, 1999, for the 5% propene limit in liquefied petroleum gas used in motor vehicles.	3/27/97
Onboard diagnostics, phase II Adopted amendments to extend the phase-in of enhanced catalyst monitoring, modify misfire detection requirements, add PVC system and thermostat monitoring requirements, and require manufacturers to sell diagnostic tools and service information to repair shops.	12/12/96
Consumer products Adopted amendments to delay 25% VOC compliance date for aerosol adhesives, clarify portions of the regulation, exempt perchloroethylene from VOC definition, extend the sell-through time to three years, and add perchloroethylene reporting requirements.	11/21/96
Consumer products (test method) Adopted an amendment to add Method 310 for the testing of VOC content in consumer products.	11/21/96
Pollutant transport designation Adopted amendments to modify transport couples from the Broader Sacramento area and add couples to the newly formed Mojave Desert and Salton Sea Air Basins.	11/21/96
Diesel fuel certification test methods Approved amendments specifying the test methods used for quantifying the constituents of diesel fuel.	10/24/96 6/4/97 EO
Wintertime requirements for utility engines & off-highway vehicles Optional hydrocarbon and NOx standards for snow throwers and ice augers, raising CO standard for specialty vehicles under 25hp.	9/26/96
Large off-road diesel Statement of Principles National agreement between ARB, U.S. EPA, and engine manufacturers to reduce emissions from heavy-duty off-road diesel equipment four years earlier than expected in the 1994 SIP for ozone.	9/13/96
Regulatory improvement initiative Rescinded two regulations relating to fuel testing in response to Executive Order W-127-95.	5/30/96
Zero emission vehicles Adopted amendments to eliminate zero emission vehicle quotas between 1998 and 2002, and approved MOUs with seven automobile manufacturers to accelerate release of lower emission "49 state" vehicles.	3/28/96 7/24/96 EO
CaRFG variance requirements Approved amendments to add a per gallon fee on non-compliant gasoline covered by a variance and to made administrative changes in variance processing and extension.	1/25/96 2/5/96 EO 4/2/96 EO
Utility and lawn and garden equipment engines Adopted an amendment to relax the CO standard from 300 to 350 ppm for Class I and II utility engines.	1/25/96
National security exemption of military tactical vehicles Such vehicles would not be required to adhere to exhaust emission standards.	12/14/95
CaRFG regulation amendments Approved amendments to allow for downstream addition of oxygenates and expansion of compliance options for gasoline formulation.	12/14/95
Required additives in gasoline (deposit control additives) Terms, definitions, reporting requirements, and test procedures for compliance are to be clarified.	11/16/95
CaRFG test method amendments Approved amendments to designate new test methods for benzene, aromatic hydrocarbon, olefin, and sulfur content of gasoline.	10/26/95
Motor vehicle inspection and maintenance program Handled by BAR.	10/19/95 by BAR
Antiperspirants and deodorants, consumer products, and aerosol coating products Ethanol exemption for all products, modifications to aerosol special requirements, modifications for regulatory language consistency, modifications to VOC definition.	9/28/95
Low emission vehicle (LEV III) standards Reactivity adjustment factors, introduction of medium-duty ULEVs, window labels, and certification requirements and test procedures for LEVs.	9/28/95

Board Action	Hearing Date
Medium- and heavy-duty gasoline trucks Expedited introduction of ultra-low emission medium-duty vehicles and lower NOx emission standards for heavy-duty gasoline trucks to fulfill a 1994 ozone SIP commitment.	9/1/95
Retrofit emission standards: all vehicle classes to be included in the alternate durability test plan, kit manufacturers to be allowed two years to validate deterioration factors under the test plan, update retrofit procedures allowing manufacturers to disable specific OBDs if justified by law.	7/27/95
Gasoline vapor recovery systems Adopts revised certification and test procedures.	6/29/95
Onboard refueling vapor recovery standards 1998 and subsequent MY engine cars, LD trucks, and MD trucks less than 8500 GVWR.	6/29/1995 4/24/96 EO
Heavy duty vehicle exhaust emission standards for NOx Amendments to standards and test procedures for 1985 and subsequent MY HD engines, amendments to emission control labels, amendments to Useful Life definition and HD engines and in-use vehicle recalls.	6/29/95
Aerosol coatings regulation Adopted regulation to meet California Clean Air Act requirements and a 1994 ozone SIP commitment.	3/23/95
Periodic smoke inspection program Delays start of PSIP from 1995 to 1996.	12/8/94
Onboard diagnostics phase II Amendments to clarify regulation language, ensure maximum effectiveness, and address manufacturer concerns regarding implementation.	12/8/94
Alternative control plan (ACP) for consumer products A voluntary, market-based VOC emissions cap upon a grouping of consumer products, flexible by manufacturer that will minimize overall costs of emission reduction methods and programs.	9/22/94
Diesel fuel certification: new specifications for diesel engine certification fuel, amended oxygen specification for CNG certification fuel, and amended commercial motor vehicle liquefied petroleum gas regulations.	9/22/94
Utility and lawn and garden equipment (UGLE) engines Modification to emission test procedures, ECLs, defects warranty, quality-audit testing, and new engine compliance testing.	7/28/94
Evaporative emissions standards and test procedures Adopted evaporative emissions standards for medium-duty vehicles.	2/10/94
Off-road recreational vehicles Adopted emission control regulations for off-road motorcycles, all-terrain vehicles, go-karts, golf carts, and specialty vehicles.	1/1/94
Perchloroethylene from dry cleaners Adopted measure to control perchloroethylene emissions from dry cleaning operations.	10/1/93
Wintertime oxygenate program Amendments to the control time period for San Luis Obispo County, exemption for small retailers bordering Nevada, flexibility in gasoline delivery time, calibration of ethanol blending equipment, gasoline oxygen content test method.	9/9/93
Onboard diagnostic phase II	7/9/93
Urban transit buses Amended regulation to tighten state NOx and particulate matter (PM) standards for urban transit buses beyond federal standards beginning in 1996.	6/10/93
1-year implementation delay in emission standards for utility engines	4/8/93
Non-ferrous metal melting Adopted Air Toxic Control Measure for emissions of cadmium, arsenic, and nickel from non-ferrous metal melting operations.	1/1/93
Certifications requirements for low emission passenger cars, light-duty trucks & medium duty vehicles	1/14/93
Airborne toxic control measure for emissions of toxic metals from non-ferrous metal melting	12/10/92
Periodic self-inspection program Implemented state law establishing a periodic smoke self-inspection program for fleets operating heavy-duty diesel-powered vehicles.	12/10/92
Notice of general public interest for consumer products	11/30/92
Substitute fuel or clean fuel incorporated test procedures	11/12/92

Board Action	Hearing Date
New vehicle testing using CaRFG Phase 2 gasoline Approved amendments to require the use of CaRFG Phase 2 gasoline in the certification of exhaust emissions in new vehicle testing.	8/13/92
Standards and test procedures for alternative fuel retrofit systems	5/14/92
Alternative motor vehicle fuel certification fuel specification	3/12/92
Heavy-duty off-road diesel engines Adopted the first exhaust emission standards and test procedures for heavy-duty off-road diesel engines beginning in 1996.	1/9/92
Consumer Products - Tier II Adopted Tier II of regulations to reduce emissions from consumer products.	1/9/92
Wintertime oxygen content of gasoline Adopted regulation requiring the addition of oxygenates to gasoline during winter to satisfy federal Clean Air Act mandates for CO nonattainment areas.	12/1/91
CaRFG Phase 2 Adopted CaRFG phase 2 specifications including lowering vapor pressure, reducing the sulfur, olefin, aromatic, and benzene content, and requiring the year-round addition of oxygenates to achieve reductions in ROG, NOx, CO, oxides of sulfur (SOx) and toxics.	11/1/91
Low emissions vehicles amendments revising reactivity adjust factor (RAF) provisions and adopting a RAF for M85 transitional low emission vehicles	11/14/91
Onboard diagnostic, phase II	11/12/91
Onboard diagnostics for light-duty trucks and light & medium-duty motor vehicles	9/12/91
Utility and lawn & garden equipment Adopted first off-road mobile source controls under the California Clean Air Act regulating utility, lawn and garden equipment.	12/1/90
Control for abrasive blasting	11/8/90
Roadside smoke inspections of heavy-duty vehicles Adopted regulations implementing state law requiring a roadside smoke inspection program for heavy-duty vehicles.	11/8/90
Consumer Products Tier I Adopted Tier I of standards to reduce emissions from consumer products.	10/11/90
CaRFG Phase I Adopted CaRFG Phase I reformulated gasoline regulations to phase-out leaded gasoline, reduce vapor pressure, and require deposit control additives.	9/1/90
Low-emission vehicle (LEV) and clean fuels Adopted the landmark LEV/clean fuel regulations which called for the gradual introduction of cleaner cars in California. The regulations also provided a mechanism to ensure the availability of alternative fuels when a certain number of alternative fuel vehicles are sold.	9/1/90
Evaporative emissions from vehicles Modified test procedure to include high temperatures (up to 105 F) and ensure that evaporative emission control systems function properly on hot days.	8/9/90
Dioxins from medical waste incinerators Adopted Airborne Toxic Control Measure to reduce dioxin emissions from medical waste incinerators.	7/1/90
CA Clean Air Act guidance for permitting Approved California Clean Air Act permitting program guidance for new and modified stationary sources in nonattainment areas.	7/1/90
Consumer products BAAQMD	6/14/90
Medium duty vehicle emission standards Adopted three new categories of low emission MDVs, required minimum percentages of production, and established production credit and trading.	6/14/90
Medium-duty vehicles Amended test procedures for medium-duty vehicles to require whole-vehicle testing instead of engine testing. This modification allowed enforcement of medium-duty vehicle standards through testing and recall.	6/14/90
Ethylene oxide sterilizers Adopted Airborne Toxic Control Measure to reduce ethylene oxide emissions from sterilizers and aerators.	5/10/90
Asbestos in serpentine rock Adopted Airborne Toxic Control Measure for asbestos-containing serpentine rock in surfacing applications.	4/1/90

Board Action	Hearing Date
Certification procedure for aftermarket parts	2/8/90
Antiperspirants and deodorants Adopted first consumer products regulation, setting standards for antiperspirants and deodorants.	11/1/89
Residential woodstoves Approved suggested control measure for the control of emissions from residential wood combustion.	11/1/89
On-Board Diagnostic Systems II Adopted regulations to implement the second phase of on-board diagnostic requirements which alert drivers of cars, light-trucks and medium-duty vehicles when the emission control system is not functioning properly.	9/1/89
Cars and light-duty trucks Adopted regulations to reduce ROG and CO emissions from cars and light trucks by 35 percent.	6/1/89
Architectural coatings Approved a suggested control measure to reduce ROG emissions from architectural coatings.	5/1/89
Chrome from cooling towers Adopted Airborne Toxic Control Measure to reduce hexavalent chromium emissions from cooling towers.	3/1/89
Reformulated Diesel Fuel Adopted regulations requiring the use of clean diesel fuel with lower sulfur and aromatic hydrocarbons beginning in 1993.	11/1/88
Vehicle Recall Adopted regulations implementing a recall program which requires auto manufacturers to recall and fix vehicles with inadequate emission control systems (Vehicles are identified through in-use testing conducted by the ARB).	9/1/88
Suggested control measure for oil sumps Approved a suggested control measure to reduce emissions from sumps used in oil production operations.	8/1/88
Chrome platers Adopted Airborne Toxic Control Measure to reduce emissions of hexavalent chromium emissions from chrome plating and chromic acid anodizing facilities.	2/1/88
Suggested control measure for boilers Approved suggested control measure to reduce NOx emissions from industrial, institutional, and commercial boilers, steam generators and process heaters.	9/1/87
Benzene from service stations Adopted Airborne Toxic Control Measure to reduce benzene emissions from retail gasoline service stations (Also known as Phase II vapor recovery).	7/1/87
Agricultural burning guidelines Amended existing guidelines to add provisions addressing wildland vegetation management.	11/1/86
Heavy-duty vehicle certification Amended certification of heavy-duty diesel and gasoline-powered engines and vehicles to align with federal standards.	4/1/86
Cars and light-duty trucks Adopted regulations reducing NOx emissions from passenger cars and light-duty trucks by 40 percent.	4/1/86
Sulfur in diesel fuel Removed exemption for small volume diesel fuel refiners.	6/1/85
On-Board Diagnostics I Adopted regulations requiring the use of on-board diagnostic systems on gasoline-powered vehicles to alert the driver when the emission control system is not functioning properly.	4/1/85
Suggested control measure for wood coatings Approved a suggested control measure to reduce emissions from wood furniture and cabinet coating operations.	3/1/85
Suggested control measure for resin manufacturing Approved a suggested control measure to reduce ROG emissions from resin manufacturing.	1/1/85

**FINAL 2016 AQMP
APPENDIX VI-D**

**GENERAL CONFORMITY
AND TRANSPORTATION CONFORMITY BUDGET**

MARCH 2017

General Conformity Budget

U.S. EPA's General Conformity rule (40 CFR part 93, Subpart B, and 40 CFR Part 51, Subpart W, as adopted by reference in SCAQMD Rule 1901, September 1994) establishes an applicability test for determining which Federal actions are subject to the conformity requirement for the nonattainment or maintenance areas. If a proposed action results in emission increases which are less than the de minimis thresholds for the relevant pollutants or precursors, no conformity determination needs to be made. If the emissions from a proposed action exceed the de minimis threshold for any given pollutant (or precursor) for which the area is designated as maintenance or in nonattainment, the Federal agency must make a positive conformity determination for that pollutant(s) on the basis of one of the criteria listed in 40 CFR 93.158 before the project can proceed. The conformity determination must demonstrate that the emissions from the proposed project are accounted for in the most recently approved SIP. The South Coast Air Basin is designated as an "extreme" nonattainment area for ozone and as a nonattainment area for PM_{2.5}. The general conformity de minimis thresholds are 10 tons per year of VOC and 10 tons per year of NO_x for the "extreme" ozone nonattainment areas; and 70 tons per year of PM_{2.5} and the applicable precursors for the "serious" PM_{2.5} nonattainment areas.

To streamline the review process and to facilitate the conformity determination, two separate VOC and NO_x general conformity budgets were established in the 2012 AQMP, which were 1 ton per day (tpd) of NO_x and 0.2 tpd of VOC, for every year from 2013 to 2030. This set-aside account was revised in the 2016 AQMP based on economic growth projections and the number of potential projects planned to take place in near future years. The SIP set-aside account include three subjects. They are VOC emissions from phase-out of toxics, SIP reserve for potential technology assessments and general conformity. The general conformity account was re-evaluated in the 2016 AQMP based on expected growth and the number of projects that are planned to take place in near future years. The revised set-aside budgets to accommodate projects subject to general conformity determination are: 2.0 tpd of NO_x and 0.5 tpd of VOC each year from 2017 to 2030, and then reduced to 0.5 tpd of NO_x and 0.2 tpd of VOC in 2031. Emissions from general conformity projects will be tracked by the District tracking system and be debited from this set-aside on a first-come-first-serve basis. Any unused portion cannot be carried forward to the following year. For those projects that come in after the conformity budget is exhausted, the corresponding federal agency will have to go through the regular general conformity determination process to demonstrate that these emissions are accounted for in the SIP. The set-aside accounts will be revised and updated via future AQMP/SIP revisions. Details of this set-aside account and the list of projects that were accommodated under this set-aside account are provided in Appendix III.

Transportation Conformity Budget

Background

Section 176(c) of the Federal Clean Air Act (CAA) establishes transportation conformity requirements which are intended to ensure that transportation activities do not interfere with air quality progress. The CAA requires that transportation plans, programs, and projects that obtain federal funds or approvals be consistent with, or *conform to* applicable state implementation plans (SIP) before being approved by a Metropolitan Planning Organization (MPO). Conformity to the SIP means that proposed transportation activities must not:

- (1) Cause or contribute to any new violation of any standard,
- (2) Increase the frequency or severity of any existing violation of any standard in any area, or
- (3) Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

A SIP analyzes the region's total emissions inventory from all sources necessary to demonstrate reasonable further progress (RFP), attainment, or maintenance of the National Ambient Air Quality Standards (NAAQS). The portion of the total emissions inventory from on-road highway and transit vehicles which provides RFP and attainment of the NAAQS in these analyses becomes the "motor vehicle emissions budget."¹ Motor vehicle emissions budgets are the mechanism for ensuring that transportation planning activities conform to the SIP. Budgets are set for each criteria pollutant or its precursors that the area does not attain and it is set for each RFP milestone year and the attainment year.

Requirements for Demonstrating Conformity

The Southern California Association of Governments (SCAG), the MPO in Southern California, prepares a long range regional transportation plan (RTP) at least every four years and a short range funding program, or regional transportation improvement program (RTIP), every two years. Contents of both the RTP and RTIP are specified in federal transportation law found at Titles 23 and 49 of the federal code of regulations and applicable sections of state transportation planning law.

Before adopting the RTP/RTIP, SCAG prepares a regional emissions analysis using the proposed plan and program as specified in the federal conformity regulation and compares those emissions to the emission budgets in the SIP. The MPO may determine the RTP/RTIP conforms if the emissions from the proposed actions are less than the emissions budgets in the SIP. The conformity determination also signifies that

¹ Federal transportation conformity regulations are found in 40 CFR Part 51, subpart T – Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved Under Title 23 U.S.C. of the Federal Transit Laws. Part 93, subpart A of this chapter was revised by the EPA in the August 15, 1997 Federal Register.

the MPO has met other transportation conformity requirements such as interagency consultation and financial constraint.

Conformity Budgets in the 2016 AQMP

The 2016 AQMP establishes transportation conformity emissions budgets for ozone in the South Coast Air Basin and the Coachella Valley. The AQMP also establishes conformity budgets and emissions trading mechanisms for both the annual and 24-hour PM_{2.5} nonattainment areas in the South Coast Air Basin. The emissions budgets presented below use EMFAC2014 with SCAG modeled VMT and speed distributions. The VMT and speed distribution data are from the 2016 RTP/SCS adopted by SCAG in April 2016. Air Resources Board (ARB) staff released a revised emission rate program, EMFAC2014, which updates the emission rates and planning assumptions used in calculating conformity budgets. EMFAC2014 was approved for use in SIPs and transportation conformity by U.S. EPA on December 14, 2015.

Calculation Methodology

All the budgets in this plan have been constructed in consultation with SCAG and U.S. EPA using emissions for a summer average day consistent with the ozone attainment and progress demonstrations, and average annual emissions for the PM_{2.5} budgets consistent with the progress and attainment demonstrations for the annual and 24-hour PM_{2.5} standards, using the following method²:

- 1) Calculate the on-road motor vehicle emissions totals for the appropriate pollutants (VOC, NO_x and PM_{2.5}) from EMFAC2014.
- 2) For the PM_{2.5} budgets, obtain the re-entrained paved road dust, re-entrained unpaved road dust and road construction dust emissions from the planning inventory which can be found in the Appendix III of the 2016 AQMP.
- 3) Sum each pollutant and round each total up to the nearest ton for VOC, NO_x and PM_{2.5}.

Tables VI-D-1 through VI-D-4 below contain the emissions budgets for the South Coast Air Basin and the Coachella Valley.

² ARB and SCAQMD use the same vehicle activity data. The minor variations in emissions result from slight differences in the methodology used to allocate SCAG activity by the vehicle classes used in the EMFAC model.

Table VI-D-1. Transportation Conformity Budgets* for the 2008 8-hour Ozone standard in the South Coast Air Basin

South Coast Air Basin (tons per summer day)	2018		2021		2024		2027		2030		2031	
	VOC	NOx	VOC	NOx	VOC	NOx	VOC	NOx	VOC	NOx	VOC	NOx
Baseline Emissions	92.97	168.93	75.13	127.58	64.27	84.79	57.22	74.13	51.49	67.48	49.49	65.73
Total	92.97	168.93	75.13	127.58	64.27	84.79	57.22	74.13	51.49	67.48	49.49	65.73
Conformity Budget	93	169	76	128	65	85	58	75	52	68	50	66

*Budgets calculated with EMFAC2014 using SCAG 2016 RTP activity. Budgets are rounded up to the nearest ton.

Table VI-D-2. Transportation Conformity Budgets* for the 2008 8-hour Ozone standard in the Coachella Valley

Coachella Valley (tons per summer day)	2018		2021		2024		2026	
	VOC	NOx	VOC	NOx	VOC	NOx	VOC	NOx
Baseline Emissions	4.24	9.98	3.46	7.47	3.10	4.37	2.93	4.12
Total	4.24	9.98	3.46	7.47	3.10	4.37	2.93	4.12
Conformity Budget	5	10	4	8	4	5	3	5

*Budgets calculated with EMFAC2014 using SCAG 2016 RTP activity. Budgets are rounded up to the nearest ton.

Table VI-D-3. Transportation Conformity Budgets* for the 2012 Annual PM2.5 standard in the South Coast Air Basin

South Coast Air Basin Tons per Annual Day	2019			2022			2025			2028		
	VOC	NOx	PM2.5	VOC	NOx	PM2.5	VOC	NOx	PM2.5	VOC	NOx	PM2.5
Baseline Emissions: Exhaust, Tire and Brake Wear	82.52	168.13	10.82	68.22	126.26	10.25	58.51	86.26	10.05	52.68	76.28	10.00
Paved Road Dust			8.15			8.38			8.53			8.63
Unpaved Road Dust			0.59			0.59			0.59			0.58
Road Construction Dust			0.25			0.27			0.28			0.29
Total	82.52	168.13	19.81	68.22	126.26	19.48	58.51	86.26	19.44	52.68	76.28	19.50
Conformity Budget	83	169	20	69	127	20	59	87	20	53	77	20

*Budgets calculated with EMFAC2014 using SCAG 2016 RTP activity. Budgets are rounded up to the nearest ton. **Bold** figures indicate a budget number. Paved, unpaved and road construction dust are from the planning inventory in the Appendix III of the 2016 AQMP

Emissions Trading Mechanism for the 1997 Annual PM2.5 Standard

This Plan continues the emissions trading mechanism established by the 2007 AQMP as revised in 2011. That trading mechanism established per Section 93.124 of the conformity regulations allow transportation

conformity analyses using these budgets in analysis years beyond 2014, to use future decreases in NOx emissions from on-road mobile sources to offset any on-road increases in PM2.5 using a NOx:PM2.5 ratio of 10:1. This trading mechanism will only be used, if needed, for conformity analyses for years after 2014. To ensure that the trading mechanism does not impact the ability to meet the NOx budget, the NOx emission reductions available to supplement the PM2.5 budget shall only be those remaining after the 2014 NOx budget has been met. Clear documentation of the calculations used in the trading should be included in the conformity analysis. This trading mechanism was approved by U.S. EPA on November 9, 2011. (See 76 Fed. Register 69928).

