

# **SACRAMENTO FEDERAL OZONE NONATTAINMENT AREA REDESIGNATION SUBSTITUTION REQUEST FOR THE 1979 1-HOUR OZONE STANDARD**

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## Table of Contents

Table of Contents .....	ii
List of Tables .....	v
List of Figures .....	v
List of Abbreviations and Acronyms .....	vi
1 EXECUTIVE SUMMARY .....	1-1
1.1 Background .....	1-1
1.2 Air Quality Trends .....	1-3
1.3 Permanent and Enforceable Control Measures .....	1-3
1.4 Emissions Inventory Trend .....	1-3
1.5 Overview of Chapter Contents .....	1-3
1.6 Conclusion .....	1-4
1.7 References .....	1-4
2 INTRODUCTION .....	2-1
2.1 Purpose and Objectives .....	2-1
2.2 Background .....	2-2
2.2.1 Ozone Formation .....	2-2
2.2.2 Health and Public Welfare Effects .....	2-2
2.2.3 Nonattainment Area .....	2-2
2.2.4 RS Request Preparation and Review Process .....	2-3
2.3 1979 1-Hour Ozone NAAQS .....	2-4
2.3.1 Overview .....	2-4
2.3.2 Nonattainment Designation .....	2-4
2.3.3 Reclassification .....	2-4
2.3.4 Standard Revoked .....	2-4
2.3.5 Attainment .....	2-5
2.3.6 CAA Section 185 Termination Determination Request .....	2-5
2.4 References .....	2-5
3 REDESIGNATION SUBSTITUTION REQUIREMENTS FOR REVOKED STANDARDS .....	3-1
3.1 1979 1-Hour NAAQS .....	3-1

3.2	1997 8-Hour NAAQS .....	3-2
3.3	Anti-Backsliding Requirements .....	3-3
3.4	References .....	3-3
4	OZONE MONITORING NETWORK AND AIR QUALITY DATA .....	4-1
4.1	Introduction to Ozone Data .....	4-1
4.2	Ozone Monitoring Network .....	4-1
4.3	Air Monitoring Network and Reporting Requirements .....	4-2
4.4	Ozone Data Certification .....	4-3
4.5	Ozone Data Trends .....	4-4
4.5.1	1979 1-Hour Ozone Standard Trend .....	4-4
4.6	Meteorological Trend Analysis .....	4-5
4.7	References .....	4-10
5	PERMANENT AND ENFORCEABLE EMISSION REDUCTIONS .....	5-1
5.1	Overview .....	5-1
5.2	Local Strategies .....	5-1
5.3	State Strategies .....	5-2
5.4	References .....	5-3
6	EMISSIONS INVENTORY .....	6-1
6.1	Overview .....	6-1
6.2	Introduction to Emissions Inventory .....	6-1
6.3	Inventory Categories .....	6-2
6.4	Emissions Inventory Trends .....	6-2
6.5	Other Trend Indicators .....	6-6
6.5.1	Population and VMT .....	6-6
6.5.2	Economic growth .....	6-7
6.6	References .....	6-8
7	REDESIGNATION SUBSTITUTION COMPLIANCE ASSESSMENT .....	7-1
7.1	Overview .....	7-1
7.2	References .....	7-1
8	SUMMARY AND CONCLUSIONS .....	8-1
8.1	Ozone Air Quality Trends .....	8-1

8.2	Emissions Inventory Trend .....	8-1
8.3	Permanent and Enforceable Emission Reductions .....	8-1
8.4	Attainment Determination .....	8-1
8.5	Conclusions .....	8-2
8.6	References .....	8-2
Appendix A	Control measures Adopted by Air Districts in the SFNA .....	A-1
Appendix B.	Fuel Measures Adopted by CARB 1990 to 2013 .....	B-1
Appendix C	On-Road Mobile Source Measures Adopted by CARB 1990 to 2013 ...	C-1
Appendix D	Off-Road Mobile Source measures Adopted by CARB 1990 to 2013 ...	D-1
Appendix E	Emissions Inventory Breakdown for VOC and NO <sub>x</sub> Emissions in the SFNA .....	E-1