Table VI-D-4. Transportation Conformity Budgets* for the 2006 24-hour PM2.5 standard in the South Coast Air Basin

South Coast Air Basin Tons per Annual Day	2017			2019			2020		
	ROG	NOx	PM2.5	ROG	NOx	PM2.5	ROG	NOx	PM2.5
Baseline Emissions: Exhaust, Tire and Brake Wear	98.55	199.09	11.19	82.52	168.13	10.82	76.27	151.64	10.52
Paved Road Dust			8.02			8.15			8.22
Unpaved Road Dust			0.59			0.59			0.59
Road Construction Dust			0.23			0.25			0.26
Total	98.55	199.09	20.03	82.52	168.13	19.81	76.27	151.64	19.59
Conformity Budget	99	200	21	83	169	20	77	152	20

*Budgets calculated with EMFAC2014 using SCAG 2016 RTP activity. Budgets are rounded up to the nearest ton. **Bold** figures indicate a budget number. Paved, unpaved and road construction dust are from the planning inventory in the Appendix III of the 2016 AQMP

Emissions Trading Mechanism for the 24-hour PM2.5 Standard

The emissions trading mechanism for the 24-hour standard is not being revised in this plan from what was submitted in the Final 2012 AQMP. The trading mechanism in the 2012 AQMP established the approximate weighting ratios of the precursor emissions for 24-hour PM2.5 formation in equivalent tons per day of NOx as: VOC: 0.3 (reducing one ton of VOC is equivalent to reducing 0.3 ton of NOx), NOx: 1.0, and PM2.5: 14.8 (i.e., reducing one ton of PM2.5 is equivalent to reducing 14.8 tons of NOx). This mechanism allows emissions below the budget for one pollutant to be used to supplement another pollutant exceeding the budget based on the ratios established above. Clear documentation of the calculations used in the trading should be included in the conformity analysis.

As outlined in the 2012 AQMP, this trading approach is consistent with what U.S. EPA approved in 2011, and uses the basic trading ratios defined by the 24-hour PM2.5 regional modeling attainment

demonstration. Briefly, NOx emissions reductions are scaled to the reduction of Basin ammonium nitrate (including water bonding). Similarly, reductions of VOC are scaled to changes in the organic carbon species while reductions in directly emitted particulates are scaled to the projected changes in the elemental carbon and “others” portions of the PM2.5 mass. Table 6-7 from the 2012 AQMP is reproduced below as Table VI-D-5 and summarizes the trading equivalencies in TPD.

Table VI-D-5. Trading Equivalencies for 24-hour PM2.5 Motor Vehicle Emissions Budgets*.

One Ton of:	Is Equivalent in terms of PM2.5 Formation to this many tons of:		
	NOx	VOC	PM2.5
NOx	1	3.151	0.067
VOC	0.317	1	0.021
PM2.5	14.833	46.792	1

*Table is from Table 6-7 in the 2012 AQMP

An example of how the trading mechanism would work follows; if the amount of NOx calculated exceeds the budget by 0.75 TPD, then that overage could be offset by trading 2.36 TPD of excess VOC emissions reductions (e.g., 3.151 VOC/1 ton of NOx × 0.75 TPD NOx required = 2.36 TPD VOC). In this case, “excess” VOC emission reductions would be those beyond what are needed to meet the VOC budget. Similarly 0.050 TPD of directly emitted PM2.5 emissions below the budgeted amount could also be traded to the NOx emissions category and subtracted from the NOx total to allow NOx to meet its budget. In other words, the trading mechanism can be multi-pollutant and multi-directional. It should be noted that the trading calculations are performed prior to the final rounding to demonstrate conformity with the budgets.

**FINAL 2016 AQMP
APPENDIX VI-E**

VMT OFFSET DEMONSTRATION

MARCH 2017

Background

In 1979, U.S. EPA established a primary health-based national ambient air quality standard (NAAQS) for ozone at 0.12 parts per million (ppm) averaged over a 1-hour period. See 44 Fed.Reg. 8220 (February 9, 1979). The Clean Air Act (CAA), as amended in 1990, classified areas that had not yet attained that standard, based on the severity of their ozone problem, ranging from “marginal” to “extreme.” “Extreme” areas were provided the most time to attain, until November 15, 2010, but were also subject to the most stringent requirements. In particular, “severe” and “extreme” areas were subject to CAA Section 182(d)(1)(A), which requires state implementation plans to adopt “specific enforceable transportation control strategies and transportation control measures to offset any growth in vehicle miles traveled (VMT) or numbers of vehicle trips in such area...” U.S. EPA designated the South Coast Air Basin as “extreme” on November 6, 1991 (56 Fed.Reg. 56694), and thus the South Coast Air Basin was subject to this requirement. The U.S. EPA has historically interpreted this provision of the CAA (now called “VMT emissions offset requirement”) to allow areas to meet the requirement by demonstrating that emissions from motor vehicles decline each year through the attainment year. See, e.g., 57 Fed.Reg. 13498, at 13521–13523 (April 16, 1992).

In 1997, U.S. EPA replaced the 1-hour ozone standard with an 8-hour standard of 0.08 ppm [62 Fed.Reg. 38856 (July 18, 1997)]. The U.S. EPA promulgated rules implementing this standard with the “Phase 1” rule issued on April 30, 2004 (69 Fed.Reg. 23951), and the Phase 2 rule issued on November 29, 2005 (70 Fed. Reg. 71612). These implementation rules required that areas classified as “severe” or “extreme” under the 1997 8-hour standard would also be subject to the VMT offset requirement.

2008 Ozone Standard

In 2008, U.S. EPA revised the 8-hour ozone NAAQS to a level of 0.075 parts per million. (73 Fed.Reg 16436, March 27, 2008). The South Coast Air Basin was subsequently designated non-attainment for the 2008 standard on May 21, 2012 and classified as an extreme non-attainment area (77 Fed.Reg 30087), making the South Coast Air Basin subject to the requirements of CAA Section 182(d)(1)(A) for the 2008 8-hour ozone NAAQS.

U.S. EPA Guidance ON VMT Offset Requirement

In August 2012, U.S. EPA issued guidance titled “Implementing Clean Air Act Section 182(d)(1)(A): Transportation Control Measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Travelled.” Among other things, U.S. EPA’s guidance points out that subsequent court decisions regarding previous VMT offset demonstrations omitted any reference to “transportation control strategies” (TCS). TCSs, which are not defined in the CAA or U.S. EPA regulation, are eligible to offset growth in emissions due to growth in VMT. The U.S. EPA’s new guidance indicates that technology improvements such as vehicle technology improvements, motor vehicle fuels, and other control strategies that are transportation-related could be used to offset increases in emissions due to

VMT. U.S. EPA's revised guidance sets forth a method of calculating the actual growth in emissions due to growth in VMT. Essentially, the state compares projected attainment year emissions assuming no new control measures and no VMT growth with projected actual attainment year emissions (including new control measures and VMT growth). If the latter number is smaller than the former, no additional transportation control measures or strategies are required. If additional transportation control measures and transportation control strategies are required, they should be clearly identified and distinguished from the measures included in the initial calculations for the base year and the three scenarios identified for the attainment year.

In addition, the guidance recommends that the base year used in the demonstration is the base year used in the attainment demonstration for the ozone standard. To address U.S. EPA's guidance, 2012 is used in this demonstration as the base year for the 2008 8-hour standard and for the 1979 1-hour standard. Consistent with U.S. EPA guidance, emissions of VOC are used to determine compliance with the VMT offset requirement.

Transportation Control Strategies and Transportation Control Measures

The Clean Air Act [CAA §182(d)(1)(A)] differentiates between transportation control strategies (TCS) and transportation control measures (TCM), and thus provides for a wide range of strategies and measures as options to offset growth in emissions from VMT growth. In addition, the example TCMs listed in Section 108(f)(1)(A) of the CAA include measures that reduce emissions by reducing VMT, reducing tailpipe emissions, and removing dirtier vehicles from the fleet. California's motor vehicle control program includes a variety of strategies and measures including new engine standards and in-use programs (e.g., smog check, vehicle scrap, fleet rules, idling restrictions). TCMs developed by SCAG provide additional reductions. In addition, SCAG prepares a report every two years that reports on the status of implementation of TCMs.

Based on the provisions in Section 182(d)(1)(A) and the clarifications provided in the U.S. EPA guidance, any combination of transportation control strategies and TCMs may be used to meet the requirement to offset growth in emissions resulting from VMT growth. Since 1990 when this requirement was established, California has adopted more than sufficient enforceable transportation strategies and measures to meet the requirement to offset the growth in emissions from VMT growth. For the 2008 8-hour standard offset demonstration, 2012 controls are used as the base case control level since 2012 is the base year of the SIP.

A list of the State's mobile source control program adopted since 1990 is provided in Attachment VI-E-1. In addition, a list of TCMs implemented in the South Coast Air Basin is provided in Attachment VI-E-2.

Emissions Due to VMT Growth

As discussed above, the U.S. EPA guidance provides a recommended calculation methodology to determine if sufficient transportation control strategies and TCMs have been adopted and implemented to offset the growth in emissions due solely to growth in VMT. As such, any increase in emissions solely from VMT increases in the future attainment year from the base year (assuming that there are no further motor vehicle control programs implemented after the base year) would need to be offset. In addition, a calculation is needed to show the emission levels if VMT had remained constant from the base year to the future attainment year. As discussed earlier, a comparison of the projected attainment year emissions assuming no new control measures and no VMT growth with projected actual attainment year emissions (including new control measures and VMT growth) is made. If the latter number is smaller than the former, no additional transportation control measures or strategies would be required.

Methodology

The following calculations are based on the U.S. EPA guidance recommended calculation methodology. As shown for the 8-hour ozone standard, 2012 is the base year used for the attainment demonstration and 2031 is the attainment year. For the 1-hour ozone national ambient air quality standard demonstration, 2012 serves as the base year and 2022 is the projected attainment year.

Analysis Tool

This analysis uses California's approved motor vehicle emissions model, EMFAC2014.

The EMFAC model estimates the emissions from two combustion processes: running exhaust and start exhaust, and four evaporative processes: hot soak, running losses, diurnal, and resting losses.

Emissions from running exhaust, start exhaust, hot soak, and running losses are a function of how much a vehicle is driven. Emissions from these processes are directly related to VMT, trips, and vehicle starts. These processes are included in the calculation of the emissions levels used in the VMT offset demonstration. Emissions from resting loss and diurnal loss processes are not related to VMT, trips or vehicle starts and are not included in the analysis because these emissions occur regardless if the vehicle makes a trip (i.e., a start) or not.

EMFAC combines trip-based VMT from the regional transportation planning agencies, starts data based on household travel surveys, and vehicle population data from the Department of Motor Vehicles with corresponding emission rates to calculate emissions.¹

¹ More information on data sources can be found in the EMFAC technical document which is located on the web at: <http://www.arb.ca.gov/msei/emfac2011-technical-documentation-final-updated-0712-v03.pdf>

With the EMFAC model, the calculation of emissions growth and whether it is offset is simplified to a comparison of future year emissions with “no growth” in VMT or new control strategies to future emissions with VMT growth and new control strategies. This follows U.S. EPA’s 2012 guidance and is consistent with the court’s interpretation of CAA section 182(d)(1)(A).

The following text and tables show the steps taken for the analysis of the emission calculations.

Analysis Using 2012 as the Base Year for the 2008 8-hour Ozone Standard with Attainment Year of 2031.

Step 1. Provide the emissions level for the base year.

The following table shows the VOC emissions, VMT, starts, and vehicle population for calendar year 2012 from the EMFAC2014 model.

Summary of 2012 Base Year – South Coast Air Basin

	VMT (thousand miles/day)	Starts (thousands/day)	Vehicle Population (thousands)	VOC Emissions* (tons/day)
2012 Base Year	380,248	69,789	11,123	138

* Does not include diurnal or resting loss emissions.

Step 2. Calculate three emissions levels in the attainment year.

For the attainment year,

- (1) Calculate emissions level with the motor vehicle control program frozen at 2012 levels and with projected VMT, starts, and vehicle population for the attainment year. This represents what the emissions in the attainment year would have been if transportation control strategies and TCMs had not been implemented after 2012;
- (2) Calculate emissions level with the motor vehicle control program frozen at 2012 levels and assuming VMT, starts, and vehicle population do not increase from 2012 levels; and
- (3) Calculate an emissions level that represents emissions with full implementation of all transportation control strategies and TCMs since 2012 and which represents the projected future year baseline emissions inventory using the VMT, starts, and vehicle population for the attainment year.

Calculation 1. Calculate the emissions in the attainment year assuming no new measures since the base year, and including growth in VMT, starts, and vehicle population.

To perform this calculation, California Air Resources Board (CARB) staff identified the on-road motor vehicle control programs adopted since 2012 and adjusted EMFAC2014 to reflect the VOC emissions levels in 2031 without the benefits of the post-2012 control programs. The projected VOC emissions are 64 tons/day.

Calculation 2. Calculate the emissions with no growth in VMT, starts, or vehicle population.

In this calculation, the VOC emission levels in 2031 without benefit of the post-2012 control program are calculated. EMFAC2014 allows a user to input different VMT, starts, and vehicle population than the default values. For this calculation, EMFAC2014 was run without the benefit of the post-2012 control program for the year 2031 with the 2012 level of VMT of 380,247,973 miles per day, the 2012 level of starts at 69,788,908 per day, and the 2012 level of population at 11,122,867 vehicles. The VOC emissions associated with 2012 VMT, starts, and vehicle population in calendar year 2031 are 61 tons/day.

Calculation 3. Calculate emission reductions with full Implementation of Transportation Control Strategies & TCMs.

The VOC emission levels for 2031 assuming the benefits of the post-2012 motor vehicle control program and the projected VMT, starts, and vehicle population in 2031 are calculated using EMFAC2014. The projected VOC emissions level is 40 tons/day. VOC emissions for the three sets of calculations described above are summarized in the following table.

Summary of 2031 Attainment Year Emissions Levels in the South Coast Air Basin

	Description	VMT* (miles/day, thousands)	Starts (thousands/day)	Vehicle Population (thousands)	VOC Emissions** (tons/day)
(1)	Emissions with Motor Vehicle Control Program Frozen at 2012 Levels. (VMT, starts and vehicle population at 2031 levels.)	408,964	78,894	12,742	64
(2)	Emissions with Motor Vehicle Control Program Frozen at 2012 Levels. (VMT, starts, and vehicle population at 2012 levels)	380,248	69,789	11,123	61
(3)	Emissions with Full Motor Vehicle Control Program in Place (VMT, starts and vehicle population at 2031 levels)	408,964	78,894	12,742	40

* CY 2031 VMT based on the SCAG 2016 RTP

** Does not include diurnal or resting loss emissions.

As provided in the U.S. EPA guidance, to determine compliance with the provisions of Section 182(d)(1)(A) of the federal Clean Air Act, the emissions levels calculated in Calculation 3 should be less than the emissions levels in Calculation 2:

$$\text{VOC: } 40 < 61 \text{ tons/day}$$

Analysis Using 2012 as the Base Year for the 1-hour Ozone Standard with Attainment Year of 2022.

Step 1. Provide the emissions levels for the base year.

The following table shows the VOC emissions, VMT, starts, and vehicle population for calendar year 2012 from the EMFAC2014 model.

Summary of 2012 Base Year

	VMT (thousand miles/day)	Starts (thousands/ day)	Vehicle Population (thousands)	VOC Emissions (tons/day)
2012 Base Year	380,248	69,789	11,123	138

Step 2. Calculate three emissions levels in the attainment year.

For the attainment year,

- (1) Calculate emissions level with the motor vehicle control program frozen at 2012 levels and with projected VMT, starts, and vehicle population for the attainment year. This represents what the emissions in the attainment year would have been if transportation control strategies and TCMs had not been implemented after 2012;
- (2) Calculate emissions level with the motor vehicle control program frozen at 2012 levels and assuming VMT, starts, and vehicle population do not increase from 2012 levels; and
- (3) Calculate an emissions level that represents emissions with full implementation of all transportation control strategies and TCMs since 2012 and which represents the projected future year baseline emissions inventory using the VMT, starts, and vehicle population for the attainment year.

Calculation 1. Calculate the emissions in the attainment year assuming no new measures since the base year, and including growth in VMT, starts, and vehicle population.

To perform this calculation, staff identified the on-road motor vehicle control programs adopted since 2012 and adjusted the EMFAC2014 model to reflect the VOC emissions levels in 2022 without the benefits of the post-2012 control programs. The projected VOC emissions are 83 tons per day.

Calculation 2. Calculate the emissions with no growth in VMT, starts, or vehicle population.

EMFAC2011 allows the user to input different VMT, starts, and vehicle population than default. As such, for this calculation, the EMFAC2011 model was run without the benefit of the post-2012 control program for calendar year 2022 with the 2012 level of VMT of 404,315,909 miles per day, the 2012 level of starts at 69,788,908 per day, and the 2012 level of population at 11,122,867. The VOC emissions associated with 2012 VMT, starts, and vehicle population are 79 tons/day.

Calculation 3. Calculate emission reductions with full implementation of Transportation Control Strategies and TCMs.

The VOC emission levels for 2022 assuming the benefits of the post-2012 motor vehicle control program and the projected VMT, starts, and vehicle population in 2022 are calculated using EMFAC2014. The projected VOC emissions level is 58 tons/day. VOC emissions for the three sets of calculations described above are provided in the following table.

Summary of 2022 Attainment Year Emissions Levels

	Description	VMT* (miles/day, thousands)	Starts (thousands/ day)	Vehicle Population (thousands)	VOC Emissions** (tons/day)
(1)	Emissions with Motor Vehicle Control Program Frozen at 2012 Levels. (VMT, starts, and vehicle population at 2022 levels.)	404,316	72,244	11,603	83
(2)	Emissions with Motor Vehicle Control Program Frozen at 2012 Levels. (VMT, starts, and vehicle population at 2012 Levels)	380,248	69,789	11,123	79
(3)	Emissions with Full Motor Vehicle Control Program in Place (VMT, starts, and vehicle population at 2022 Levels)	404,316	72,244	11,603	58

* CY 2022 VMT based on SCAG 2016 Regional Transportation Plan/SCS

** Does not include resting or diurnal loss emissions.

As provided in the U.S. EPA guidance, to determine compliance with the provisions of Section 182(d)(1)(A) of the federal Clean Air Act, the emissions levels calculated in Calculation 3 should be less than the emissions levels in Calculation 2:

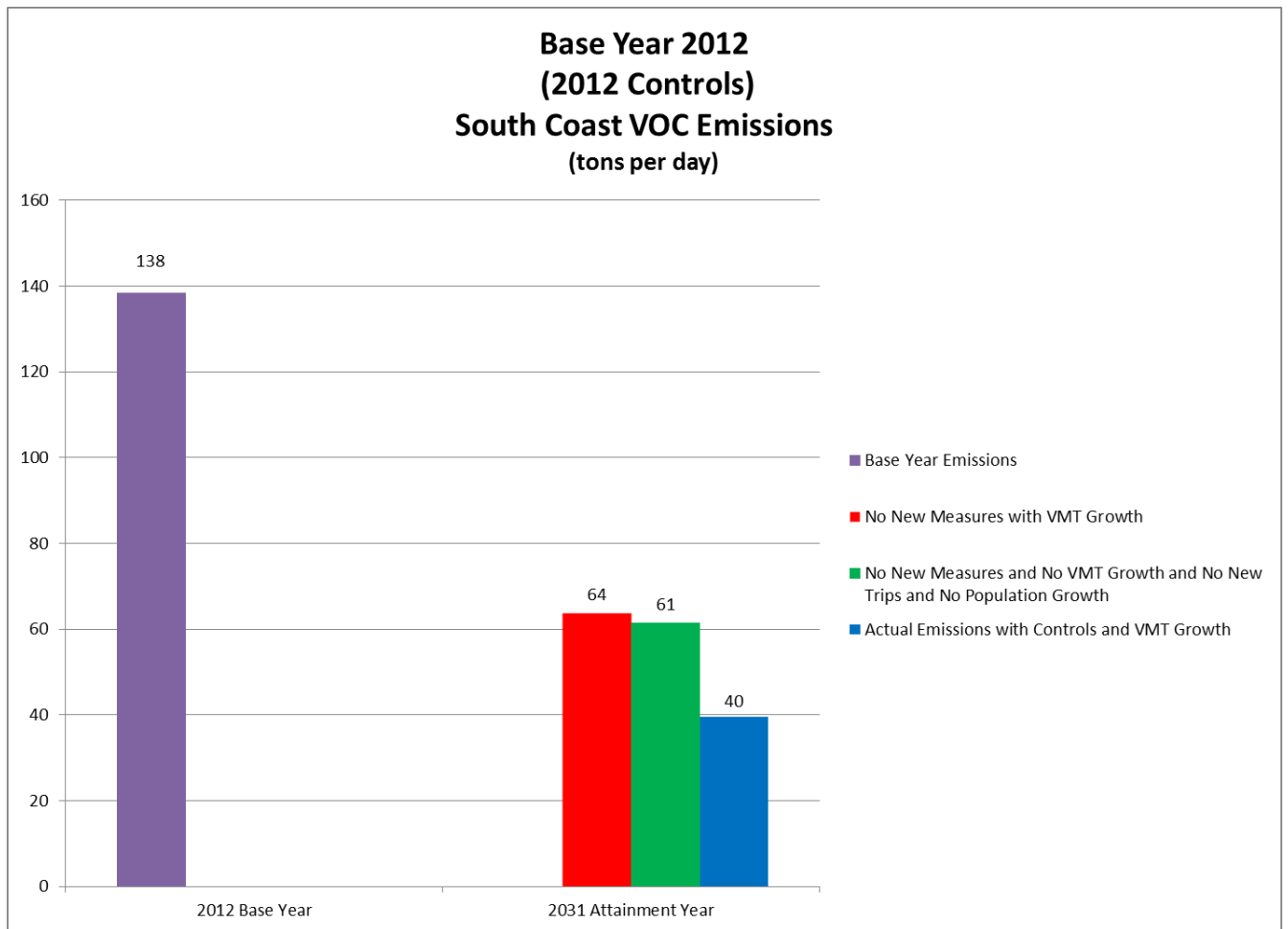
VOC: 58 < 79 tons/day

Summary

The previous sections provide an analysis to demonstrate compliance with the provisions of Section 182(d)(1)(A) of the federal Clean Air Act. To further illustrate the demonstration, Figure VI-E-1 shows graphically the emissions benefits of the motor vehicle control programs in offsetting VOC emissions due to increased VMT, starts, and vehicle population in the South Coast Air Basin for the 2008 8-hour ozone standard (2012 base year). The left bar (in purple) shows the emissions in the base year with base year controls. The three bars on the right show the emissions levels in the attainment year for the three calculations identified above: the red bar shows attainment year emissions with base year controls and attainment year VMT, starts, and vehicle population, the green bar shows attainment year emissions with base year controls, VMT, starts, and vehicle population, and the blue bar shows attainment year emissions with attainment year controls, VMT, starts, and vehicle population. Based on the U.S. EPA guidance, if the actual emission projected with controls and VMT growth (blue bar) is lower than the projected emission with no new measure, no VMT growth, no new trips and no population growth (green bar), then the identified transportation control strategies and TCMs are sufficient to offset the growth in emissions.

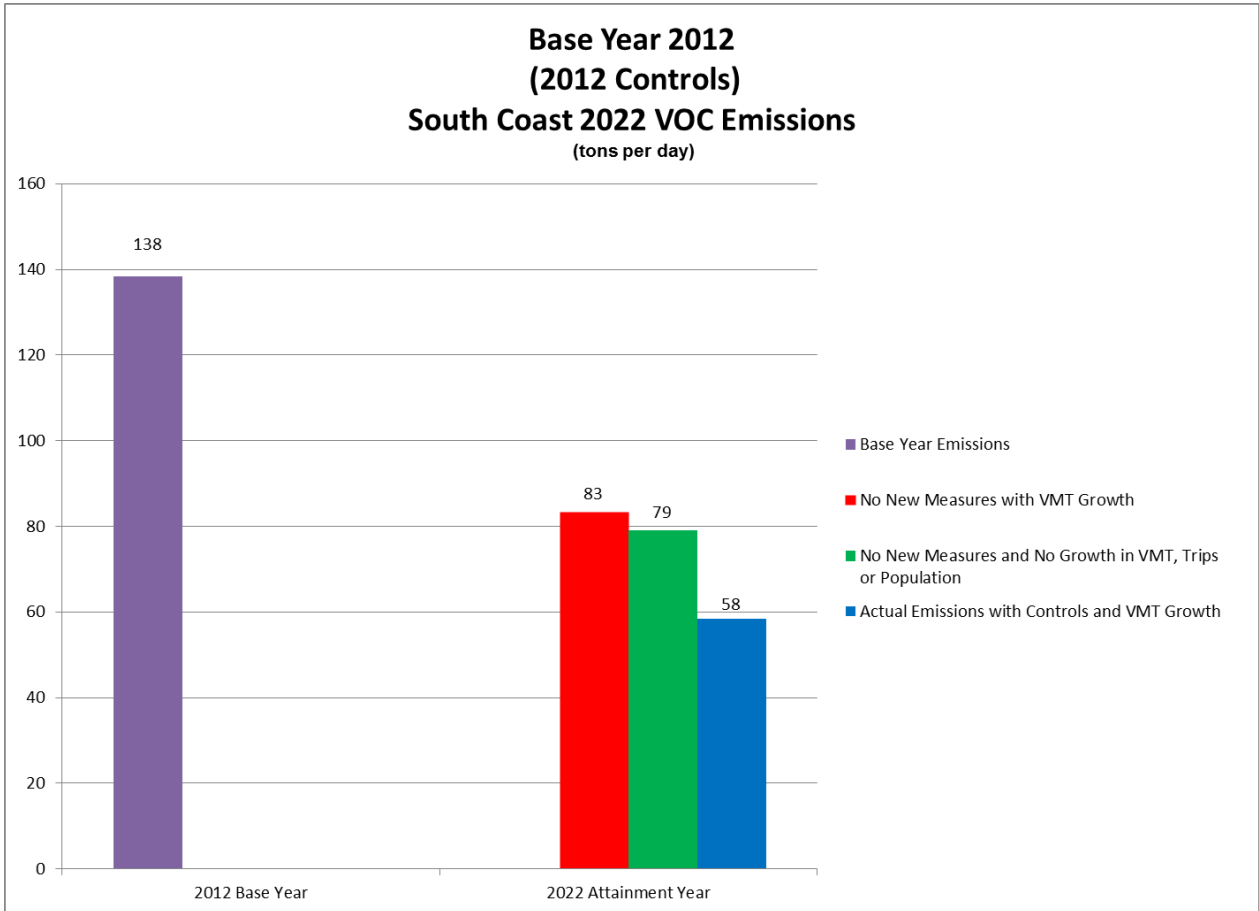
Figure VI-E-2 below shows graphically the emissions benefits of the motor vehicle control programs in offsetting VOC emissions due to increased VMT, starts, and vehicle population in the South Coast Air Basin for the 1-hour ozone standard (1990 base year). The left bar (in purple) shows the emissions in the base year with base year controls. The three bars on the right show the emissions levels in the attainment year for the three calculations identified above: the red bar shows attainment year emissions with base year controls and attainment year VMT, starts, and vehicle population, the green bar shows attainment year emissions with base year controls, VMT, starts, and vehicle population, and the blue bar shows attainment year emissions with attainment year controls, VMT, starts, and vehicle population. Based on the U.S. EPA guidance, if the blue bar is lower than the green bar, then the identified transportation control strategies and TCMs are sufficient to offset the growth in emissions.

Figure VI-E-1. VOC Emissions* from On-Road Mobile Sources in the South Coast Air Basin (2012 Base Year)



* Does not include resting or diurnal loss emissions

Figure VI-E-2. VOC Emissions* from On-Road Mobile Sources in the South Coast Air Basin (2012 Base Year)



* Does not include resting or diurnal loss emissions

Attachment VI-E-1

**State of California Motor Vehicle Control Program (1990–Present) Transportation Control Strategies
Adopted by the California Air Resources Board since 1990**

Measure	Hearing Date	Category
California Reformulated Gasoline (CaRFG), Phase I. T 13, CCR, 2251.5	9/27/1990	Fuels
California Reformulated Gasoline, Phase II. T 13, CCR, 2250, 2255.1, 2252, 2260 - 2272, 2295	11/21/1991	Fuels
Wintertime Gasoline Program. T 13, CCR, 2258, 2298, 2251.5, 2296	11/21/1991	Fuels
Wintertime Oxygenate Program. T 13, CCR, 2258, 2251.5, 2263(b), 2267, 2298, 2259, 2283, 2293.5	9/9/1993	Fuels
Diesel Fuel Certification Test Methods. T 13, CCR, 1956.8(b), 1960.1(k), 2281(c), 2282(b), (c) and (g)	10/24/1996	Fuels
Diesel Fuel Test Methods. T 13, CCR, 1956.8(b), 1960.1(k), 2281(c), 2282(b), (c) and (g)	10/24/1996	Fuels
Low Emission Vehicles Standards (LEV 2) and Compliance Assurance Program (CAP 2000). T 13, CCR, 1961 & 1962 (both new); 1900, 1960.1, 1965, 1968.1, 1976, 1978, 2037, 2038, 2062, 2101, 2106, 2107, 2110, 2112, 2114, 2119, 2130, 2137-2140, 2143-2148	11/5/1998	On-road
Exhaust Standards for (On-Road) Motorcycles. T 13, CCR, 1900, 1958, 1965	12/10/1998	On-road
Light-and Medium Duty Low Emission Vehicle Alignment with Federal Standards. Exhaust Emission Standards for Heavy Duty Gas Engines. T 13, CCR, 1956.8 & 1961	12/7/2000	On-road
Heavy Duty Diesel Engine Standards for 2007 and Later. T 13, CCR, 1956.8 and incorporated test procedures	10/25/2001	On-road
Low Emission Vehicle Regulations. T 13, CCR, 1960.1, 1960.5, 1961, 1962 and incorporate test procedures and guidelines	11/15/2001	On-road
CaRFG Phase 3 Amendments. T 13, CCR, 2261, 2262, 2262.4, 2262.5, 2262.6, 2262.9, 2266.5, 2269, 2271, 2272, 2265, and 2296	7/25/2002	Fuels
Adoption of Minor Amendments to the Low-Emission Vehicle Regulations. T 13, CCR, 1961, 1965, 1978, and the incorporate test procedures	12/12/2002	On-road
Incorporation of Federal Exhaust Emission Standards for 2008 and Later Model-Year Heavy Duty Gasoline Engines and the Adoption of Minor Amendments to the Low-Emission Vehicle Regulations. T 13, CCR, 1956.8 and documents incorporated by reference	12/12/2002	On-road
CaRFG Phase 3 Amendments (specifications for De Minimis Levels of Oxygenates and MTBE Phase Out Issues). T 13, CCR, 2261, 2262.6, 2263, 2266.5, 2272, 2273, 2260, 2273.5	12/12/2002	Fuels
Specifications for Motor Vehicle Diesel Fuel. T 13 & T17, CCR, 1961, 2281, 2282, 2701, 2284, 2285, 93114, and incorporated test procedures	7/24/2003	Fuel
California Reformulated Gasoline, Phase 3. T 13, CCR, 2260, 2262, 2262.4, 2262.5, 2262.6, 2262.9, 2263, 2265 (and the incorporated "California Procedures"), and 2266.5	11/18/2004	Fuels
On-Board Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Engines (HD OBD). T 13, CCR, 1971.1	7/21/2005	On-road
Requirements to Reduce Idling Emissions from New and In-Use Trucks, Beginning in 2008. T 13, CCR, 1956.8, 2404, 2424, 2425, and 2485 and the incorporated document	10/20/2005	On-road
Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yard. T 13, CCR, 2479	12/8/2005	On-road and Off-road

Appendix VI-E: VMT Offset Demonstration

Measure	Hearing Date	Category
Evaporative and Exhaust Emission Test Procedures. T 13, CCR, 1961, 1976, 1978	6/22/2006	On-road
Phase 3 Reformulated Gasoline (Ethanol Permeation) T 13, CCR, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2270, 2271, and 2273	6/14/2007	Fuel
Port Truck Modernization T 13, CCR, 2027	12/6/2007	On-road
Cleaner In-Use Heavy-Duty Trucks (Truck and Bus Reg) T 13, CCR, 2025	12/11/2008	On-road
2010 Amendments to On-Board Diagnostic System Requirements for Heavy-Duty Engines (HD OBD). T 13, CCR, 1971.1 and 1971.5	5/28/2009	On-road
Truck and Bus Regulation 2010. T13, CCR, 2025	12/16/2010	On-road
Amendments to Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yard. T 13, CCR, 2479	9/22/2011	On-road
Advanced Clean Cars T 13, CCR, 1900, 1956, 1960, 1961, 1962, 1965, 1968, 1976, 1978, 2037, 2038, 2062, 2112, 2139, 2140, 2145, 2147, 2235, 2300, 2302, 2303, 2304, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, and 2318	1/26/2012	On-road
Zero Emission Vehicle Standards for 2009 through 2017 models. T 13, CCR, 1962.1, 1962.3	1/26/2012	On-road
Low Emission Vehicle III Greenhouse Gas and Zero Emission Vehicle Regulation Amendments for Federal Compliance Option T 13, CCR, 1900, 1956.8, 1960.1, 1961, 1961.2, 1961.3, 1962.1, 1962.2, 1976	11/15/2012	On-road
1997 Amendments to Onboard Diagnostics, Phase II, Technical Status. T 13, CCR, 1968.1, 2030, 2031	12/12/1996	On-road
2003 Amendments to On-Board Diagnostic II Review Amendments. T 13, CCR, 1968.1, 1968.2, 1968.5	4/25/2002	On-road
Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	9/28/2006	On-road
2007 Amendments to On-Board Diagnostic II. T 13, CCR, 1968.2, 1968.5, 2035, 2037 and 2038	9/28/2006	On-road
2007 Amendments to Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	12/6/2007	On-road
2010 Amendments to On-Board Diagnostic II. T 13, CCR, 1968.2, 1968.5, 2035, 2037 and 2038	5/28/2009	On-road
Plug-In Hybrid Electric Vehicle Test Procedure Amendments. T 13, CCR, 2032, 1900, 1962, 1962.1	5/28/2009	On-road
2011 Amendments to Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	6/23/2011	On-road
2012 Amendments to On-Board Diagnostic II. T 13, CCR, 1968.2, 1968.5, 2035, 2037 and 2038	1/26/2012	On-road
Emergency Regulatory Amendments to the Tractor-Trailer Greenhouse Gas Regulation T 17, CCR, 95307	2/29/2012	On-Road
2013 Amendments to On-Board Diagnostics (OBD I and II) Regulations T 13, CCR, 1968.2, 1971.1	8/23/2012	On-road
2013 Amendments to Heavy Duty On Board Diagnostic Requirements	8/23/2013	On-road
Heavy-Duty Greenhouse Gas Phase 1: On-Road Heavy Duty Greenhouse Gas Emissions Rule, Tractor-Trailer Rule, Commercial Motor Vehicle Idling Rule, Optional Emission Standards, Heavy-Duty Hybrid-Electric Vehicle Certification Procedure T 13, CCR, 1900, 1956.	12/12/2013	On-road

Measure	Hearing Date	Category
Heavy-Duty Hybrid-Electric Vehicle Certification Procedure T 13, CCR, 1900, 1956.8, 2036, 2037, 2112, 2139, 2140, 2147, 2485, T 17, CCR, 95300, 95301, 95302, 95303, 95305, 95660, 95661, 95662, 95663, 95664	12/12/2013	On-road
2014 Amendments to Zero Emission Vehicle Regulation T 13, CCR, 1962.1, 1962.2	10/23/2014	On-road
	5/21/2015	
Amendments to Low Emission Vehicle III Criteria Pollutant Requirements for Light-and Medium-Duty Vehicles the Hybrid Electric Vehicle Test Procedures, and the Heavy-Duty Otto-Cycle and Heavy-Duty Diesel Test Procedures T 13, CCR, 1900, 1956.8, 1961.2, 1962.2, 1965, 1976, 1978	10/23/2014	On-road

LOS ANGELES COUNTY

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
BALDWIN PARK	LAF3507	SOUTH BALDWIN PARK COMMUTER BIKEWAY PROJECT. CONSTRUCT 3-MILE COMMUTER CLASS I BIKE PATH ALONG SAN GABRIEL RIVER AND WALNUT CREEK CONNECTING TO MAJOR EMPLOYMENT CENTERS ON BALDWIN PARK BLVD.	9/30/2015	9/30/2015	9/30/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
BURBANK	LAF1502	SAN FERNANDO BIKEWAY. IMPLEMENT A CLASS I BIKEWAY ALONG SAN FERNANDO BLVD, VICTORY PLACE AND BURBANK WESTERN CHANNEL TO COMPLETE THE BURBANK LEG OF A 12 MILE BIKEWAY.	2014	6/30/2015	10/30/2017	OBSTACLES ARE BEING OVERCOME. PROJECT SCHEDULE IS CONTINGENT ON ADVANCE OF ADJACENT INTERSTATE 5 HOV / EMPIRE INTERCHANGE PROJECT WITHIN SAME RIGHT-OF-WAY. DELAY ALSO DUE TO NEPA ENVIRONMENTAL REVIEW OF COMPLETED 30% DESIGN WORK. CALTRANS COMPLETED FINAL DESIGN AND UTILITY RELOCATION OF ADJACENT FREEWAY PROJECT. CITY CAN NOW BEGIN 100% DESIGN.
CALTRANS	LA000357	ROUTE 5: FROM ROUTE 170 TO ROUTE 118 ONE HOV LANE IN EACH DIRECTION (10 TO 12 LANES) INCLUDING THE RECONSTRUCTION OF THE I-5/SR-170 MIXED FLOW CONNECTOR AND THE CONSTRUCTION OF THE I-5/SR-170 HOV TO HOV CONNECTOR (CFP 345) (2001 CFP 8339; CFP2197).	2008/2010	12/31/2013	6/30/2015	OBSTACLES ARE BEING OVERCOME. DELAY IS DUE TO UTILITIES RELOCATION COMPLICATIONS DURING CONSTRUCTION. UNDER CONSTRUCTION.

APPENDIX VI-E: Attachment 2

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
CALTRANS	LA000358	ROUTE 5: – FROM ROUTE 134 TO ROUTE 170 HOV LANES (8 TO 10 LANES) (CFP 346)(2001 CFP 8355). (EA# 12180, 12181,12182,12183,12184, 13350 PPNO 0142F,151E,3985,3986,3987) SAFETEA LU # 570. CONSTRUCT MODIFIED IC @ I-5 EMPIRE AVE, AUX LNS NB & SB BETWEEN BURB	2012/2010	12/31/2014	12/31/2016	OBSTACLES ARE BEING OVERCOME. DELAY IS DUE TO UTILITIES RELOCATION COMPLICATIONS. ALL PROGRAMMED FUNDS ARE OBLIGATED.
CALTRANS	LA000548	ROUTE 10: FROM PUENTE TO CITRUS HOV LANES FROM 8 TO 10 LANES (C-ISTEA 77720) (EA# 117080, PPNO# 0309N)	2030/2015	2/12/2016	10/31/2018	OBSTACLES ARE BEING OVERCOME. DELAY IS DUE TO RIGHT OF WAY COMPLICATIONS FOR ACQUIRING PROPERTIES FROM CITY REDEVELOPMENT AGENCY. ALL PROGRAMMED FUNDS ARE OBLIGATED.
CALTRANS	LA01342	ROUTE 10: RT 10 FROM RT 605 TO PUENTE AVE HOV LANES (8+0 TO 8+2) (EA# 117070, PPNO 0306H) PPNO 3333 3382 AB 3090 REP (TCRP #40)	2008/2010	10/28/2013	10/28/2014	OBSTACLES ARE BEING OVERCOME. DELAY IS DUE TO DESIGN CHANGE/DEVIATION FROM CONTRACT PLANS AS A RESULT OF DIFFERING SITE CONDITIONS. UNDER CONSTRUCTION AND ALL FUNDS HAVE BEEN OBLIGATED.
CALTRANS	LA0B875	ROUTE 10: HOV LANES FROM CITRUS TO ROUTE 57/210 – (EA# 11934, PPNO# 0310B)	2015	3/15/2016	1/4/2018	OBSTACLES ARE BEING OVERCOME. DELAY IS DUE TO COMBINING TWO PROJECTS (EAS 11934 AND 28900) AND REQUIRED ADDED CONSTRUCTION STAGES.
CALTRANS	LA0D73	ROUTE 5: LA MIRADA, NORWALK & SANTA FE SPRINGS-ORANGE CO LINE TO RTE 605 JUNCTION. WIDEN FOR HOV & MIXED FLOW LNS, RECONSTRUCT VALLEY VIEW (EA 2159A0, PPNO 2808). TCRP#42.2&42.1	2014	12/1/2016	12/1/2016	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT

APPENDIX VI-E: Attachment 2

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
GARDENA	LAF3306	GARDENA MUNICIPAL BUS LINES LINE #1X TSP (TRANSIT SIGNAL SYNCHRONIZATION PROJECT 21-SIGNALS). PROJECT WILL IMPLEMENT TRANSIT SIGNAL PRIORITY ALONG ITS LINE #1X TO REDUCE TRANSIT TRAVEL TIMES AND ENHANCE ON-TIME PERFORMANCE. CITY OF GARDENA: MARINE AVENUE: FROM YUKON AVENUE TO WESTERN AVENUE WESTERN AVENUE: FROM MARINE AVENUE TO 166TH STREET NORMANDIE AVENUE: FROM 166TH STREET TO GARDENA BOULEVARD VERMONT AVENUE: FROM GARDENA BOULEVARD TO 153RD STREET; UP TO 21 LOCATIONS.	6/30/2016	6/30/2016	6/30/2016	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. MOU SCHEDULED TO BE EXECUTED BY DEC 2014. PROJECT TO COMMENSE IN 2014-15.
GLENDALE	LA0G202	TRAFFIC LIGHT SYNCHRONIZATION ALONG THREE MAJOR ARTERIALS , GLENDALE AVE, BRAND BLVD., SAN FERNANDO RD., AND COLORADO ST.	12/1/2014	12/1/2014	12/1/2014	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. NEAR COMPLETION.
GLENDALE	LA0G406	FAIRMONT AVE. PARK-N-RIDE FACILITY (83 PARKING SPACES) TO SERVE COMMUTERS USING SR-134, I-5. THE LOCATION OF THE PARK-N-RIDE IS FAIRMONT AVENUE AND SAN FERNANDO RD.	12/30/2012	12/30/2014	12/30/2014	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT

APPENDIX VI-E: Attachment 2

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
LONG BEACH	LAE0332	LONG BEACH PARK AND RIDE FACILITY AT 3RD STREET AND PACIFIC AVE SOUTH OF THE MTA BLUE LINE PACIFIC STATION. 300 TO 500 SPACE AND INCLUDE RESIDENTIAL AND COMMERCIAL DEVELOPMENT		10/1/2011		TCM SUBSTITUTION HAS BEEN INITIATED.
LONG BEACH	LAE1296	LONG BEACH INTELLIGENT TRANSPORTATION SYSTEM	2011	9/30/2013	9/30/2015	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO CONSTRUCTION AND RELOCATION OF CITY'S TRAFFIC MANAGEMENT CENTER FROM 1600 SAN FRANCISCO AVENUE TO CITY HALL (COMPLETED IN MARCH OF 2014) AND RECONFIGURATION OF CITY'S FIBER COMMUNICATIONS SYSTEM (DUE TO BE COMPLETED IN JUNE OF 2014). BOTH TASKS ARE NECESSARY FOR THIS GRANT FUNDED PROJECT TO MOVE FORWARD.
LONG BEACH	LAF1341	OCEAN BL. SIGNAL SYNCHRONIZATION AND ENHANCEMENT PROJECT. INSTALLATION OF NEW SIGNALS, INTERCONNECT, PEDESTRIAN SAFETY ENHANCEMENTS, ADA ACCESS RAMPS, TRANSIT INFORMATION SYSTEMS, AND TRAFFIC SIGNAL UPGRADES AND RECONSTRUCTION. OCEAN BL, ALAMITOS TO LIVINGSTON	10/1/2013	10/1/2013	12/31/2014	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO COORDINATION WITH AN EXISTING CITY PROJECT IN THE AREA.
LONG BEACH	LAF1530	BICYCLE SYSTEM GAP CLOSURES & IMPROVED LA RIVER BIKE PATH. PROJECT WILL CONSTRUCT PRIORITY CLASS I & III BICYCLE SYSTEM GAP CLOSURES IN LONG BEACH AND IMPROVE CONNECTION TO LA RIVER.	2014	10/1/2014	6/30/2015	OBSTACLES ARE BEING OVERCOME. CONSTRUCTION WAS PUSHED BACK SINCE ADDITIONAL DESIGN WAS REQUIRED AFTER FEEDBACK WAS RECEIVED FROM THE COMMUNITY.