## List of Tables

Table 1-1 1-Hour Ozone Exceedance Days Trend SFNA – Peak Monitoring Site .....	1-2
Table 4-1 SFNA Ozone monitoring stations information and status .....	4-3
Table 4-2 Number of 1-Hour ozone exceedance day for the SFNA .....	4-5
Table 6-1 SFNA VOC Emissions .....	6-3
Table 6-2 SFNA NO <sub>x</sub> Emissions .....	6-3
Table 6-3 Percent Change in VOC Emissions Reductions (-) or Increase (+) from Attainment Year (2009) to Future Year .....	6-6
Table 6-4 Percent Change in NO <sub>x</sub> Emissions Reductions (-) or Increase (+) from Attainment Year (2009) to Future Year .....	6-6
Table 7-1: Criteria and Compliance Assessment .....	7-1

## List of Figures

Figure 2-1 SFNA Boundaries .....	2-3
Figure 4-1 Location of ozone monitoring stations operating in the Sacramento Federal Nonattainment Area (SFNA) during 2015.....	4-2
Figure 4-2 Sacramento Maximum daily Temperatures from May – October, 1990 – 2016 .....	4-7
Figure 4-3 1990 – 2016 High Temperature Days vs. Ozone Exceedance Days, SFNA.... .....	4-9
Figure 4-4 Sacramento Maximum Average Daily Temperature 1967 – 2016 (Ozone Season Only) .....	4-9
Figure 6-1 SFNA VOC Emissions Trends from 2007 through 2028 .....	6-4
Figure 6-2 SFNA NO <sub>x</sub> Emissions Trends from 2007 through 2028.....	6-5
Figure 6-3 SFNA Daily VMT Trends compared to VOC and NO <sub>x</sub> On-Road Emission Trends, 2009 to 2028 .....	6-7
Figure 6-4 SFNA Population Trends compred to total VOC and NO <sub>x</sub> Trends, 2009 through 2028 .....	6-5

## List of Abbreviations and Acronyms

<b>°F -</b>	degree Fahrenheit
<b>APCD -</b>	Air Pollution Control District
<b>AQMD -</b>	Air Quality Management District
<b>AQMIS -</b>	Air Quality and Meteorological Information System
<b>AQS -</b>	Air Quality System
<b>CAA -</b>	Clean Air Act
<b>CARB -</b>	California Air Resources Board
<b>CEPAM -</b>	California Emission Projection Analysis Model
<b>CFR -</b>	Code of Federal Regulations
<b>EDCAQMD -</b>	El Dorado County Air Quality Management District
<b>EIC -</b>	emission inventory category code
<b>USEPA -</b>	United States Environmental Protection Agency
<b>ERCs -</b>	emission reduction credits
<b>FR -</b>	Federal Register
<b>FRAQMD -</b>	Feather River Air Quality Management District
<b>IPCC -</b>	Intergovernmental Panel on Climate Change
<b>MPO -</b>	Metropolitan Planning Organization
<b>MSA -</b>	Metropolitan Statistical Area
<b>MTP -</b>	Metropolitan Transportation Plan
<b>MTIP -</b>	Metropolitan Transportation Improvement Program
<b>NAAQS -</b>	National Ambient Air Quality Standard
<b>NAA</b>	Nonattainment Area
<b>NOAA -</b>	National Oceanic Atmospheric Administration
<b>NSR -</b>	New Source Review
<b>NO<sub>x</sub> -</b>	Nitrogen Oxides
<b>PCAPCD -</b>	Placer County Air Pollution Control District
<b>ppb -</b>	parts per billion
<b>ppm -</b>	parts per million
<b>RACM -</b>	Reasonably Available Control Measure
<b>RACT -</b>	Reasonably Available Control Technology

<b>RFP -</b>	Reasonable Further Progress
<b>ROG -</b>	reactive organic gases
<b>ROP -</b>	rate-of-progress
<b>RS -</b>	Redesignation Substitution
<b>SACOG -</b>	Sacramento Area Council of Governments
<b>SFNA -</b>	Sacramento Federal Nonattainment Area
<b>SIP -</b>	State Implementation Plan
<b>SJVAPCD -</b>	San Joaquin Valley Air Pollution Control District
<b>SMAQMD -</b>	Sacramento Metropolitan Air Quality Management District
<b>tpd -</b>	tons per day
<b>VMT -</b>	vehicle miles traveled
<b>VOC -</b>	volatile organic compounds
<b>YSAQMD -</b>	Yolo-Solano Air Quality Management District



## **1 EXECUTIVE SUMMARY**

Ground-level ozone is regulated under federal and state laws. It is a colorless gas formed in the presence of heat and sunlight and is not emitted directly into the air from emission sources like other pollutants. Ozone is formed through chemical reactions between two precursor pollutants, volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>).