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TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
LOS ANGELES COUNTY	LA0C8120	SOUTH BAY FORUM TRAFFIC SIGNAL CORRIDORS PROJECT. DESIGN & CONSTRUCTION OF MULTI JURISDICTIONAL, SIGNAL SYSTEM IMPROVEMENTS ON REGIONAL ARTERIALS & ADVANCED ITS TECHNOLOGY. (APROX. 770 INTERSECTIONS)	12/31/2015	12/31/2015	12/31/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. UNDER CONSTRUCTION.
LOS ANGELES COUNTY	LAF1511	EASTSIDE LIGHT RAIL BIKE INTERFACE PROJECT. PROJECT INCLUDES DESIGN AND CONSTRUCTION OF BIKE ROUTES WITH APPROPRIATE SIGNAGE AND STRIPING TO ACCESS METRO GOLD LINE STATIONS.	10/21/2014	10/21/2014	10/30/2015	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO RESCOPE.
LOS ANGELES COUNTY	LAF1514	EMERALD NECKLACE BIKE TRAIL PROJECT. DESIGN AND CONSTRUCT 1.1 MILES OF CLASS I BIKE PATH TO CONNECT DUARTE ROAD TO THE SAN GABRIEL RIVER BICYCLE TRAIL.	2011	6/30/2013	6/1/2015	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO REQUIREMENTS AND PERMITS FROM CORPS OF ENGINEER FOR PORTION OF BIKE PATH THROUGH FLOOD CONTROL CHANNEL. PROJECT DESIGN FUNDS HAVE BEEN OBLIGATED.
LOS ANGELES COUNTY	LAF3308	SAN GABRIEL VALLEY FORUM TRAFFIC SIGNAL CORRIDORS PROJECT. DESIGN AND CONSTRUCTION OF MULTIJURISDICTIONAL TRAFFIC SIGNAL SYNCH, INTERSECTION OPERATIONAL IMPROVEMENTS, AND INTELLIGENT TRANSPORTATION SYSTEM COMPONENTS ON REGIONAL ARTERIALS. APROX. 183 SIGNALS TOTAL.	6/30/2016	6/30/2016	6/30/2016	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT

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TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
LOS ANGELES COUNTY	LAF3310	SOUTH BAY FORUM TRAFFIC SIGNAL CORRIDORS PROJECT. DESIGN AND CONSTRUCTION OF MULTIJURISDICTIONAL TRAFFIC SIGNAL SYNCHRONIZATION, OPERATIONAL IMPROVEMENTS & ITS COMPONENTS ON ARTERIALS IN THE SOUTH BAY AREA OF LA COUNTY. (APROX 40+ SIGNALS)	6/30/2016	6/30/2016	6/30/2016	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
LOS ANGELES COUNTY MTA	LA0C8114	LA CITY RIDESHARE SERVICES; PROVIDE COMMUTE INFO, EMPLOYER ASSISTANCE AND INCENTIVE PROGRAMS THROUGH CORE & EMPLOYER RIDESHARE SERVICES & MTA INCENTIVE PROGRAMS. PPNO 9003	2009	12/30/2016	12/30/2016	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. ONGOING PROJECT.
LOS ANGELES COUNTY MTA	LA0D198	CRENSHAW TRANSIT CORRIDOR	12/31/2018	12/31/2018	4/30/2021	ORIGINAL SCOPE ON SCHEDULE. FINAL PROJECT COMPLETION DATE HAS BEEN UPDATED TO ACCOMODATE CONSTRUCTION OF TWO OPTIONAL STATIONS: CRENSHAW/VERNON STATION (LEIMERT PARK VILLAGE) AND FLORENCE/HINDRY STATION.
LOS ANGELES COUNTY MTA	LA0F021	EXPOSITION LIGHT RAIL TRANSIT SYSTEM PHASE II – FROM CULVER CITY TO SANTA MONICA		12/31/2017	12/31/2017	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
LOS ANGELES COUNTY MTA	LA0F075	LIGHT RAIL TRANSIT FLEET-UP TO 78 NEW CARS SYSTEMWIDE. THESE EXPANSION RAIL CARS WILL BE ASSIGNED TO EXPO I, EXPO II AND GOLD LINE FOOTHILL.	3/30/2018	3/30/2018	3/30/2018	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. FUNDS HAVE BEEN OBLIGATED.

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TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
LOS ANGELES COUNTY MTA	LA0G010	REGIONAL CONNECTOR – LIGHT RAIL IN TUNNEL ALLOWING THROUGH MOVEMENTS OF TRAINS, BLUE, GOLD, EXPO LINES. FROM ALAMEDA / 1ST STREET TO 7TH STREET/METRO CENTER	12/31/2019	12/31/2019	5/31/2021	<p>OBSTACLES ARE BEING OVERCOME. DELAY DUE TO: 1) LONGER CONTRACT C0980 PROCUREMENT AND ENVIRONMENTAL, APPROVAL AND AUTHORIZATION PROCESSES THAN ORIGINALLY ESTIMATED; 2) FTA REQUIREMENT TO BUILD A NINE-MONTH BUFFER INTO THE SCHEDULE.</p> <p>CONTRACT C0980 PROCUREMENT COMPLETED AND METRO BOARD APPROVED AWARD OF DESIGN/BUILD CONTRACT TO REGIONAL CONNECTOR CONSTRUCTORS. THIRD PARTY UTILITY RELOCATIONS ARE PROGRESSING.</p>
LOS ANGELES COUNTY MTA	LA0G447	METRO PURPLE LINE WESTSIDE SUBWAY EXTENSION SECTION 1 - WILSHIRE/WESTERN TO LA CIENEGA	12/31/2019	2019/2023	12/31/2023	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
LOS ANGELES COUNTY MTA	LA29202W	MID -CITY TRANSIT CORRIDOR: WILSHIRE BLVD. FROM VERMONT TO SANTA MONICA DOWNTOWN- MID-CITY WILSHIRE BRT INCL. DIV. EXPANSION AND BUS ONLY LANE	2009/2010	12/31/2014	6/30/2016	<p>OBSTACLES ARE BEING OVERCOME. FUNDS HAVE BEEN OBLIGATED.</p> <p>DELAY DUE TO 1) LONGER ENVIRONMENTAL REVIEW AS A RESULT OF COMMUNITY CONCERNS; 2) LONGER DESIGN AND ENGINEERING BY CITY AND COUNTY; 3) NEW REQUIREMENT TO OBTAIN A LONG-TERM REVOCABLE PERMIT FROM THE VETERAN'S ADMINISTRATION FOR THE USE OF A SMALL STRIP OF THEIR PROPERTY.</p>

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TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LA0B7330	SAN FERNANDO RD ROW BIKE PATH PHSE II – CONSTRUCT 2.75 MILES CLAS I FRM FIRST ST TO BRANFORD ST, ON MTA-OWND ROW PARLEL TO SAN FERNANDO RD. LINK CYCLSTS TO NUMEROUS BUS LNE. PPNO 2868.	2005	3/30/2014	3/30/2014	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
LOS ANGELES, CITY OF	LA0C8164	EXPOSITION BLVD RIGHT-OF-WAY BIKE PATH-WESTSIDE EXTENSION. DESIGN AND CONSTRUCTION OF 2.5 MILES OF CLASS 1 BIKEWAY, LIGHTING, LANDSCAPING & INTERSECTION IMPROVEMENTS. (PPNO# 3184)	2009	2018	2018	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
LOS ANGELES, CITY OF	LA0G182	THE CENTRAL CITY EAST PROJECT WILL PROVIDE A FULLY TRAFFIC RESPONSIVE SIGNAL CONTROL SYSTEM TO APPROXIMATELY 150 INTERSECTIONS CURRENTLY OPERATIONAL WITH ATSAC CAPABILITY.	5/1/2014	5/1/2014	12/31/2016	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO NEED FOR COMPLETON OF ATSAC SYSTEM. ATSAC SYSTEM IS NOW COMPLETE.
LOS ANGELES, CITY OF	LAF1524	SAN FERNANDO RD. BIKE PATH PH. IIIA/IIIB – CONSTRUCTION. RECOMMEND PHASE IIIA- CONSTRUCTION OF A CLASS I BIKE PATH WITHIN METRO OWNED RAIL RIGHT-OF-WAY ALONG SAN FERNANDO RD. BETWEEN BRANFORD ST. AND TUXFORD ST INCL BRIDGE.	10/1/2015	10/1/2015	10/1/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT

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TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LAF1708	HOLLYWOOD INTEGRATED MODAL INFORMATION SYSTEM. INSTALLATION OF ELECTRONIC, DIRECTION AND PARKING AVAILABILITY SIGNS WITH INTERNET CONNECTIVITY TO PROVIDE ADVANCE AND REAL-TIME INFORMATION INTENDED TO INCREASE TRANSIT RIDERSHIP	2015	9/21/2015	9/21/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
LOS ANGELES, CITY OF	LAF1725	WIFI ON THE GOLD LINE. WIFI INTERNET INSTALLED ON GOLD LINE TRAINS, POLES & STATIONS, EASTSIDE EXTENSION, CHINATOWN & LITTLE TOKYO/ARTS DISTRICTS.	12/31/2014	12/31/2014	12/31/2014	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
LOS ANGELES, CITY OF	LAF3171	DE SOTO AVE WIDENING: RONALD REAGAN FWY TO DEVONSHIRE ST.. WIDEN DE SOTO AVE FR SR-118 TO DEVONSHIRE ST TO PROVIDE 3 LANES IN EACH DIRECTION & UNIFORM ROADWAY WIDTH. EXISTING ASPHALT BERMS TO BE REPLACED WITH CURB, GUTTER, & 10' SIDEWALK. SIDEWALK IS 1.42 MILES, 90% OF THE SIDEWALKS ALONG THE PROJECT LIMITS WILL BE NEW.	12/1/2015	12/1/2015	12/31/2017	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO PROGRAMMING ISSUE. PROGRAMMING ISSUE RESOLVED. CURRENTLY IN DESIGN PHASE WHICH WILL COMPLETE BY JUNE 2015.

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TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LAF3314	INTELLIGENT TRANSPORTATION SYSTEM (ITS) COMMUNICATION SYSTEM. UPGRADE AND REPLACE UNDER CAPACITY COMMUNICATION SYSTEM HARDWARE IN ORDER TO PROVIDE A VIABLE AND COST EFFECTIVE COMMUNICATION LINK BETWEEN TRAFFIC CORRIDORS AND THE LA COUNTY IEN.	12/31/2015	12/31/2015		ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
LOS ANGELES, CITY OF	LAF3513	DESIGN AND CONSTRUCT 3.85 MILE BIKEWAY ALONG FUTURE EXPOSITION LIGHT RAIL CORRIDOR BETWEEN VENICE/ROBERTSON BLVDS. AND SANTA MONICA CITY LIMITS AT CENTINELA. CLASS I AND CLASS II BIKEWAYS.	12/31/2015	12/31/2015	12/31/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
LOS ANGELES, CITY OF	LAF3731	DOWNTOWN LA INTER-MODAL TRANSIT INFORMATION AND WAYFINDING. INSTALL TRANSIT INFORMATION MONITORS, VARIABLE MESSAGE SIGNS, INTERACTIVE KIOSKS & PARKING AVAILABILITY SIGNAGE ALONG BROADWAY CORRIDOR TO OLYMPIC.	12/31/2014	12/31/2014	12/31/2014	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT

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TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
MONROVIA	LAE0039	TRANSIT VILLAGE – PROVIDE A TRANS. FACILITY FOR SATELLITE PARKING FOR SIERRA MADRE VILLA GOLD LINE STA, P-N-R FOR COMMUTERS, A FOOTHILL TRANSIT STORE.	2010	12/31/2012	12/31/2015	<p>OBSTACLES ARE BEING OVERCOME. DELAY DUE TO 1) CONSIDERATION OF AN ALTERNATIVE SITE; AND 2) COORDINATION WITH GOLD LINE AUTHORITY.</p> <p>DESIGN CONCEPTS AND COST ESTIMATES ARE DEVELOPED. CONSTRUCTION BID DOCUMENT IS ALMOST COMPLETE AND WILL BE ON THE STREET IN JUNE OR JULY 2014. CITY EXPECTS TO AWARD CONTRACT IN AUGUST AND BEGIN CONSTRUCTION IN SEPTEMBER. THE PROJECT IS NOW ON A FAST TRACK.</p>
PASADENA	LAE3790	THE PASADENA ITS INTEGRATES 3 COMPONENTS; TRAFFIC SIGNAL COMMUNICATION AND CONTRL, TRANSIT VEHICLE ARRIVAL INFO AND PUBLIC PARKING AVAILABILITY INFO. SAFETEA-LU PRJ #3790 AND #399	2010	6/30/2013	6/30/2015	<p>OBSTACLES ARE BEING OVERCOME. DELAY DUE TO BID HIGHER THAN CONSTRUCTION ESTIMATE.</p> <p>CITY IS PREPARING TO RE-ADVERTISE PROJECT REMOVING EXPENSIVE NON-TCM PORTION OF PROJECT.</p>
PASADENA	LAF3501	DETECTION OF BICYCLES AT SIGNAL CONTROLLED INTERSECTIONS. BICYCLE DETECTION SYSTEMS AT INTERSECTIONS CONTROLLED BY TRAFFIC SIGNALS ALONG BIKE CORRIDORS. PROJECT CORRIDOR LENGTH IS 15.5 MILES.	5/1/2016	5/1/2016		ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT

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TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
PORT OF LOS ANGELES	LAF3170	PORT TRUCK TRAFFIC REDUCTION PROGRAM: WEST BASIN RAILYARD. INTERMODAL RAILYARD CONNECTING PORT OF LA WITH ALAMEDA CORRIDOR TO ACCOMMODATE INCREASED LOADING OF TRAINS AT THE PORT, THEREBY REDUCING TRUCK TRIPS TO OFF-DOCK RAILYARDS.	12/1/2014	12/1/2014	12/1/2014	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
RANCHO PALOS VERDES	LAF1506	BIKE COMPATIBLE RDWY SAFETY AND LINKAGE ON PALOS VERDES DR. THE PROJECT WILL HAVE A CLASS II BIKE LANE ON BOTH SIDES OF PALOS VERDES DRIVE SOUTH, WITH AN UNPAVED SHOULDER FOR EMERGENCY USE.	2014	10/9/2014	10/9/2014	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT
RANCHO PALOS VERDES	LAF1605	PEDESTRIAN SAFE BUS STOP LINKAGE. LINKING 11 BUS STOPS CURRENTLY INACCESSIBLE BECAUSE OF LACK OF SIDEWALKS ON BOTH THE EAST AND WEST SIDE OF HAWTHORNE BLVD. FROM CREST RD. TO PALOS VERDES DR. SOUTH (ABOUT 13,000')	2013	12/9/2013	12/9/2015	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO ACCOMMODATING CONSTRUCTION OF AN OVERLAYING TRAFFIC SIGNAL SYNCHRONIZATION PROJECT. SIDEWALK NEEDS TO BE INSTALLED AFTER INSTALLING UNDERGROUND CONDUIT FOR THE TRAFFIC SIGNAL SYNCHRONIZATION PROJECT. FINAL DRAFT PLANS COMPLETED AND WILL PREPARE REQUEST FOR E-76.
SAN GABRIEL VALLEY COG	LA990359	GRADE SEP XINGS SAFETY IMPR; 35- MI FREIGHT RAIL CORR. THRGH SAN.GAB. VALLEY – EAST. L.A. TO POMONA ALONG UPRR ALHAMBRA & L.A. SUBDIV – ITS 2318 SAFETEA #2178;1436 #1934 PPNO 2318	2003/2009	6/30/2018	6/30/2018	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. UNDER CONSTRUCTION.

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TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
SANTA MONICA	LAF1728	CITY OF SANTA MONICA ITS IMPROVEMENTS. SANTA MONICA REAL TIME BEACH PARKING SIGNS. THIS PROJECT WILL MAKE INFORMATION REGARDING BEACH PARKING AVAILABLE TO MOTORISTS DESTINED FOR SANTA MONICA BEACH PARKING LOTS.	6/30/2013	6/30/2013	6/30/2014	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO LONGER COORDINATION AND PERMIT/APPROVAL. E-76 APPROVED BY CALTRANS ON 12/11/12. COASTAL COMMISSION PERMIT APPROVED ON 7/9/13. BID ADVERTISED ON 9/25/13. BIDS RECEIVED ON 10/30/13. 1 BID RECEIVED AND REJECTED DUE TO DBE REQUIREMENT. PROJECT RE-BID ON 11/27/13.
SANTA MONICA	LAF3703	A 'NO NET NEW TRIPS' RIDESHARE TOOLKIT. DEVELOP A TDM TOOLKIT WITH ONLINE MULTI-MODAL MOBILITY INFORMATION, BIKE ACCOMMODATIONS, 300 WALKING-ROLLING CARTS, 75 BIKE LOCKERS & INCENTIVE PROGRAMS FOR EMPLOYERS, SCHOOLS & NEIGHBORHOODS. WITHIN THE CITY OF SANTA MONICA IN DEMAND MANAGEMENT AREAS AS DEFINED IN THE LAND USE AND CIRCULATION ELEMENT (LUCE) ADOPTED JULY 2010.	6/30/2014	6/30/2014	6/30/2015	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO 1) TWO CITY PROJECT MANAGERS RETIRING, 2) HIRING REPLACEMENT PROJECT MANAGERS, AND 3) COORDINATING WITH COMMUNITY LEADERS, SCHOOL DISTRICTS, MAJOR EMPLOYERS ALONG THE PROPOSED PROJECT AREA. COORDINATION WITH STAKEHOLDERS HAS BEEN MOSTLY RESOLVED. PROJECT IN IMPLEMENTATION STAGE. PROJECT IS ABOUT 50% COMPLETED.
TORRANCE	LA0G358	SOUTH BAY REGIONAL INTERMODAL TRANSIT CENTER PROJECT. THE LAND IS IN THE PROCESS OF BEING PURCHASED AND ESCROW WILL CLOSE ON DECEMBER 17, 2009. PRESENTLY, THE LOT IS VACANT/OPEN LAND WITH NO EXISTING STRUCTURE UPON IT. THE ADDRESS IS 465 N. CRENSHAW BLVD., TORRANCE, CA 90503.	12/31/2015	12/31/2015	12/31/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT

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TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
ARTESIA	LAF1607	SOUTH STREET PEDESTRIAN, BIKEWAY AND TRANSIT IMPROVEMENT. IMPROVE PEDESTRIAN ENVIRONMENT AND TRANSIT STOP LOCATIONS WITH LANDSCAPED MEDIANS, TRANSIT SHELTERS, BENCHES, SIDEWALK ENHANCEMENTS AND LIGHTING. CLOSE EXISTING BIKE LANE GAP.	2014	10/1/2014	COMPLETE	
AVALON	LAF1501	COUNTY CLUB DRIVE BIKEWAY IMPROVEMENT PROJECT. CONSTRUCTION OF A 4-FOOT WIDE CLASS II BIKE LANE IN BOTH DIRECTIONS ALONG A ONE MILE SECTION OF COUNTRY CLUB DRIVE.	2013	10/1/2013		FOR RECREATIONAL PURPOSES - NOT A COMMITTED TCM.
AZUSA	LAF3434	AZUSA INTERMODAL TRANSIT CENTER. CONSTRUCT REGIONAL AZUSA INTERMODAL TRANSIT CENTER TO ACCOMMODATE EXISTING AND FUTURE PARKING DEMAND AND SUPPORT EFFECTIVE TRANSIT USE.	6/30/2015	6/30/2015		MISTAKENLY MARKED AS A COMMITTED TCM IN 2013 FTIP A#13-24
BALDWIN PARK	LAE0076	CONSTRUCT ADD'L VEHICLE PARKING (200 TO 400 SPACES), BICYCLE PARKING LOT AND PEDESTRIAN REST AREA AT THE TRANSIT CENTER	2010	12/31/2014	COMPLETE	

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TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
CALTRANS	LA996134	ROUTE 5: RTE. 5/14 INTERCHANGE & HOV LNS ON RTE 14 – CONSTRUCT 2 ELEVATED LANES – HOV CONNECTOR (DIRECT CONNECTORS) (EA# 16800)(2001 CFP 8343) (PPNO 0168M)	2014/2009	5/24/2013	COMPLETE	
FOOTHILL TRANSIT ZONE	LA0B311	PARK AND RIDE FACILITY TRANSIT ORIENTED NEIGHBORHOOD PROGRAM SAFETEA-LU # 341 (E-2006-BUSP-092) (E-2006-BUSP-173)	2003/2005	12/31/2013	COMPLETE	AZUSA AND WEST COVINA WERE ENTERED ERRONEOUSLY IN THIS TIP SHEET. AZUSA IS UNDER LAF3434. INDUSTRY - CONSTRUCTION OF THE INDUSTRY PARK AND RIDE PARKING STRUCTURE WAS COMPLETED. FROM LA0B311.INDUSTRY NUMBER OF PARKING SPACES #622 WEST COVINA - CITY OF WEST COVINA STILL WAITING FOR RESPONSE FROM CALIFORNIA DEPARTMENT OF FINANCE (DOF) FOR FINAL REVIEW AND APPROVAL TO TRANSFER ALL PROPERTIES OF FORMER REDEVELOPMENT BOARD AGENCY AT THE WESTFIELD MALL TO THE CITY PARKING AUTHORITY.
FOOTHILL TRANSIT ZONE	LA0G142	LACRD - 12 BUSES FOR THE I-10 EL MONTE BUSWAY. HOT LANE. (RTP# 1TR08D08 & 1TR08D07A)		12/31/2012	COMPLETE	
INDUSTRY	LAF3303	INDUSTRY-ATMS SIGNAL UPGRADE/CCTV VIDEO SURVEILLANCE SYSTEM. DESIGN & IMPLEMENT 20 ATMS SIGNAL UPGRADE, 6 CCTV VIDEO SURVEILLANCE SYSTEM, WIRELESS COMMUNICATIONS & LOCAL CONTROL CENTER (LCC) VIDEO SCREEN SYSTEM.	3/30/2014	3/30/2014	COMPLETE	

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TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
LONG BEACH	LA0C8237	LONG BEACH PARK AND RIDE FACILITY AT 4TH AND PACIFIC, SOUTH OF THE MTA BLUE LINE PACIFIC STATION. 100 DEDICATED, TRANSIT ORIENTED SPACES IN MIXED USE DEVELOPMENT	6/30/2014	6/30/2014		A DUPLICATE OF LAE0332.
LONG BEACH	LA996322	DWNTWN. SHORELINE DR. TRAFFIC MGMT. SYSTEM: DEPLOYMENT OF ITS ELEMENTS IN THE DWNTWN AREA TO RESPOND TO SPECIAL GENERATOR TRAFFIC.	3/31/2013	3/31/2013	COMPLETE	
LONG BEACH	LAF1334	ATLANTIC AVE SIGNAL SYNCHRONIZATION & ENHANCEMENT PROJECT. TRAFFIC SIGNAL UPGRADES AND RECONSTRUCTION, INTERCONNECT, BUS PRIORITY TRAFFIC SIGNAL EQUIPMENT, EMERGENCY VEHICLE PREEMPTION, AND ENHANCEMENTS FOR BUS STOPS AND PEDESTRIAN SAFETY.	12/1/2013	12/1/2013	COMPLETE	
LOS ANGELES, CITY OF	LA0D272	SOUTH SAN FERNANDO VALLEY REGIONAL PARK AND RIDE. ADD 50 NEW PARKING SPACES TO EXISTING COMMUTER EXPRESS PARK AND RIDE LOT WITHIN EXISTING AREA.		12/31/2012	COMPLETE	

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TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LA0G181	ATCS - CENTRAL BUSINESS DISTRICT. DEVELOP A FULLY TRAFFIC RESPONSIVE SIGNAL CONTROL SYSTEM TO APPROXIMATELY 180 INTERSECTIONS CURRENTLY OPERATIONAL WITH ATSAC CAPABILITY.	2/1/2014	2/1/2014		SYSTEM REPLACEMENT, NOT A TCM.
LOS ANGELES, CITY OF	LAF1450	ENCINO PARK-AND-RIDE FACILITY RENOVATION. RENOVATION OF THE ENCINO PARK-AND-RIDE FACILITY IN ORDER TO ADDRESS PHYSICAL AND STRUCTURAL DEFICIENCIES AND ADD CAPACITY TO THIS HEAVILY UTILIZED FACILITY. INCLUDES 50 NEW PARKING SPACES AND BIKE LOCKERS.	2013	10/1/2013	COMPLETE	
LOS ANGELES, CITY OF	LAF1527	MANCHESTER AVENUE BIKE LANES & ISLAND REDUCTION. THE PROJECT CONSISTS OF THE INSTALLATION OF ONE MILE OF BIKE LANES AND THE REDUCTION OF THE LANDSCAPED MEDIAN ISLAND ON MANCHESTER BL BETWEEN SEPULVEDA BL AND OSAGE AV	10/1/2015	10/1/2015	COMPLETE	
LOS ANGELES, CITY OF	LAF1720	EXPERIENCELA.COM WEB 2.0 INTERACTIVE TRANSIT MAPPING. PROVIDE INTERACTIVE MAPPING, WIFI AND MOBILE INTERFACE, AND WEB 2.0 TECHNOLOGY AS NEW SERVICES ON EXPERIENCELA.COM.		6/30/2013	COMPLETE	

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TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
LOS ANGELES COUNTY MTA	LA0C10	MID-CITY/EXPOSITION CORRIDOR LIGHT RAIL TRANSIT PROJECT PHASE I TO VENICE-ROBERTSON STATION	2011/2012	12/31/2012	COMPLETE	
LOS ANGELES COUNTY MTA	LA0G154	LACRD – EL MONTE TRANSIT CENTER IMPROVEMENTS AND EL MONTE BUSWAY IMPROVEMENTS, INCLUDING BIKE LOCKERS, TICKET VENDING MACHINES AT EL MONTE BUSWAY STATIONS AND UP TO 10 BUS BAYS.	12/31/2010	12/31/2012	COMPLETE	
LOS ANGELES COUNTY MTA	LA0G694	LOS ANGELES - SAN FERNANDO VALLEY BRT TRANSIT EXTENSION CANOGA		12/31/2013	COMPLETE	
LOS ANGELES COUNTY MTA	LA963542	ACQUISITION REVENUE VEHICLES – 2,513 CLEAN FUEL BUSES: LEASED VEH, FY02 (370) FY03 (30 HC) + FY04 (70 HC) + (200 ARTICS); FY05-FY10 TOTAL OF 1000 BUSES.	2005	6/30/2014	COMPLETE	
ROLLING HILLS ESTATE	LAF1529	PALOS VERDES DRIVE NORTH BIKE LANES. CONSTRUCTION OF CLASS II BIKE LANE AND RELATED IMPROVEMENTS ON PALOS VERDES DRIVE NORTH	12/31/2012	12/31/2013	COMPLETE	
SANTA CLARITA	LAF1424	MCBEAN REGIONAL TRANSIT CENTER PARK AND RIDE. PURCHASE LAND, DESIGN, AND CONSTRUCT A REGIONAL PARK-AND-RIDE LOT ADJACENT TO THE MCBEAN REGIONAL TRANSIT CENTER IN THE CITY OF SANTA CLARITA.	2012	10/1/2013	COMPLETE	

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TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
SANTA FE SPRINGS	LA0F096	NORWALK SANTA FE SPRINGS TRANSPORTATION CENTER PARKING EXPANSION AND BIKEWAY IMPROVEMENTS. PROVIDE ADDITIONAL 250 PARKING SPACES FOR TRANSIT CENTER PATRONS AND IMPROVE BICYCLES ACCESS TO THE TRANSIT CENTER	2011	6/30/2012	COMPLETE	
SANTA FE SPRINGS	LAF3402	NORWALK/SANTA FE SPRINGS TRANSPORTATION CTR PHASE II PARKING. CONSTRUCT A TOTAL OF APPROX. 160 PARKING SPACES ON A SITE ADJACENT TO THE METROLINK STATION.	6/30/2014	6/30/2014	COMPLETE	PHASE 2 OF LA0F096 WHICH IS COMPLETE. MISTAKINGLY CARRIED OVER TO BE A NEW COMMITTED TCM IN 2013 FTIP.
SANTA MONICA	LA0F062	DESIGN AND CONST. OF REAL-TIME PARKING INF./GUIDANCE SYSTEM. PHASE I COVERS SANTA MONICA AREA, BOUNDED BY COLORADO AVE., OCEAN AVE., WILSHIRE BLVD AND LINCOLN BLVD.	6/30/2013	6/30/2013		PARKING INFORMATION/GUIDANCE SYSTEM NOT A TCM.
SANTA MONICA	LAF1343	OCEAN PARK BL, MAIN ST, NEILSON WY SIGNAL SYSTEM. INSTALL COMMUNICATION & SIGNAL MODIFICATIONS NEEDED TO BRING INTERSECTIONS ONTO THE SIGNAL CONTROL SYSTEM ALONG THE OCEAN PARK BL, MAIN ST, AND NEILSON WY CORRIDORS. INCLUDES 26 INTERSECTIONS ON 3 CORRIDORS.	6/30/2015	6/30/2015	COMPLETE	

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TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
TEMPLE CITY	LA0G668	ROSEMEAD BLVD SAFETY ENHANCEMENTS & BEAUTIFICATION PROJECT: INSTALLATION OF BICYCLE LANES, SIDEWALK IMPROVEMENTS, LANDSCAPING, WAYFINDING SIGNAGE FROM PENTLAND TO CALLITA (1.7 MI).	10/31/2013	10/31/2013	COMPLETE	
TORRANCE	LA0G615	TORRANCE TRANSIT SYSTEM BUS RAPID PROJECT (REDONDO BEACH TO LONG BEACH) - FOR THE ACQUISITIONS OF EIGHT (8) EXPANSION BUSES (\$6,400,000), AND INCLUDES TWO (2) YEARS OF OPERATING ASSISTANCE TO OPERATE THE NEW RAPID SERVICE (\$1,500,000).		7/1/2013	COMPLETE	
WHITTIER	LAE0191	DESIGN, RIGHT-OF-WAY, AND CONSTRUCT 2.8 MILE BIKEWAY AND PEDESTRIAN PATH FROM MILLS AVE. TO VALLEY HOME IN WHITTIER.		11/30/2013	COMPLETE	

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TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
AZUSA	LAF5309	CITY OF AZUSA TRAFFIC MANAGEMENT SYSTEM. THIS PROJECT WILL UPGRADE TRAFFIC SIGNALS AT 43 INTERSECTIONS IN THE CITY OF AZUSA. THE PROJECT WILL FUND THE DESIGN AND CONSTRUCTION/IMPLEMENTATION OF CONTROLLERS, WIRING, DETECTION, CONDUIT, FIBER OPTIC, COUNTDOWN PEDESTRIAN HEADS, SIGNALS, VIDEO DETECTION, CCTV CAMERAS AND TRAFFIC CONTROL AND MONITORING UPGRADES AT THE 43 INTERSECTIONS.	12/1/2017
BURBANK GLENDALE PASADENA AIRPORT	LA000789A	BURBANK-GLENDALE-PASADENA AIRPORT INTERMODAL GROUND ACCESS LINK: CONSTRUCTION OF A LINK BETWEEN THE AIRPORT AND OTHER TRANSPORTATION SERVICES, INCLUDING CONSTRUCTION OF A NEW METROLINK STATION AT HOLLYWOOD WAY/SAN FERNANDO ROAD ON THE ANTELOPE VALLEY LINE AND A LINK BETWEEN THE AIRPORT AND OTHER TRANSPORTATION SERVICES. (CONSTRUCTION OF LA000789)	3/31/2017
CALTRANS	LA0G440	ROUTE 005: PHASE 2, FROM SR-14 TO PARKER ROAD, CONSTRUCT HOV/HOT, TRUCK & AUX LANES (EA 2332C, PPNO 3189A & EA 2332E PPNO 3189B), SAFTETEA-LU#465. PE & RW \$ ARE PROGRAMMED FOR EA 2332E ONLY.	6/11/2018
CULVER CITY MUNI BUS LINES	LAF3317	BUS SIGNAL PRIORITY IN CULVER CITY. DESIGN, DEVELOP & INSTALL WIRELESS BUS SIGNAL PRIORITY SYSTEM ON CULVER CITY BUS FLEET AND AT INTERSECTIONS TO INCREASE OPERATION EFFICIENCY & TRAVEL TIME SAVINGS. THE PROJECT INCLUDES INTERSECTIONS WITH TRANSIT SERVICE WITHIN THE BOUNDARY OF THE CITY OF CULVER CITY.	6/30/2017
CULVER CITY	LAF3318	TRAFFIC MONITORING AND SURVEILLANCE SYSTEM GAP CLOSURE. DESIGN AND IMPLEMENTATION OF 14 CCTV CAMERA TRAFFIC MONITORING AND SURVEILLANCE SYSTEM, HUB SWITCHING EQUIPMENT AND APPROX. 4 MI OF FIBER OPTIC COMMUNICATION CABLES, AND EOC VIDEO.	12/30/2016
CULVER CITY	LAF5302	PROJECT WILL UPGRADE THE CURRENT TRAFFIC CONTROL SYSTEM TO AN ADAPTIVE TRAFFIC CONTROL SYSTEM (ATCS). PROJECT WILL REPLACE 90 TYPE 170 CONTROLLERS WITH TYPE 2070, ADD ADDITIONAL VEHICLE DETECTORS AT 102 LOCATIONS, AND UPGRADE COMMUNICATIONS EQUIPMENT AND CONNECTION TO FIBER-OPTIC BACKBONE. THE ATCS WILL CONTROL 102 INTERSECTIONS THROUGHOUT CULVER CITY.	3/1/2019
DIAMOND BAR	LAF7300	DIAMOND BAR ADAPTIVE TRAFFIC CONTROL SYSTEM PROJECT : INSTALLS ADAPTIVE TRAFFIC CONTROL SYSTEM (ATCS) AT SIGNALIZED INTERSECTIONS ON DIAMOND BAR BL, GOLDEN SPRINGS DR, AND GRAND AV. (2) PROVIDES FULLY TRAFFIC RESPONSIVE SIGNAL CONTROL SYSTEM BASED ON TRAFFIC DEMANDS.	6/30/2019
DOWNEY	LAF5114	TELEGRAPH ROAD TRAFFIC THROUGHPUT AND SAFETY ENHANCEMENT BETWEEN THE RIO HONDO RIVER CHANNEL TO THE SAN GABRIEL RIVER CHANNEL, A DISTANCE OF 2.2 MILES. PROJECT INVOLVES THE CONSTRUCTION OF RAISED MEDIAN ISLANDS, MINOR WIDENING AT INTERSECTIONS, TRANSIT PRIORITY SYSTEM AND BIKE (2.2 MILES IN LENGTH) AND PEDESTRIAN CIRCULATION IMPROVEMENTS.	6/30/2018

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TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
EL MONTE	LAF5705	SHARED PARKING PROGRAM/SMART PARKING DETECTION SYS IN DOWNTOWN AREA; I-10 FWY, EL MONTE BUSWAY, EL MONTE TRANSIT CTR, TRANSIT VILLAGE, AND EL MONTE METROLINK STATION. COMPREHENSIVE PARKING STRATEGY PLAN. INCLUDES SMART PARKING DETECTION SYSTEM AND SHARED PARKING PROGRAM. UTILIZE MOBILE COMMUNICATION DEVICES TO ASSESS THE PARKING AVAILABILITY AT MULTIPLE PARKING LOTS. PROVIDE REAL-TIME INVENTORY OF PARKING SPACES.	6/30/2017
GLENDALE	LA0G809	CONSTRUCTION OF CITYWIDE BIKEWAY FACILITY THIS PROJECT INCLUDES CONSTRUCTION OF CLASS II, AND SHARROWS RECOMMENDED IN THE GLENDALE BICYCLE MASTER PLAN AND INSTALLATION OF CITYWIDE BIKE RACKS, AND OTHER AMENITIES RELATED TO BICYCLE. THE PROJECT LENGTH MAY INCLUDE OVER 12 MILES OF BIKE LANES.	12/1/2018
GLENDALE	LAF3714	ARROYO VERDUGO COMMUTE MANAGER SYSTEM. DEVELOPMENT OF A CUSTOMIZED TDM-SPECIFIC GEOGRAPHICALLY BASED WEBSITE.	12/30/2017
INGLEWOOD	LA0G843	MEASURE R ITS PHASE IV - PART A OF A TWO PART ITS IMPROVEMENT PROJECT. DESIGN AND CONSTRUCTION OF APPROXIMATELY 2.7 MILES OF COMMUNICATION INFRASTRUCTURE ALONG LA BREA, FLORENCE, CRENSHAW, MANCHESTER AND CENTINELA. SIGNAL SYNCHRONIZATION (APPROX. 20 LOCATIONS); DESIGN AND CONSTRUCTION OF SYSTEM DETECTION (APPROX. 40 INTERSECTIONS); CHANGEABLE MESSAGE SIGNS (2 LOCATIONS); CCTV CAMERAS (APPROX. 6 LOCATIONS) AND TRAFFIC MANAGEMENT CENTER EQUIPMENT AND COMMUNICATION NETWORK INTEGRATION.	6/30/2016
LAWNDALE	LA0G954	THIS PROJECT WILL IMPROVE OUTDATED AND NON-ACTUATED TRAFFIC SIGNAL SYSTEMS WITHIN LAWNDALE AND WILL INCLUDE: FULL ACTUATION, INADEQUATE BICYCLE & PEDESTRIAN ACCOMMODATION, LIMITED TIMING PLANS, NEW CONTROLLERS/CABINETS WHERE NEEDED, AND NEW WIRING/LOOPS WHERE NEEDED AT ALL INTERSECTIONS.	12/1/2015
LAWNDALE	LAF7500	HAWTHORNE BOULEVARD CLASS II BICYCLE LANES: (1) INSTALLS 1.0 MILE OF CLASS 2 BIKE LANES ON HAWTHORNE BLVD FOR BOTH DIRECTIONS. (2) PROVIDES BICYCLE PARKING.	10/31/2019
LONG BEACH	LA0G830	I-710 IMPROVEMENTS/SHOEMAKER BRIDGE - DOWNTOWN EXITS. THE PROJECT MAKES BICYCLE, PEDESTRIAN, AND STREETSCAPE IMPROVEMENTS ON MAJOR THOROUGHFARES.	12/31/2020
LONG BEACH	LAF5609	DOWNTOWN LONG BEACH PINE AVENUE STREETSCAPE IMPROVEMENT. THIS PROJECT IS LOCATED ON PINE AVE BETWEEN SEASIDE WY AND ANAHEIM ST. IT WILL IMPLEMENT STREET IMPROVEMENTS, SUSTAINABLE DESIGN FEATURES, AND PEDESTRIAN ENHANCEMENTS ALONG A MAJOR TRANSIT NODE INCLUDING: PEDESTRIAN LIGHTING, CROSSWALK ENHANCEMENTS, DIAGONAL CROSSWALKS, STREET FURNITURE, BIKE RACKS, STREET TREES, LANDSCAPING, BOLLARDS TO FACILITATE STREET CLOSURE FOR COMMUNITY EVENTS AND REMOVAL OF OBSTRUCTIONS FROM THE WALKWAY.	7/1/2016

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TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
LONG BEACH	LAF7316	ARTESIA CORRIDOR ATCS ENHANCEMENT PROJECT: (1) UPGRADES TRAFFIC SIGNALS ALONG ARTESIA BL BETWEEN LONG BEACH BL AND DOWNEY AV TO CONNECT WITH ADAPTIVE TRAFFIC CONTROL SYSTEM (ATCS). (2) INSTALLS CCTV AND CMS ON ARTESIA BL. (3) INSTALLS FIBER OPTIC CABLE AND DEVICES TO CONNECT SIGNALS TO EACH OTHER AND TRAFFIC MANAGEMENT CENTER (TMC). (4) TWO NEW TRAFFIC SIGNALS IN COMPTON (5) INSTALLS CLASS II BIKE LANE IN BOTH DIRECTIONS FROM ATLANTIC AV TO SUSANA RD. (6) PEDESTRIAN IMPROVEMENTS.	1/1/2019
LOS ANGELES, CITY OF	LAF1612	CENTURY CITY URBAN DESIGN AND PEDESTRIAN CONNECTION PLAN. PROJECT WILL IMPLEMENT SIDEWALK IMPROVEMENTS, DECORATIVE CROSSWALKS, MEDIAN ISLAND, CURB RAMPS, PEDESTRIAN LIGHTING, SHELTERS, BENCHES, TRASH RECEPTACLES & STREET TREES. THE PHYSICAL IMPROVEMENTS WILL CONSIST OF A MEANDERING PEDESTRIAN WALKWAY, SOLAR-POWERED PEDESTRIAN SCALE LIGHTING, STREET LIGHTING, TRASH RECEPTACLES, BUS BENCHES, (10)BICYCLE RACKS.	12/31/2016
LOS ANGELES, CITY OF	LAF1704	DOWNTOWN L.A. ALTERNATIVE GREEN TRANSIT MODES TRIAL PROGRAM. OFFER SHARED RIDE-BICYCLE AND NEIGHBORHOOD ELECTRIC VEHICLE TRANSIT SERVICES TO LA CITY HALL AS AN ALTERNATIVE TO OVERCROWDED DASH SERVICE	6/27/2016
LOS ANGELES, CITY OF	LAF3315	CITY/COUNTY TRAFFIC MANAGEMENT INTEGRATION PHASE 2 PROJECT. INTEGRATE THE IEN TRAFFIC SIGNAL TIMING DATA AS SECOND LEVEL INPUTS INTO ATCS AND MAKE REVISIONS FROM 2007 CALL APPLICATION TO THIS PROJECT.	6/30/2015
LOS ANGELES, CITY OF	LAF3515	SAN FERNANDO RD. BIKE PATH PH. IIIB CONSTRUCTION. CONSTRUCT 2.75 MILE CLASS I BIKE PATH WITHIN METRO RIGHT-OF-WAY ALONG SAN FERNANDO RD. BETWEEN TUXFORD ST. AND COHASSET ST. TO COMPLETE 12-MILE BIKEWAY.. THE PROJECT IS LOCATED WITHIN THE CITY OF LOS ANGELES, IN THE COMMUNITY OF SUN VALLEY. THE PROJECT CONSISTS OF A CLASS I FACILITY 12 FEET IN WIDTH AND 2.75 MILES IN LENGTH BETWEEN TUXFORD ST. AND COHASSET ST. (BURBANK CITY LIMIT).	1/1/2016
LOS ANGELES, CITY OF	LAF3646	ARTS DISTRICT/LITTLE TOKYO GOLD LINE STATION LINKAGES. PEDESTRIAN ENHANCEMENTS INCLUDING SIDEWALK/PATH PAVING; PED LIGHTS; STREET TREES/PLANTING; DISTRICT SIGNAGE; ENTRY ELEMENTS; STREET FURNITURE; CROSSWALK PAVING; AND BIKE PARKING. (10 BIKE RACKS)	12/31/2016
LOS ANGELES, CITY OF	LAF5519	THIS PROJECT IS LOCATED IN THE CITY OF LOS ANGELES. CONSTRUCTION OF BICYCLE FRIENDLY STREET TREATMENTS: AT LEAST 100 DIRECTIONAL SIGNS, AT LEAST 500 SHARED LANE MARKINGS, AND BICYCLE DETECTORS AND MARKINGS PROVIDED TO AT LEAST 15 SIGNALIZED INTERSECTIONS. OTHER TREATMENTS WILL INCLUDE TRAFFIC CALMING DEVICES AND DIVERSION, WHICH INCLUDE AT LEAST ONE DIVERTER AND ROUNDABOUT.	12/31/2018
LOS ANGELES, CITY OF	LAF5525	TO DESIGN AND CONSTRUCT CURB-SIDE BICYCLE PARKING (BICYCLE CORRAL) THAT WILL SERVE EACH COUNCIL DISTRICT. THE PROJECT REQUIRES SURFACE MODIFICATIONS TO CURBSIDE PARKING AREAS FOR INSTALLING AT LEAST 150 BIKE RACKS.	1/1/2018

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TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
LOS ANGELES, CITY OF	LAF5710	EXPERIENCE LA HISTORIC CULTURAL NEIGHBORHOOD CONNECTIONS. INSTALLATION OF 22 KIOSKS AT TRANSIT HUBS IN ACTIVITY CENTERS THROUGHOUT THE CITY OF LOS ANGELES. BY UTILIZING SMART TECHNOLOGY TRANSIT USERS WILL BE ABLE TO USE CELL PHONES OR THE KIOSK TO FIND INFORMATION THAT WILL MAKE THE TRANSFER MORE SEAMLESS TO THEIR FINAL DESTINATION.	6/1/2019
LOS ANGELES, CITY OF	LAF7628	WATTS STREETScape IMPROVEMENTS PHASE 2: INSTALLS ADA RAMPS, LANDSCAPING STREET TREES, STREET FURNITURE, PED LIGHTING, CROSSWALK ENHANCEMENTS, CURB EXTENSIONS, SHARROWS, AND PED & BIKE WAYFINDING SIGNAGE.	12/31/2019
LOS ANGELES, CITY OF	LAF7707	LAST MILE FOLDING BIKE INCENTIVE PROGRAM: PROVIDES FINANCIAL INCENTIVES TO TRANSIT RIDERS TOWARDS THE PURCHASE OF 1,800 COLLAPSIBLE OR ELECTRIC BIKES TO USE IN CONJUNCTION WITH BUS AND RAIL SYSTEMS.	12/31/2018
LOS ANGELES COUNTY	LA0D461	RECONSTRUCT- THE OLD ROAD FROM HILLCREST PARKWAY TO LAKE HUGHES RD & WIDEN FROM 40' TO 68', 2 VEH. LANES AND A 5' CLASS II BIKELANE IN EA DIR & STRIPPED MEDIAN (FROM 2 TO 4 LNS 2 EA DIR) FOR 2.1 MILES.	6/30/2021
LOS ANGELES COUNTY	LAF1311	SOUTH BAY FORUM TRAFFIC SIGNAL CORRIDORS PROJECT. DESIGN & CONSTRUCTION OF MULTIJURISDICTIONAL TRAFFIC SIGNAL SYNCHRONIZATION, INTERSECTION OPERATIONAL IMPROVEMENTS, AND INTELLIGENT TRANSP. SYSTEM COMPONENTS ON REGIONAL ARTERIALS. SYNCHRONIZES 50 CONSECUTIVE INTERSECTIONS.	10/1/2015
LOS ANGELES COUNTY	LAF1321	SAN GABRIEL VALLEY FORUM TRAFFIC SIGNAL CORRIDORS PROJECT. DESIGN & CONSTRUCTION OF MULTIJURISDICTIONAL TRAFFIC SIGNAL SYNCHRONIZATION, INTERSECTION OPERATIONAL IMPROVEMENTS, AND INTELLIGENT TRANSPORTATION SYSTEM COMPONENTS. SYNCHRONIZES 83 CONSECUTIVE INTERSECTIONS.	10/1/2015
LOS ANGELES COUNTY	LAF3309	GATEWAY CITIES FORUM TRAFFIC SIGNAL CORRIDORS PROJ, PHASE VI. DESIGN AND CONSTRUCT MULTIJURISDICTIONAL TRAFFIC SIGNAL SYNCHRONIZATION, INTERSECTION OPERATIONAL IMPROVEMENTS & ITS COMPONENTS ON REGIONAL ARTERIALS IN GATEWAY CITES AREA. (APROX. 126 SIGNALS)	6/30/2016
LOS ANGELES COUNTY	LAF5310	RAMONA BOULEVARD/BADILLO STREET/COVINA BOULEVARD TSSP/BSP. IMPLEMENTATION OF A TRAFFIC SIGNAL SYNCHRONIZATION PROJECT (TSSP) ON RAMONA BL/BADILLO ST/COVINA BL FROM SANTA ANITA AV TO THE 57 FREEWAY. A BUS SIGNAL PRIORITY (BSP) PROJECT WILL BE IMPLEMENTED ON RAMONA BL/BADILLO ST FROM TYLER AV TO GRAND AV TO GIVE TRANSIT PRIORITY FOR FOOTHILL TRANSIT OPERATIONS (APROX. 48 SIGNAL LOCATIONS)	6/30/2019

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TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
LOS ANGELES COUNTY	LAF5314	GATEWAY CITIES FORUM TRAFFIC SIGNAL CORRIDORS PROJECT - IMPROVE TRAFFIC SIGNAL OPERATIONS BY UPGRADING EACH TRAFFIC SIGNAL TO FEDERAL AND STATE STANDARDS, PROVIDING ADDITIONAL VEHICLE DETECTION TO ENABLE OPERATION AS A FULLY TRAFFIC-ACTUATED SIGNAL, INSTALLING THE APPROPRIATE COMPONENTS TO ENABLE EACH SIGNAL TO BE CAPABLE OF TIME-BASED COORDINATION AND RETIMING SIGNALS TO IMPROVE THE OVERALL PROGRESSION OF TRAFFIC.(APROXIMATLY 17 SIGNALS INCLUDED)	6/30/2019
LOS ANGELES COUNTY	LAF5315	SAN GABRIEL VALLEY FORUM TRAFFIC SIGNAL CORRIDORS PROJECT. THIS PROJECT INCLUDES 6 INTERSECTIONS AT MYRTLE AV/PECK RD BETWEEN HUNTINGTON DR AND CLARK ST AND PROVIDES FOR SYSTEM WIDE COORDINATION, TIMING AND OPERATIONAL IMPROVEMENTS AND TRAFFIC SIGNAL SYNCHRONIZATION, EQUIPMENT UPGRADES AND INTERSECTION OPERATIONAL IMPROVEMENTS. (APROX. 20+ SIGNALS)	6/30/2019
LOS ANGELES COUNTY	LAF5316	SOUTH BAY FORUM TRAFFIC SIGNAL CORRIDORS PROJECT - SYSTEMWIDE COORDINATION, TIMING AND OPERATIONAL IMPROVEMENTS AND TRAFFIC SIGNAL SYNCHRONIZATION, EQUIPMENT UPGRADES AND INTERSECTION OPERATIONAL IMPROVEMENTS IN SOUTH BAY REGION. 25 SIGNALS SYSTEM WIDE. ADDITIONALLY, THIS PROJECT WILL INSTALL ANY WARRANTED AND FEASIBLE ROADWAY IMPROVEMENTS ALONG THE ROUTES TO IMPROVE OVERALL PROGRESSION.	6/30/2019
LOS ANGELES COUNTY	LAF5514	VERMONT AVE BIKE LANE - MANCHESTER BLVD TO EL SEGUNDO BLVD. FUNDS ARE REQUESTED TO DESIGN AND CONSTRUCT CLASS II BIKE LANES ON VERMONT AV (3.0 MILES). MEDIANS WILL BE REDUCED TO INSTALL BIKE LANES AND BICYCLE RACKS (20) WILL BE PROVIDED AT KEY DESTINATIONS.	2/26/2019
LOS ANGELES COUNTY	LAF7703	EXPERIENCELA 3.0-MOBILITY IN THE CLOUD : DEVELOPS AND IMPLEMENTS CLOUD COMPUTING BASED SOFTWARE TECHNOLOGY TO PROVIDE TRANSIT USERS LOCATION SPECIFIC INFORMATION VIA PERSONAL MOBILE DEVICES AND INTERACTIVE KIOSKS AT KEY TRANSPORTATION FACILITIES.	6/30/2019
LOS ANGELES COUNTY MTA	LA0B408	ROUTE 405: ADD A 10-MILE HOV LANE ON THE NORTHBOUND 405 BETWEEN I-10 AND U.S. 101 IN LA FROM RTE 10 TO RTE 101 WIDEN FOR HOV LANE & MODIFY RAMPS, & HOV INGRESS/EGRESS AT SANTA MONICA BLV(EA 12030, PPNO 0851G, SAFETLU SECTION 1302 #18, 1934 #20)	5/24/2016
LOS ANGELES COUNTY MTA	LA0G1048	ACTON SIDING AND SECOND PLATFORM. LENGTHEN AN EXISTING SIDING WEST OF CP QUARTZ BY APPROX. 4,000 FEET, AND ADD A SECOND STATION PLATFORM AT VINCENT GRADE/ ACTON STATION. THE PROJECT WILL PROVIDE BENEFITS TO FREIGHT AND COMMUTER RAIL WITH IMPROVED OVERALL CAPACITY, TRACK OPERATIONS, AND SAFETY ALONG A VITAL SEGMENT OF THE ANTELOPE VALLEY LINE.	12/31/2016

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TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
LOS ANGELES COUNTY MTA	LA0G1051	EXTEND SEVERAL OF THE STUB-END TRACKS IN UNION STATION TO CONNECT WITH EXISTING MAINLINE TRACKS. THE PROJECT WILL SERVE THE EXISTING METROLINK, AMTRAK, AND NEW HIGH SPEED TRAIN PROJECT IN THIS CORRIDOR. IT WILL INCLUDE THE PREPARATION OF AN UPDATED ENVIRONMENTAL REPORT AND CLEARANCE, PREPARATION OF THE P/E DOCUMENTATION, PREPARATION OF FINAL PLANS, SPECIFICATIONS AND ESTIMATES, AND THE CONSTRUCTION OF THE PROJECT.	2/28/2019
LOS ANGELES COUNTY MTA	LA0G635	DESIGN AND CONSTRUCTION OF PEDESTRIAN AND TRANSIT ENHANCEMENTS ALONG THE PUBLIC RIGHT-OF-WAY OF THE METRO GOLD LINE EASTSIDE EXTENSION TO SURROUNDING NEIGHBORHOOD. TRANSIT ENHANCEMENTS ARE WITHIN 3 MILES OF EASTSIDE GOLDLINE EXTENSION STATION.	6/30/2020
LOS ANGELES COUNTY MTA	LA0G640	PACIFIC SURFLINER CORRIDOR - RAYMER/BERNSON DOUBLE TRACK IMPROVEMENTS - UPGRADE THE RAIL CORRIDOR FROM A SINGLE TRACK TO A DOUBLE TRACK, INSTALLING CONCRETE TIES ON BOTH TRACKS, INSTALL FOUR NEW SPECIAL TRACKWORK TURNOUTS, NINE AT-GRADE CROSSINGS, FOUR BRIDGES, A NEW SECOND PLATFORM AT NORTHRIDGE, OTHER ENHANCEMENTS INCLUDE SIGNAL RELOCATION, UTILITY RELOCATION AND DRAINAGE IMPROVEMENTS.	12/31/2018
MALIBU	LA0G910	PACIFIC COAST HIGHWAY REGIONAL TRAFFIC MESSAGE SYSTEMS. THE PROJECT WILL ENABLE THE CITY OF MALIBU AND OTHER AGENCIES TO NOTIFY TRAVELERS OF CRITICAL REGIONAL TRAFFIC AND SAFETY INFORMATION AND FACILITATE TRAFFIC FLOW THROUGHOUT THE REGION. 6 PERMANENT AND 2 MOBILE CHANGEABLE MESSAGE SIGNS WILL BE INSTALLED AT STRATEGIC LOCATIONS ALONG PCH/SR-1 CORRIDOR IN THE CITY OF MALIBU.	1/31/2017
MONTEBELLO	LA0G862	PURCHASE OF SEVEN (7) ALTERNATIVE FUEL EXPANSION TRANSIT BUSES	12/31/2016
PASADENA	LAF3301	METRO GOLD LINE AT-GRADE CROSSING MOBILITY ENHANCEMENTS. DEPLOYMENT OF ITS AT SIGNALIZED INTERSECTIONS ADJACENT TO METRO GOLD LINE AT-GRADE CROSSINGS TO PROVIDE ADAPTIVE TRAFFIC SIGNAL CONTROL TO IMPROVE MOBILITY & ENHANCE SAFETY. PROJECT INCLUDES 14 INTERSECTIONS.	5/1/2016
PASADENA	LAF3302	INTELLIGENT TRANSPORTATION SYSTEM (ITS) PHASE III (SIGNAL SYNCHRONIZATION PROJECT 3+ SIGNALS). COMPLETE THE MAIN COMMUNICATION INFRASTRUCTURE SYSTEM OF THE ITS COMMUNICATION MASTER PLAN BY CLOSING ALL GAPS IN THE EXISTING FIBER COMMUNICATION NETWORK. AS STATED IN THE PROJECT DESCRIPTION, THIS PROJECT TARGETS CRITICAL EXISTING GAPS WITHIN THE CITY'S ITS FIBER MASTER PLAN.	5/1/2016
PASADENA	LAF3710	PASADENA'S WAYFINDING SYSTEM. IMPLEMENT WAYFINDING SYSTEM INCLUDING TRANSIT INFORMATION AND CONNECTIVITY TO ADJACENT DESTINATIONS AT TRANSIT STOPS AND PARKING LOTS.	5/1/2016

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TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
REDONDO BEACH	LA0D29	HEART OF THE CITY BUS TRANSFER STATION AMENITIES. RELOCATE THE EXISTING INTERMODAL TRANSIT TERMINAL AND CONSTRUCT A NEW TRANSIT CENTER WITH 12 BUS BAYS, PASSENGER WAITING AREA AND INFORMATION CENTER, AND A DRIVER OPERATOR LOUNGE. THE PROPERTY WILL ALSO PROVIDE 339 PUBLIC PARKING SPACES (PLUS 2 FOR STAFF: MAINTENANCE & SECURITY) AND BICYCLE FACILITIES. LOCATION - 1521 KINGSDALE AVENUE, REDONDO BEACH, CA 90278	12/31/2016
REDONDO BEACH	LAF3502	REDONDO BEACH BICYCLE TRANSPORTATION PLAN IMPLEMENTATION. IMPLEMENT CLASS II AND III BIKE FACILITIES IDENTIFIED IN THE CITY OF REDONDO BEACH'S ADOPTED BICYCLE TRANSPORTATION PLAN. APPROXIMATELY 2.1 CENTERLINE MILES OF BIKE LANES AND 15.8 CENTERLINE MILES OF BIKE ROUTES THROUGHOUT THE CITY OF REDONDO BEACH.	12/31/2015
SANTA CLARITA	LAF3300	ITS PHASE IV INTERCONNECT GAP CLOSURE AND SIGNAL SYNCH. THIS PROJECT INVOLVES RE-SYNCHRONIZING TRAFFIC SIGNALS ON ARTERIALS, DEPLOYING AN ADAPTIVE SIGNAL SYSTEM, AND A REDUNDANT FIBER-OPTIC INTERCONNECT SYSTEM. (APROX. 40+ SIGNALS)	12/31/2017
SANTA CLARITA	LAF5502	DESIGN AND CONSTRUCT CLASS II BIKE LANES ON TOURNEY ROAD FROM VALENCIA TO MAGIC MOUNTAIN PKWY (1.1 MILES), AND CLASS III BIKE ROUTES ON ORCHARD VILLAGE RD FROM MCBEAN PKWY TO LYONS (1.35 MILES). THE PROJECT WILL INCLUDE BIKE DETECTION AT ALL INTERSECTIONS AND BICYCLE WAYFINDING AND SIGNAGE.	12/1/2017
SANTA MONICA	LAF3505	BIKE NETWORK LINKAGES TO EXPOSITION LIGHT RAIL PROJECT. BIKE NETWORK ENHANCEMENTS TO SUPPORT EXPOSITION LINE. INCREASED SAFETY AND CONVENIENCE WITH SIGNAL DETECTION, HIGHLY VISIBLE LANE MARKINGS AND NEW BIKE RACKS. THE PROJECT AREA IS LOCATED THROUGHOUT THE CITY OF SANTA MONICA AND NO MORE THAN TWO MILES FROM THE PROPOSED EXPOSITION LIGHT RAIL LINE STATIONS.	12/31/2016
SANTA MONICA	LAF5524	IMPLEMENTATION OF A SANTA MONICA BIKE-SHARE PROGRAM, INCLUDING THE PURCHASE AND INSTALLATION OF 250 BIKES AND 25 DOCKING STATIONS TO BE LOCATED AT ACTIVITY NODES AND TRANSIT STATIONS (INCLUDING EXPO LRT STATIONS). TWO VEHICLES WILL BE ACQUIRED AND OUTFITTED TO TRANSPORT AND REDISTRIBUTE BICYCLES BETWEEN STATIONS AS NEEDED. THE BIKE-SHARE DOCKING STATIONS WILL BE SOLAR POWERED WHERE APPROPRIATE AND INCLUDE A TECHNOLOGY PLATFORM FOR SYSTEM OPERATION THROUGH THE WEB AND SMART PHONE APPLICATIONS.	6/30/2019
TORRANCE	LAF3312	CITY OF TORRANCE ITS & TRAFFIC IMPROVEMENTS. IMPLEMENT ITS COMPONENTS AT LOCATIONS NOT COVERED BY '95 METRO CFP SOUTH BAY SIGNAL SYNCH PROJECT. TO PROVIDE EFFECTIVE CITYWIDE AND MULTI-JURISDICTIONAL TRAFFIC MANAGEMENT. *CRENSHAW BLVD BETWEEN PCH AND THE MOST SOUTH CITY CONTROLLED SIGNALIZED INTERSECTION.(APROX. 3 SIGNALS)	12/31/2016

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TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
VARIOUS AGENCIES	LA0G772	VALLEY VILLAGE - PURCHASE OF 7 SERVICE EXPANSION SMALL BUS 8 AP, 2 WC...	12/1/2015

ORANGE COUNTY

TABLE III-2.1 ORANGE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
CALTRANS	ORA000193	HOV CONNECTORS FROM SR-22 TO I-405, BETWEEN SEAL BEACH BLVD. (I-405 PM 022.558) AND VALLEY VIEW ST. (SR-22 PM R000.917), WITH A SECOND HOV LANE IN EACH DIRECTION ON I-405 BETWEEN THE TWO DIRECT CONNECTORS.	2010	2/1/2015	10/1/2014	AHEAD OF SCHEDULE.
CALTRANS	ORA000194	HOV CONNECTORS FROM I-405 TO I-605, BETWEEN KATELLA AVE. (I-605 PM R001.104) AND SEAL BEACH BLVD. (I-405 PM 022.643), WITH A SECOND HOV LANE IN EACH DIRECTION ON I-405 BETWEEN THE TWO DIRECT CONNECTIONS.	2010	7/1/2015	6/30/2014	AHEAD OF SCHEDULE.
OCTA	ORA020820	METROLINK SERVICE TRACK EXPANSION AND GRADE CROSSING IMPROVEMENTS. PART OF A PLAN TO IMPLEMENT 30 MINUTE HEADWAYS COULD INCLUDE TURNBACK FACILITIES, LAYOVER FACILITIES, AND OR RELIABILITY IMPROVEMENTS FOR HIGH FREQUENCY METROLINK SERVICE OPERATIONS BETWEEN FULLERTON AND LAGUNA NIGUEL/MISSION VIEJO	1/1/2015	1/1/2015	1/1/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT.

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TABLE III-2.1 ORANGE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
OCTA	ORA085004	ANAHEIM CANYON STATION PROJECT WILL ADD DOUBLE TRACK AND ANOTHER PLATFORM AS WELL AS EXTEND THE EXISTING PLATFORM TO BE IN CONFORMANCE WITH THE METROLINK STANDARDS FOR PASSENGER PLATFORM LENGTH. (MAY USE TOLL CREDIT IF CMAQ REQUIRES A MATCH)	6/1/2014	6/1/2014	12/31/2016	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO PROJECT SCOPE AND RIGHT OF WAY ISSUES. THE PROJECT SCOPE AND RIGHT OF WAY ISSUES HAVE BEEN RESOLVED AND A COOPERATIVE AGREEMENT IS GOING TO OCTA BOARD IN AUGUST 2014.
OCTA	ORA111001	INTERSTATE 5 ADD 1 HOV IN EACH DIRECTION FROM SOUTH OF PACIFIC COAST HIGHWAY TO SAN JUAN CREEK ROAD. PPNO:2531F	11/1/2016	11/1/2016	11/1/2016	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT.
OCTA	ORA111002	INTERSTATE 5 ADD 1 HOV IN EACH DIRECTION FROM SOUTH OF AVENIDA VISTA HERMOSA TO SOUTH OF PACIFIC COAST HIGHWAY. PPNO 2531E	10/1/2016	10/1/2016	10/1/2016	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT.
OCTA	ORA65002	RIDESHARE SERVICES RIDEGUIDE, DATABASE, CUSTOMER INFO, AND MARKETING (ORANGE COUNTY PORTION).	2010	12/30/2020	12/30/2020	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. ONGOING INFORMATION FOR RIDESHARE SERVICES
OCTA	ORA990929	INTERSTATE 5 ADD 1 HOV IN EACH DIRECTION FROM SOUTH OF AVENIDA PICO TO SOUTH OF AVENIDA VISTA HERMOSA AND RECONFIGURE AVENIDA PICO INTERCHANGE. PPNO:2531D	7/1/2017	7/1/2017	7/1/2017	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT.

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TABLE III-2.1 ORANGE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
TRANSPOR- TATION CORRIDOR AGENCIES (TCA)	10254	SJHC, 15 MI TOLL RD BETWEEN I-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, EXISTING 3/M/F EA.DIR.1 ADD'L M/F EA DIR, PLUS CLIMBING & AUX LNS AS REQ, BY 2020 PER SCAG/TCA MOU 4/5/01	2015/2008	12/31/2020	12/31/2020	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. ONGOING IMPLEMENTATION PER SCAG/TCA MOU.
TCA	ORA050	ETC (RTE 241/261/133) (RTE 91 TO I-5/JAMBOREE) EXISTING 2 M/F EA.DIR, 2 ADD'L M/F IN EA. DIR, PLUS CLIMB AND AUX LNS AS REQ, BY 2020 PER SCAG/TCA MOU 4/05/01.	2015/2010	12/31/2020	12/31/2020	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. ONGOING IMPLEMENTATION PER SCAG/TCA MOU.
TCA	ORA051	(FTC-N) (OSO PKWY TO ETC) (13MI) EXISTING 2 MF IN EA. DIR, 2 ADDITIONAL M/F LANES, PLS CLMBNG & AUX LANS AS REQ BY 2020 PER SCAG/TCA MOU 4/05/01.	2015/2010	12/31/2020	12/31/2020	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. ONGOING IMPLEMENTATION PER SCAG/TCA MOU.

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TABLE III-2.1 ORANGE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
TCA	ORA052	(FTC-S) (I-5 TO OSO PKWY) (15MI) 2 MF EA. DIR BY 2013; AND 1 ADDITIONAL M/F EA. DIR. PLS CLMBNG & AUX LANES AS REQ BY 2030 PER SCAG/TCA MOU 4/05/01.	2015/2010	6/15/2030	2021/2030	TIMELY IMPLEMENTATION OF THE TCM IS PREDICATED UPON TCA MEETING THE SCHEDULE OF TWO CRITICAL MILESTONES AS REFERENCED BY TCA IN ITS INFORMATIONAL SUBMITTAL TO SCAG (DATED APRIL 21, 2014) ⁴ . SPECIFICALLY, TCM TIMELY IMPLEMENTATION IS DEMONSTRATED ONLY IF: 1) A POSITIVE DECISION IS RENDERED BY THE STATE WATER RESOURCES CONTROL BOARD REGARDING TCA'S PENDING APPEAL OF THE SAN DIEGO REGIONAL WATER QUALITY BOARD'S DENIAL OF THE WASTEWATER DISCHARGE REQUIREMENTS PERMIT; FURTHER, THE PERMIT AND THE CURRENTLY PENDING BIOLOGICAL OPINION FROM THE U.S. FISH AND WILDLIFE SERVICE ARE BOTH RECEIVED IN ADEQUATE TIME TO MEET THE TESORO EXTENSION CONSTRUCTION SCHEDULE; AND 2) CONSTRUCTION OF THE TESORO EXTENSION BEGINS IN JUNE 2015. IF EITHER CONDITION IS NOT MET, SUBSTITUTION OF THE SR-241 TCM SHALL BE REQUIRED AND COMMENCE ACCORDINGLY.

⁴ The TCA's informational submittal and SCAG's review letter dated May 27, 2014 are available upon request.

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TABLE III-2.2 ORANGE COUNTY COMPLETED/CORRECTED TCMS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
ANAHEIM	ORA000100	GENE AUTRY WAY WEST @ I-5 (I-5 HOV TRANSITWAY TO HASTER) ADD OVERCROSSING ON I-5 (S)/MANCHESTER AND EXTEND GENE AUTRY WAY WEST FROM I-5 TO HASTER (3 LANES IN EA DIR.)	2004	01/2013	COMPLETE	
ANAHEIM	ORA100508	DEVELOP AND IMPLEMENT AN ITS MASTER PLAN IN ANAHEIM. INCLUDES NEW CCTV CAMERAS (3) AND MODIFICATIONS TO FIBER OPTICS	6/30/2013	6/30/2013	COMPLETE	
FULLERTON	ORA020113	FULLERTON TRAIN STATION – PARKING STRUCTURE, PHASE I AND II. TOTAL OF 800 SPACES (PPNO 2026)	2004	6/11/2012	COMPLETE	
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA041501	PURCHASE (71) STANDARD 30FT EXPANSION BUSES – ALTERNATIVE FUEL – (31) IN FY08-09, (9) IN FY09-10, (7) IN FY11-12, (6) IN FY12-13 AND (18) IN FY13-14	2012	6/30/2016		SUBSTITUTED WITH ORA131108
OCTA	ORA0826016	PURCHASE (72) PARATRANSIT EXPANSION VANS – (21) IN FY09/10, (51) IN FY10/11.	6/30/2016	6/30/2016	COMPLETE	
OCTA	ORA082618	PURCHASE PARATRANSIT VEHICLES EXPANSION (MISSION VIEJO) (11) IN FY09/10.	6/30/2030	6/30/2030	COMPLETE	

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TABLE III-2.2 ORANGE COUNTY COMPLETED/CORRECTED TCMS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
OCTA	ORA085001	ORANGE TRANSPORTATION CENTER PARKING EXPANSION - PROJECT WILL PROVIDE APPROXIMATELY 1,100 ADDITIONAL TRANSIT PARKING SPACES AT THE ORANGE STATION PARKING CENTER.	9/1/2015	9/1/2015		SUBSTITUTED WITH ORA131108
OCTA	ORA120357	ORANGE COUNTY. TRAFFIC SIGNAL SYNCHRONIZATION FOR BUS RAPID TRANSIT CORRIDORS		12/31/2012	COMPLETE	
OCTA	ORA120536	TUSTIN RAIL STATION PARKING EXPANSION - CONSTRUCTION OF 191 NEW SPACES (281 EXISTING SPACES + 191 NEW SPACES = 472 TOTAL SPACES) PPNO 9510		12/15/2012	COMPLETE	
OCTA	ORA131108	2011 CTFP REGIONAL TRAFFIC SIGNAL SYNCHRONIZATION PROGRAM. 102 MILES AND 355 SIGNALIZED INTERSECTIONS ALONG 10 HIGH VOLUME REGIONAL TRAFFIC CORRIDORS.	6/30/2014	6/30/2014	COMPLETE	PROJECT IS TCM SUBSTITUTION FOR ORA085001, ORA41501.

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TABLE III-2.2 ORANGE COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
ORANGE COUNTY	ORA112001	MOULTON PARKWAY SMART STREET SEGMENT 3 PHASE II - FROM APPROXIMATELY 400' NORTH OF EL TORO ROAD TO 500' NORTH OF SANTA MARIA AVENUE (0.7 MILES) - IMPROVE ROADWAY TRAFFIC CAPACITY AND SMOOTH TRAFFIC FLOW THROUGH TRAFFIC SIGNAL SYNCHRONIZATION (3), BUS TURNOUTS, INTERSECTION IMPROVEMENTS, ADDITIONAL SIDEWALK, ADDITIONAL TURNING LANES AND ON-ROAD BIKE LANES WITHIN THE PROJECT LIMITS.	9/30/2013	9/30/2013	COMPLETE	

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TABLE III-2.3 ORANGE COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2013 FTIP COMPLETION DATE
ANAHEIM	ORA112622	BROOKHURST ST (600' NORTH OF I-5 TO SR-91). ADD ONE LANE EACH DIRECTION. FROM 4 TO 6 LANE FACILITY WITH RAISED MEDIAN. THE PROJECT WILL INCLUDE SIX-FOOT-WIDE CLASS II BIKEWAYS, TEN-FOOT WIDE PARKWAYS/SIDEWALKS AND CONCRETE SOUNDWALLS ALONG THE EAST AND/OR WEST SIDES OF BROOKHURST ST. CONSISTENT WITH THE 2012 RTP	6/30/2017
ANAHEIM	ORA120318	ANAHEIM REGIONAL TRANS INTERMODAL CENTER (ARTIC) PHASE I- INCLUDE EXPAND OF EXIST AMTRAK/METROLINK STATION AT ANA STAD TO PROVIDE ACCESS W/ TRANS SVC. TOLL CREDITS FTA 5337 FY 12/13 FOR \$1,600. TOLL CREDITS FOR FTA 5309C FY12/13 FOR \$1,500. TOLL CREDITS FOR CMAQ FY 13/14 FOR \$2,747.	6/30/2018
OCTA	ORA030605	I-405 FROM SR-73 TO I-605 ADD 1 MF LANE IN EACH DIRECTION, AND ADDITIONAL CAPITAL IMPROVEMENTS. COMBINED WITH ORA045, ORA151, ORA100507 AND ORA120310	9/30/2022
OCTA	ORA030612	PLACENTIA TRANSIT STATION - E OF SR-57 AND MELROSE ST AND N OF CROWTHER AVE. CONSTRUCT NEW METROLINK STATION AND RAIL SIDEING PPNO 9514	4/30/2016
OCTA	ORA081619	STATION REHABILITATION AND REPAIR IMPROVMENTS FOR ORANGE COUNTY METROLINK STATIONS	5/11/2015
OCTA	ORA110304	GOLDENWEST TRANSPORTATION CENTER. CONSTRUCT A SURFACE PARKING LOT (300 SPACES)	4/30/2016
OCTA	ORA111210	I-5 FROM SR 55 TO SR 57 - ADD 1 HOV LANE EACH DIRECTION	12/1/2018
OCTA	ORA112005	IMPLEMENT BIKE STATIONS AND BIKE SHARING PROGRAM IN ORANGE COUNTY	10/30/2015
OCTA	ORA112702	RIDESHARE VANPOOL PROGRAM - CAPITAL LEASE COST FY12/13 - FY16/17. (USE TOLL CREDITS FOR \$1.338 IN FY12/13)	1/31/2017
VARIOUS AGENCIES	ORA990906	GROUPED PROJECTS FOR BICYCLE AND PEDESTRIAN FACILITIES FUNDED WITH TE - SCOPE: PROJECTS ARE CONSISTENT WITH 40 CFR PART 93.126 EXEMPT TABLES 2 AND TABLE 3 CATEGORIES - BICYCLE AND PEDESTRIAN FACILITIES (BOTH MOTORIZED AND NON-MOTORIZED)	12/30/2014

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RIVERSIDE COUNTY

TABLE III-3.1 RIVERSIDE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
MORENO VALLEY	RIV071240	IN THE CITY OF MORENO VALLEY - EAST BOUND CACTUS AVE WIDENING BETWEEN VETERANS WAY & HEACOCK: WIDENING OF EAST BOUND CACTUS AVE FROM 2 TO 3 LANES, INCLUDING TRAFFIC SIGNAL MODIFICATIONS WITHIN THE PROJECT REACH, CHANNELIZATION, AND SIGNAL INTERCONNECT SYSTEM (6 SIGNALS).	6/1/2013	6/1/2013	2/28/2015	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO 1) OBTAINING EASEMENTS AND RIGHTS-OF-WAY; 2) UPDATING DESIGN, PLANS, AND SPECIFICATIONS; 3) UTILITY RELOCATION; AND 4) FINDING A SOLUTION BETWEEN CITY'S TRAFFIC CENTER SOFTWARE COMMUNICATING WITH EXISTING TRAFFIC CONTROLLERS IN FIELD.
RCTC	RIV071250	ON SR-91/I-15: SR91 - CONST 1 MF LN (SR71-I15)/1 AUX LN VAR LOCS(SR241-PIERCE) (OC PM 14.43-18.91), CD SYSTEM (2/3/4 LNS MAIN-I15), 1 TOLL EXPR LN (TEL) & CONVERT HOV TO TEL EA DIR (OC-I15); I15- CONST TEL MED DIR CONNCT NB15 TO WB91 AND EB91 TO SB15, 1 TEL EA DIR SR91 DIR CONNCT-ONTARIO IC (I15 PM 37.56-42.94).	7/31/2017	7/31/2017	9/4/2017	OBSTACLES ARE BEING OVERCOME. MINOR ADJUSTMENT TO CONSTRUCTION SCHEDULE. PROJECT WAS AWARDED DESIGN BUILD CONTRACT AND NTP 1 AND 2 HAVE BEEN ISSUED. DESIGN BUILD CONTRACTOR IS CURRENTLY WORKING THROUGH DESIGN AND CONSTRUCTION BEGAN IN MAY 2013.
RCTC	RIV111207	IN WESTERN RIVERSIDE COUNTY - CONTINUE THE IMPLEMENTATION OF PARK-N-RIDE FACILITIES THROUGH PROPERTY LEASES (VARIOUS LOCATIONS THROUGHOUT THE WESTERN COUNTY).	12/30/2018	12/30/2018	12/30/2018	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. PARK-N-RIDE LEASES ARE A CONTINUING PROGRAM IN WESTERN RIVERSIDE COUNTY.

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TABLE III-3.1 RIVERSIDE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
RCTC	RIV520109	RECONSTRUCT & UPGRADE SAN JACINTO BRANCH LINE FOR RAIL PASSENGER SERVICE (RIVERSIDE TO PERRIS) (PERRIS VALLEY LINE) (FY 07 5307) (UZA: RIV-SAN)	2012	2014	12/31/2015	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO LITIGATION AND DELAYED SIGNING OF SMALL START GRANTS AGREEMENT. UNDER CONSTRUCTION.
RCTC	RIV520111	REGIONAL RIDESHARE – CONTINUING PROGRAM.	2009	6/30/2018	6/30/2018	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. ONGOING PROGRAM.
RIVERSIDE TRANSIT AGENCY	RIV041030	IN THE CITY OF HEMET – CONSTRUCT NEW HEMET TRANSIT CENTER (WITH APPROXIMATELY 4 BUS BAYS) AT 700 SCARAMELLA CR., HEMET, CA (5309C FY 04 + 05 EARMARKS).	6/30/2010	12/31/2015	12/31/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT.
RIVERSIDE TRANSIT AGENCY	RIV050553	IN TEMECULA – CONSTRUCT NEW TEMECULA TRANSIT CENTER AT 27199 JEFFERSON AVE. (SW OF JEFFERSON AVE & SE OF CHERRY ST) (04, 05, 06, 07, E-2006-091, E-2007-0131, & 2008-BUSP-0131, SAFETEA-LU).	12/30/2010	12/31/2015	12/31/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT.
RIVERSIDE TRANSIT AGENCY	RIV090609	IN WESTERN RIVERSIDE COUNTY FOR RTA: INSTALL ADVANCE TRAVELER INFORMATION SYSTEMS (ATIS) ON VARIOUS FIXED ROUTE VEHICLES AND INSTALLATION OF ELECTRONIC MESSAGE SIGNS AT APPROX. 60 BUS STOPS (FY 'S 05, 07, 08, 09, AND 10 – 5309).	2011	12/30/2015	12/30/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT.

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TABLE III-3.1 RIVERSIDE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
TEMECULA	RIV62029	AT HWY 79 SO AND LA PAZ ST: ACQUIRE LAND, DESIGN AND CONSTRUCT PARK-AND-RIDE LOT – 250 SPACES (FY 05 HR4818 EARMARK)	2004/2007	12/31/2015	12/31/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT.

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TABLE III-3.2 RIVERSIDE COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
RIVERSIDE COUNTY TRANSPORTATION COMMISSION (RCTC)	RIV010212	ON SR91 – ADAMS TO 60/215 IC: ADD ONE HOV LN IN EACH DIRECTION, RESTRIPE TO EXTEND 4TH WB MIXED FLOW LANE FROM 60/215 IC TO CENTRAL OFF-RAMP, RESTRIPE TO EXTEND 5TH WB MIXED FLOW LANE FROM 60/215 IC TO 14TH ST OFF-RAMP, AUX LNS (MADISON-CENTRAL), BRIDGE WIDENING & REPLACEMENTS, EB/WB BRAIDED RAMPS, IC MOD/RECONSTRUCT + SOUND/RETAINING WALLS	2002	8/3/2015	COMPLETE	
RCTC	RIV050555	ON I-215 (N/O EUCALYPTUS AVE TO N/O BOX SPRINGS RD) & SR60 (E/O DAY ST TO SR60/I-215 JCT): RECONSTRUCT JCT TO PROVIDE 2 HOV DIRECT CONNECTOR LNS (SR60 PM: 12.21 TO 13.6) AND MINOR WIDENING TO BOX SPRINGS RD FROM 2 TO 4 THROUGH LANES BETWEEN MORTON RD AND BOX SPRINGS RD/FAIR ISLE DR IC (EA: 449311)	2011	4/29/2013	COMPLETE	

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TABLE III-3.3 RIVERSIDE COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
CITY OF EASTVALE	RIV151201	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF EASTVALE - TRAFFIC SYNCHRONIZATION OF SIX TRAFFIC SIGNALIZED INTERSECTIONS ALONG HAMNER AVENUE FROM SCHLEISMAN ROAD TO EASTVALE GATEWAY	12/31/2015
MORENO VALLEY	RIV151202	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF MORENO VALLEY - DESIGN AND CONSTRUCTION OF ITS, INCLUDING AN ETHERNET FIBER-OPTIC BACKBONE SYSTEM, CCTV CAMERAS AT 16 KEY INTERSECTIONS, AND NEW TRAFFIC SIGNAL CONTROLLERS AT EXISTING 45 SIGNALIZED INTERSECTIONS	12/31/2016
RIVERSIDE, CITY OF	RIV151205	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF RIVERSIDE - INSTALL FIBER-OPTIC SIGNAL INTERCONNECT IMPROVEMENTS ON MARKET ST/MAGNOLIA AVE FROM FIRST ST TO BUCHANAN ST AND INSTALL MISSING CONDUITS ON MAGNOLIA AVE FROM LA SIERRA AVE TO PIERCE ST UPDATING 49 SIGNALIZED INTERSECTIONS	12/31/2016
RIVERSIDE, CITY OF	RIV151209	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF RIVERSIDE - INSTALL UP TO FOUR BICYCLE STATIONS AND PROVIDE FORTY BICYCLES, TEN AT EACH STATION, TO IMPLEMENT A BIKE SHARE PROGRAM IN THE VICINITY OF DOWNTOWN RIVERSIDE, RIVERSIDE METROLINK STATION AND UNIVERSITY OF CALIFORNIA IN RIVERSIDE.	12/31/2015
RIVERSIDE, CITY OF	RIV151215	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF RIVERSIDE - CONSTRUCTION OF SIDEWALK ON ONE SIDE OF BRUCE STREET FROM ADAIR AVE TO LAKE AVE. IMPROVEMENTS INCLUDE A TOTAL OF 2,100 LF OF NEW SIDEWALK	12/31/2015
RIVERSIDE COUNTY	RIV151210	IN WESTERN RIVERSIDE COUNTY FOR THE COUNTY OF RIVERSIDE - CONSTRUCTION OF A 7.2 MILE MULTI-MODAL URBAN TRAIL ALONG THE SALT CREEK FLOOD CONTROL CHANNEL BETWEEN THE COMMUNITIES OF HEMET, MENIFEE AND CANYON LAKE. THE MULTI-MODAL TRAIL WILL INCLUDE A 16 FT WIDE CLASS I BIKEWAY AND 12 FT WIDE DECOMPOSED GRANITE PEDESTRIAL TRAIL	12/31/2018
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV071267	I-15 IN RIVERSIDE COUNTY: CONSTRUCT 4 TOLL EXPR LNS (TEL) (2 TE EA DIR) FROM SR60 (PM 51.4) TO HIDDEN VALLEY PKWY (PM 42.9) AND CONS 2 TE LNS (1 TE EA DIR) FROM HIDDEN VALLEY PKWY (PM 42.9) TO CAJALCO RD (PM 36.8). ADVANCE SIGNAGE WILL BE INSTALLED AT THE SOUTH END BETWEEN PM 34.7 TO PM 36.8 (CAJALCO RD) AND AT THE NORTH END BETWEEN PM 51.4 (SR60) TO PM 52.28 (PM 1.3 IN SAN BERNARDINO COUNTY),	12/31/2020

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TABLE III-3.3 RIVERSIDE COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
RIVERSIDE TRANSIT AGENCY	RIV151211	IN WESTERN RIVERSIDE COUNTY FOR RTA - IMPLEMENTATION OF LIMITED-STOP SERVICE ALONG ROUTE 1 SERVICE AREA DURING WEEKDAY PEAK COMMUTE PERIODS ALONG UNIVERSITY AND MAGNOLIA AVENUES (RIVERSIDE/CORONA CORRIDOR). SERVICE WILL BE BETWEEN UCR AND THE GALLERIA AT TYLER. THIS INCLUDES PURCHASE OF 14 NEW BUSES (40 FT) AND OPERATING ASSISTANCE FOR THE FIRST THREE YEARS OF SERVICE.	12/31/2020
WILDOMAR	RIV151213	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF WILDOMAR - WIDENING OF GRAND AVE (CLINTON KEITH RD TO DAVID BROWN MIDDLE SCHOOL) TO INCLUDE A CLASS II BIKE LANE AND MINIMAL WORK TO INCORPORATE CLASS II/III BIKE LANES ON CLINTON KEITH RD FROM GRAND AVE TO GEORGE AVE. IMPROVEMENTS INCLUDE A TOTAL OF 7,300 LF OF NEW BIKE LANES	12/31/2015
WILDOMAR	RIV151214	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF WILDOMAR - WIDENING OF GRAND AVE (CORYDON RD TO DAVID BROWN MIDDLE SCHOOL) TO INCLUDE A CLASS II BIKE LANES. IMPROVEMENTS INCLUDE A TOTAL OF 12,000 LF OF NEW BIKE LANES	12/31/2016

SAN BERNARDINO COUNTY

TABLE III-4.1 SAN BERNARDINO COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
RIALTO	200450	RIALTO METROLINK STATION – INCREASE PARKING SPACES FROM 225-775	2006	12/1/2015	12/1/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT.
SANBAG	200074	LUMP SUM – TRANSPORTATION ENHANCEMENT ACTIVITIES PROJECTS FOR SAN BERNARDINO COUNTY-BIKE/PED PROJECTS (PROJECTS CONSISTENT W/40CFR PART 93.126,127,128, EXEMPT TABLE 2 & 3).	2004	12/1/2015	12/1/2015	ONGOING PROJECT. PAST PROJECTS HAVE BEEN COMPLETED AND NEW PROJECTS HAVE BEEN AWARDED FUNDING
SANBAG	20061012	DOWNTOWN S.B. PASSENGER RAIL – FROM SAN BERNARDINO METROLINK STATION TO APPROX. 1 MILE EAST TO A NEW METROLINK STATION AT RIALTO AVE AND E ST. IN DOWNTOWN SAN BERNARDINO	10/10/2014	10/10/2014	6/30/2015	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO LONGER FINAL ENVIRONMENTAL APPROVAL AND BUY AMERICA REQUIREMENTS. CONSTRUCTION CONTRACT IS AWARDED AND CONSTRUCTION IS UNDERWAY
UPLAND	20040825	UPLAND METROLINK STATION - ADDITIONAL PARKING FROM 200 TO 500 spaces	12/1/2013	12/1/2013		TCM SUBSTITUTION HAS BEEN INITIATED.

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TABLE III-4.2 SAN BERNARDINO COUNTY COMPLETED/CORRECTED TCMS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
OMNITRANS	981118	BUS SYSTEM – PASSENGER FACILITIES: DESIGN AND BUILDING OF ONTARIO TRANSCENTER	2005/2002	9/30/2012	COMPLETE	
OMNITRANS	200101	BUS SYSTEM - PASSENGER FACILITIES: DEVELOPMENT OF SAN BERNARDINO TERMINAL LOCATED ON RIALTO AND E STREET. TRANSFER POINT CENTER		12/1/2014	COMPLETE	
OMNITRANS	200625	E STREET TRANSIT CORRIDOR- FROM SAN BERNARDINO TO LOMA LINDA (INCLUDES 14 ARTIC BUSES AND PARK AND RIDES)		1/1/2014	COMPLETE	
VARIOUS AGENCIES	713	I-215 CORRIDOR NORTH – IN SAN BERNARDINO, ON I-215 FROM RTE 10 TO RTE 210 – ADD 2 HOV & 2 MIXED FLOW LNS (1 IN EA. DIR.) AND OPERATIONAL IMP INCLUDING AUX LANES AND BRAIDED RAMP	2013	9/1/2013	COMPLETE	

APPENDIX VI-E: Attachment 2

TABLE III-4.3 SAN BERNARDINO COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2013 FTIP COMPLETION DATE
HIGHLAND	20061015	GREENSPOT ROAD BRIDGE AT SANTA ANA RIVER - GREENSPOT RD.CONSTRUCT NEW 4 LANE BRIDGE (STRIPING FOR 2 LANES) AT SAR W/ CHANNEL IMPROVMENTS-REALIGN APPROX 2400 FT OF 2 LANE RD.(54C0368) - EXISTING BRIDGE WILL BE PRESERVED AND REHABILITATED FOR PEDESTRIAN, BICYCLE, AND EQUESTRIAN USES.	12/30/2014
HIGHLAND	201186	AT SR-210/BASE LINE IC: RECONSTRUCT/WIDEN BASE LINE BETWEEN CHURCH AVE AND BOULDER AVE FROM 4 TO 6 THROUGH LANES AND EXTEND LEFT TURN LANES, WIDEN RAMPS – WB EXIT 1 TO 3 LANES, WB AND EB ENTRANCES 1 TO 3 LANES INCLUDING HOV PREFERENTIAL LANES (EA 1C970)	10/1/2017
SANBAG	SBD031505	GROUPED PROJECTS FOR LTF ARTICLE 3 PROJECTS LTF, ARTICLE 3 BICYCLE/PEDESTRIAN PROJECTS AT VARIOUS LOCATIONS (PROJECTS ARE CONSISTENT WITH 40 CFR PART 93.126, 127,128, EXEMPT TABLES 2 & 3)	12/1/2015

VENTURA COUNTY

TABLE III-5.1 VENTURA COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
CALTRANS	VEN070201 ⁵	NEAR MUSSEL SHOALS ADD 1 HOV LANE EACH DIR FROM MOBILE PIER ROAD UC TO S/O CASITAS PASS RD IN SANTA BARBARA CO. (PM R 39.8 TO 2.2). HOV LANES ARE PROPOSED TO BE PART-TIME (AM & PM PEAK PERIODS) ONLY. EXTEND ON/OFF-LANES AT MUSSEL SHOALS & LA CONCHITA FOR BETTER ACCEL AND DECEL; KEEP AS SINGLE LANES. CLOSE EXISTING 3 MEDIAN OPENNINGS LOCATED NEAR LA CONCHITA AND MUSSEL SHOALDS AND TANK FARM.		8/22/2016	8/22/2016	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT.
CAMARILLO	VEN040502	SANTA ROSA ROAD FROM UPLAND ROAD TO WOODCREEK ROAD WIDEN FROM TWO TO FOUR LANES AND ADD BIKE LANES	9/30/2008	7/1/2014	7/1/2015	REPLACEMENT HAS BEEN INITIATED PER FINAL 2015 FTIP GUIDELINES.
CAMARILLO	VEN110106	CALLEGUAS CREEK BIKE PATH PHASE 4 - SOUTH SIDE OF ROUTE 101 FROM PETIT STREET TO CALLEGUAS CREEK / VILLAGE AT THE PARK DRIVE - CONSTRUCT APPROXIMATELY 3500 FOOT CLASS I BIKE PATH	1/31/2013	1/31/2013	1/31/2015	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO ROW ACQUISITION. CITY IS WORKING WITH PROPERTY OWNERS ON EASEMENT.

⁵ VEN070201 will be corrected to be as a committed TCM via 2015 FTIP Amendment #15-01.

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TABLE III-5.1 VENTURA COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
OJAI	VEN010203	OJAI VALLEY BIKE TRAIL EXTENSION/FULTON ST EXTENSION.	2002/2004	12/31/2012	12/31/2014	OBSTACLES OVERCOME. PROJECT IS CURRENTLY IN CLOSEOUT.
OXNARD	VEN110112 ⁶	VICTORIA AVENUE FROM GUM TREE ST TO GONZALES RD SIDEWALK AND DRAINAGE IMPROVEMENTS, RESTRIPIING TO PROVIDE THREE NB THROUGH LANES AND BIKE LANE		12/31/2012	8/31/2014	OBSTACLES ARE BEING OVERCOME. UNDER CONSTRUCTION.
THOUSAND OAKS	VEN110308	ERBES ROAD FROM FALMOUTH TO THOUSAND OAKS BLVD (3900') CONSTRUCT CLASS II BIKE LANES, SIDEWALK/DRAINAGE IMPROVEMENTS, EXTEND TURN LANES AT INTERSECTION OF ERBES/HILLCREST	7/1/2015	7/1/2015	7/1/2015	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FROM 2013 FTIP TCM REPORT. UNDER CONSTRUCTION.
VCTC	VEN93017	REGIONAL RIDESHARE PROGRAM – LUMP SUM, INCL RIDESHARING PROGRAM FOR 08/09, 09/10, 10/11, 11/12, 12/13 – INCLUDES VENTURA COUNTY BIKE MAP UPDATE	2010	6/30/2018	6/30/2019	ON SCHEDULE. NO CHANGE IN COMPLETION DATE FOR ORIGINAL TCM SCOPE FROM 2013 FTIP TCM REPORT. ONGOING PROJECT.

⁶ VEN110112 will be identified as a committed TCM via 2015 FTIP Amendment #15-01.

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TABLE III-5.2 VENTURA COUNTY COMPLETED/CORRECTED TCMs						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
OJAI	VEN54164	BICYCLE & PEDESTRIAN TRAIL EXTENSION: FOX CYN BARRANCA FROM RT 150 TO OJAI VALLEY TRAIL	2003/2006	12/31/2013		REPLACED BY VEN130101 AND VEN130102 PER FINAL 2013 FTIP GUIDELINES.
OXNARD	VEN053403	EAST VENTURA BOULEVARD FROM NYLAND AVENUE TO EAST OF ALMOND DRIVE - LANDSCAPE ENHANCEMENT, PEDESTRIAN AND BICYCLE FACILITIES, DRAINAGE IMPROVEMENT AND PAVEMENT REHABILITATION	12/31/2008	12/31/2013	COMPLETE	
OXNARD	VEN990317	OXNARD BLVD 5TH/VINEYARD & ON 5TH ST (RT 34) OXNARD BLVD/ROSE AVE CONSTRUCT NEW BICYCLE & PEDESTRIAN FACILITIES	2003/2008	4/1/2013		REPLACED BY VEN130101 AND VEN130102 PER FINAL 2013 FTIP GUIDELINES.
SAN BUENAVENTURA	VEN061007	MILLS ROAD AT MAPLE ADJACENT TO PACIFIC VIEW MALL – BUS TURNOUTS WITH BUS SHELTERS, AND OTHER BUS STOP AMENITIES	2008	12/31/2012		AMENITY ENHANCEMENT. NOT A COMMITTED TCM.
SIMI VALLEY	VEN051201	WEST LOS ANGELES AVENUE FROM WEST CITY LIMIT TO EASY STREET CLASS II BIKE LANES	2010	12/31/2012	COMPLETE	
SIMI VALLEY	VEN055401	EXPAND TRANSIT MAINTENANCE FACILITY TO ACCOMMODATE SYSTEM EXPANSION		10/1/2011	COMPLETE	
THOUSAND OAKS	VEN056407	HILLCREST DRIVE FROM TELLER ROAD TO CONEJO BLVD – CLASS II BIKE LANES	2009	3/31/2013		REPLACED BY VEN130401 PER FINAL 2013 FTIP GUIDELINES.

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TABLE III-5.2 VENTURA COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
THOUSAND OAKS	VEN090503	LYNN ROAD FROM HILLCREST DRIVE TO AVENIDA DE LOS ARBOLES CONSTRUCT CLASS II BIKE LANES FOR 3 MILES (TEA21#221).	12/31/2010	4/1/2013	COMPLETE	
THOUSAND OAKS	VEN110109	THOUSAND OAKS TRANSIT CENTER PARKING LOT EXPANSION AND OTHER IMPROVEMENTS - EXPAND PARKING LOT BY APPROXIMATELY 77 SPACES, INSTALL ASSOCIATED LANDSCAPING, AND UPGRADE TRANSIT CENTER LIGHTING	7/1/2013	7/1/2013	COMPLETE	
THOUSAND OAKS	VEN110111	EXTEND OPERATING HOURS FOR THOUSAND OAKS FIXED ROUTE AND DIAL A RIDE SYSTEMS. Service ends 7/1/2014.	7/1/2014	7/1/2014		A DEMONSTRATION PROJECT, NOT A COMMITTED TCM.
VENTURA COUNTY	VEN110303	NEAR EL RIO ON SANTA CLARA AVENUE FROM CENTRAL TO ROUTE 118 CONSTRUCT 2.98 MILES OF CLASS II BIKE LANES	7/1/2013	7/1/2013	COMPLETE	
VENTURA COUNTY	VEN110306	IN MEINERS OAKS ON LOMITA AVENUE FROM RICE RD TO S LOMITA AVE CONSTRUCT 1.5 MILE CLASS III BIKE ROUTE	1/1/2013	1/1/2013	COMPLETE	
VENTURA COUNTY	VEN130401	ON PLEASANT VALLEY ROAD BETWEEN RICE AVE AND LAS POSAS RD (5 CENTERLINE MILES) INSTALL CLASS III BIKE LANES. INCLUDES RESTRIPIING AND SIGNAGE.	4/30/2014	4/30/2014	COMPLETE	

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TABLE III-5.2 VENTURA COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2013 FTIP COMPLETION DATE	2015 FTIP COMPLETION DATE	2015 FTIP PROJECT STATUS
VENTURA COUNTY TRANS COMMISSION (VCTC)	VEN070204	SMARTCARD UPGRADE	2008	11/1/2012		UPGRADE/REPLACEMENT PROJECT, NOT A COMMITTEED TCM.

APPENDIX VI-E: Attachment 2

TABLE III-5.3 VENTURA COUNTY NEW TCMs⁷			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2015 FTIP COMPLETION DATE
OXNARD	VEN130101	IN THE NORTHEAST COMMUNITY OF THE CITY OF OXNARD, NORTHEAST OF OXNARD TRANSPORTATION CENTER. INSTALL 1.9 MI CLASS II BIKE LANES, 6.3 MI CLASS III BIKE LANES AND IMPROVEMENTS TO 3.69 MI OF EXISTING BIKE LANES.	5/31/2015
OXNARD	VEN130102	ON C STREET FROM VINEYARD AVE TO CHANNEL ISLANDS BLVD, CONSTRUCT 4.9 MI OF CLASS II BIKE LANES. CONSTRUCT CLASS III BIKE LANES ON GUAVA ST/HEMLOCK AVE AND ALONG HILL ST.	3/1/2015
SANTA PAULA	VEN111102	SANTA PAULA BIKE TRAIL IMPROVEMENTS INCLUDING BIKE/PEDESTRIAN IMPROVEMENTS AT 16 ADJACENT INTERSECTIONS AND CONSTRUCTION OF ONE REST AREA SHADE STRUCTURE	6/1/2015
SIMI VALLEY	VEN120417	WEST LOS ANGELES AVE IN SIMI VALLEY, WIDEN 10 FT TO ADD BIKE LANES AND SIDEWALK FROM THE PUBLIC SERVICES CENTER TO WEST CITY LIMIT (1 MILE). (CMAQ IN FY12/13 INCLUDES \$15 OF TOLL CREDITS FOR ENG IN FY 14/15, \$5 FOR RW, AND \$234 FOR CON).	12/31/2014
VENTURA COUNTY	VEN130103	ON LAS POSAS RD FROM PLEASANT VALLEY RD TO LAGUNA RD, CONSTRUCT 2.05 MI CLASS III BIKE LANE. (CMAQ IN FY 14/15 INCLUDES \$28 IN TOLL CREDITS.)	11/1/2015
VENTURA COUNTY TRANS COMMISSION (VCTC)	VEN040405	NEXT BUS UPGRADE FOR REAL-TIME BUS STOP SIGNAGE (TRANSIT ENHANCEMENTS)	7/1/2018
VCTC	VEN121002	FARE COLLECTION AND RIDERSHIP MONITORING EQUIPMENT AND MAINTENANCE	7/1/2018

⁷ VEN130103 listed in the table is not a TCM because a Class III bike lane is not a TCM per Final 2015 FTIP Guidelines. The project’s TCM designation will be removed via 2015 FTIP Amendment #15-01.

**FINAL 2016 AQMP
APPENDIX VI-F**

PM PRECURSOR REQUIREMENTS

MARCH 2017

Background

PM_{2.5} has four major precursors, other than direct PM_{2.5} emissions, that may contribute to the formation of the ambient PM_{2.5} levels: ammonia, NO_x, SO_x, and VOC. Historically, U.S. EPA's approach to the evaluation and regulation of PM_{2.5} precursors was pursuant to Subpart 1, Part D, Title 1 of the Clean Air Act (CAA). As described in the 2007 PM_{2.5} Implementation Rule (72 FR 20586) and the 2008 PM_{2.5} New Source Review Rule (73 FR 28231), control measures for volatile organic compounds (VOCs) and ammonia are not required to be evaluated unless a state or the U.S. EPA provides an appropriate technical demonstration that their emissions significantly contribute to PM concentration in the nonattainment area. In January 2013, the U.S. Court of Appeals, D.C. Circuit, ruled that the U.S. EPA erred in implementing the 1997 PM_{2.5} National Ambient Air Quality Standards (NAAQS) pursuant solely to the general implementation provisions of Subpart 1, without considering the particulate matter specific provisions of Subpart 4. Although Subpart 4 relates to PM₁₀, the Court reasoned that the plain meaning of the CAA requires implementation of the 1997 PM_{2.5} standards under Subpart 4 because PM_{2.5} particles fall within the statutory definition of PM₁₀ and are thus subject to the same statutory requirements as PM₁₀. Subpart 4 has specific provisions regarding regulation of precursors of PM emissions that are not present in Subpart 1. Subpart 4 presumptively requires regulation of all PM_{2.5} precursors, except under certain circumstances. In August 2016, U.S. EPA issued the Final Rule of *"Fine Particle Matter National Ambient Air Quality Standards: State Implementation Plan Requirements"* (81 FR 58010) that provides a planning requirement framework for the 2012 and future PM_{2.5} NAAQS pursuant to Subpart 4. States must evaluate and adopt control measures for direct PM_{2.5} and all four PM_{2.5} precursors from stationary, mobile and area sources, unless states could make the appropriate precursor demonstration to demonstrate that contribution of a precursor is insignificant.

The U.S. EPA issued final designations for the primary annual PM_{2.5} standard on December 18, 2014, designating the Basin as nonattainment. However, consistent with a court ruling, all areas that were previously classified nonattainment were subsequently reclassified as "moderate" nonattainment (79 FR 31566). For the 2006 24-hour PM_{2.5} standard, the Basin was initially designated as nonattainment in December 2009. Effective February 12, 2016, at the request of the SCAQMD, the U.S. EPA reclassified the Basin as a "serious" nonattainment area for the 2006 PM_{2.5} 24-hour standard with an attainment date of December 31, 2019. A "serious" area attainment plan needs to be submitted no later than 18 months after the effective date, hence, by August 12, 2017. More stringent "serious" nonattainment area requirements apply including implementation of Best Available Control Measures / Best Available Control Technology (BACM/BACT), a lower major source emissions threshold (from 100 tons per year to 70 tons per year), and an update to the reasonable further progress (RFP) analysis given the longer attainment time frame. In the 2016 AQMP, all four PM_{2.5} precursors, namely ammonia, NO_x, SO_x, and VOC, are considered in the evaluation of control measures. Data and analyses of the four PM_{2.5} precursors are included in various elements of the 2016 AQMP, including:

- Emissions inventories (Chapter 3 and Appendix III)
- Attainment demonstration/impracticability demonstration (Chapter 5, Chapter 7 and Appendix V)
- The reasonably available control measures/reasonably available control technology (RACM/RACT) demonstration (Appendix VI-A)
- The best available control measures/best available control technology (BACM/BACT) demonstration (Appendix VI-A)
- Control strategies and other measures (Chapter 4 and Appendix IV)
- The reasonable further progress and quantitative milestone demonstration (Appendix VI-C), and
- Nonattainment new source review (NSR) (Appendix VI-G)

Section 189(e)

Section 189(e) of Subpart 4 also states that control requirements applicable to plans in effect for major stationary PM sources shall also apply to major stationary sources of PM precursors, except where such sources do not contribute significantly to PM levels which exceed the standard in the area. According to the U.S. EPA, a major source in a nonattainment area is a source with emission of any one air pollutant greater than or equal to the major source thresholds in a nonattainment area. This threshold is 100 TPY for a “moderate” nonattainment area and 70 TPY for a serious nonattainment area. Emissions are based on “potential to emit” and include the effect of add-on emission control technology, if enforceable (*must be able to show continual compliance with the limitation or requirement*). Major stationary sources of NO_x and SO_x are already subject to emission offsets and BACT requirements under Regulation XX (RECLAIM) and Regulation XII (New Source Review). Both VOC and ammonia are subject to requirements for BACT under existing NSR. VOC emissions are also required to be offset when a new or modified source will emit 4 TPY or more of VOC. The only practical difference between the existing control program for NSR and a program that expressly applies to VOC and ammonia as PM_{2.5} precursors is that any new or modified source of 70 TPY or more of ammonia will need offsets. To comply with the federal requirements for “serious” nonattainment areas, SCAQMD’s NSR program (Rules 1302, 1325) are currently being amended to include VOC and ammonia as PM precursors and to incorporate the changes in defining the major source threshold.

**FINAL 2016 AQMP
APPENDIX VI-G**

NEW SOURCE REVIEW

MARCH 2017

Background

The federal Clean Air Act (CAA) requires permits for the construction and operation of new or modified major stationary sources (Title 1, Part D, Subpart 1, Section 172(c)). New Source Review (NSR) for major and in some cases minor sources of PM_{2.5} and its precursors is presently addressed through the District's NSR and RECLAIM programs (Regulations XIII and XX, respectively). Both of these programs are applicable to sources located in the SCAQMD jurisdiction, including the South Coast Air Basin and the Coachella Valley. Regulation XIII establishes the federal and State mandated pre-construction review program for new, modified, or relocated sources in the SCAQMD jurisdiction. The NSR program is a critical component of the SCAQMD's attainment strategy and ensures that all new and modified sources install Best Available Control Technology (BACT) and their emission increases are fully offset with creditable emission reductions. Rule 1302 specifies the definitions used in Regulation XIII. Rule 1325 was adopted June 3, 2011 to incorporate U.S. EPA's requirements for PM_{2.5} into Regulation XIII. The rule mirrors federal requirements which include the definition of major source, significant emissions rate, offset ratios, and the applicability requirements of Lowest Achievable Emission Rate (LAER), facility compliance, offsets, and control of PM_{2.5} precursors. Under existing NSR and RECLAIM programs, major stationary sources of NO_x and SO_x are already subject to emission offsets. Both VOC and ammonia emissions are subject to Best Available Control Technology (BACT) under the existing NSR at a zero threshold. VOC emissions are also required to be offset when a new or modified source has the potential to emit 4 tons per year or more of VOC. Ammonia emission sources have not historically been subject to NSR offset requirements. However, for permitted ammonia sources, SCAQMD Rule 1303 (NSR Requirements) requires denial of "the Permit to Construct for any relocation, or for any new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia, unless BACT is employed for the new or relocated source or for the actual modification to an existing source." BACT shall be at least as stringent as LAER as defined in the federal Clean Air Act Section 171(3) [42 U.S.C. Section 7501(3)].

Major Source Threshold

The NSR permitting program relies on emissions thresholds to determine when certain requirements apply to new stationary sources and to modifications of existing stationary sources. If a new or modified facility will emit PM_{2.5} or PM_{2.5} precursor emissions greater than the major source threshold, the facility is considered a major source. Under the CAA, sources in a "moderate" PM_{2.5} nonattainment area are defined as major sources for nonattainment NSR provisions if they have a potential to emit 100 or more tons per year of PM_{2.5} or PM_{2.5} precursors. Under a "serious" nonattainment classification the threshold is reduced to a potential to emit 70 or more tons per year of PM_{2.5} or PM_{2.5} precursors. On December 18, 2014, the U.S. EPA issued final designations for the primary annual PM_{2.5} standard, designating the Basin as nonattainment. However, consistent with a court ruling, all areas that were previously classified nonattainment were subsequently reclassified as "moderate" nonattainment (79 FR 31566). For the 2006 24-hour PM_{2.5} standard, the Basin was initially designated as nonattainment in December 2009. Effective February 12, 2016, at the request of the SCAQMD, the U.S. EPA reclassified the Basin as a "serious" nonattainment area for the 2006 PM_{2.5} 24-

hour standard with an attainment date of December 31, 2019. Serious nonattainment classification redefines the major source threshold to 70 TPY which affects SCAQMD Regulation XIII.

PM Precursor Requirement in Nonattainment NSR

Section 189(e) of Subpart 4 states that control requirements applicable to plans in effect for major stationary PM sources shall also apply to major stationary sources of PM precursors, except where such sources do not contribute significantly to PM levels which exceed the standard in the area. In August 2016, U.S. EPA issued the Final Rule of *"Fine Particle Matter National Ambient Air Quality Standards: State Implementation Plan Requirements"* (81 FR 58010) that requires states to evaluate and adopt control measures for direct PM_{2.5} and all four PM_{2.5} precursors from stationary, mobile and area sources, unless states could make the appropriate precursor demonstration to demonstrate that contribution of a precursor insignificant. Specifically, a "nonattainment new source review (NNSR) demonstration" is required in order to establish that sources of the particular precursors need not be regulated for the purpose of the NNSR permitting program.

Regulation XIII Amendments

To comply with federal requirements for "serious" nonattainment areas, Rule 1325 has been amended on November 4, 2016 to modify the Major Polluting Facility definition to align the associated major source emission threshold from 100 to 70 tons per year for PM_{2.5} and PM_{2.5} precursors. VOC and ammonia are also being proposed to be added to the Rule 1325 definition of Precursors and a VOC and ammonia threshold is proposed at 40 tons per year as part the definition of Significant. SCAQMD staff also corrected the SO_x Major Polluting Facility threshold identified in Rule 1302 by lowering it from 100 to 70 tons per year. All of the rule amendments became effective upon adoption, with the exception of the Rule 1325 major source thresholds which will become effective August 14, 2017 or upon approval of the November 4, 2016 amendments to this rule by U.S. EPA, whichever is later.