### **1.1 Background**

The Sacramento Federal Nonattainment Area (SFNA) was designated as “severe” nonattainment for the 1979 1-Hour ozone National Ambient Air Quality Standards (NAAQS). The 1-Hour standard was revoked when the United States Environmental Protection Agency (USEPA) published the Final Phase 1 Rule (69 FR 23951) implementing the more stringent 1997 8-Hour ozone NAAQS. The USEPA made a finding that the SFNA attained the revoked 1-Hour ozone standard on October 18, 2012 (77 FR 64036). However, the District is still subject to anti backsliding requirements for the 1-Hour standard unless a Redesignation Substitution (RS) Request is approved by USEPA.

The Sacramento Air Quality Management District (SMAQMD) initially submitted a 1-hour Ozone Attainment Determination Request to USEPA in April 2010 (SMAQMD, 2010). USEPA, after issuing its proposed determination for public comment (76 FR 28696), asked for additional information which was provided to USEPA in August 2012 (SMAQMD, 2012). USEPA did not act on the request, and recently asked the SFNA to update the request under the redesignation substitution request guidelines adopted for the 2008 ozone NAAQS (80 FR 12264). This analysis is submitted in response to that request.

### **Overview**

The USEPA has determined that areas may demonstrate attainment with a revoked standard by submitting a Redesignation Substitution Request (RS Request) which is based on the Clean Air Acts (CAA) criteria for redesignation to attainment in CAA Section 107(d)(3)(E) (80 FR 12304). This RS Request establishes that the SFNA meets the CAA substitution requirements because it has attained the standard through permanent and enforceable measures, and will continue to maintain the standard for 10 years (CAA Section 175A).

The CAA allows anti-backsliding measures to be shifted to contingency measures in the SIP provided that the action is consistent with CAA section 110(l) and section 193 (40 CFR 51.1105(b)(2)). However, the region would still be subject to the CAA requirements (Section 182 (d)) for an area classified as severe under the 1997 and 2008 ozone NAAQS. Consequently, the SFNA is not requesting that these measures be shifted to contingency measures at this time.

This Request includes a request that, after USEPA approves the redesignation, USEPA also acknowledge that the CAA section 185 fee requirements for the 1-hour standard (77 FR 64037) are terminated.

### **Attainment Demonstration**

Table 1-1 contains the 2006-2016 ambient air monitoring data summary for 1-Hour ozone exceedance days for each of the historical SFNA peak monitoring sites. The region attained the 1979 1-Hour ozone NAAQS in 2009 based on data from the 2007-2009 monitoring period. This was in accordance with 40 CFR 50 Appendix H<sup>1</sup>. Table 1-1 shows that during 2007-2009 there was one peak ozone exceedance day in 2007, one in 2008, and zero in 2009. The USEPA approved an Exceptional Events analysis on April 13, 2011, which authorized the region to exclude 1-hour exceedance data from June 23, June 27, and July 10, 2008, collected at the Folsom monitor (USEPA, 2011). The USEPA made a finding that the SFNA attained the revoked 1-Hour ozone standard on October 18, 2012 (77 FR 64036). A meteorological trend analysis, correlating high temperature days (days above 90°F) with ozone concentrations indicates this improvement in air quality was not due to unusually favorable meteorology.

Table 1-1 1-Hour Ozone Exceedance Days Trend SFNA – Peak Monitoring Site

Monitoring Site	Number of Exceedance Days										
	2006	2007	2008*	2009	2010	2011	2012	2013	2014	2015	2016
Folsom	1	1	2	0	0	0	0	0	0	0	0
Sloughhouse	3	0	3	0	0	0	1	0	0	0	0
Cool	2	0	2	0	0	0	0	0	0	0	0
Sacramento-Del Paso Manor	1	1	0	0	0	0	0	0	0	0	0
Auburn	1	0	0	0	0	0	0	0	0	0	0
Colfax	1	0	0	0	0	0	0	0	0	0	0
Elk Grove	1	0	0	0	0	0	0	0	0	0	0
North Highlands	1	0	0	0	0	0	0	0	0	0	0
Roseville	0	0	2	0	0	0	0	0	0	0	0
<b>Peak Exc. Days</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

\* Data shown excludes exceedances on June 23, June 27, and July 10, 2008 due to exceptional events.

<sup>1</sup> 40 CFR 50 Appendix H explains how to determine a violation of the NAAQS. This occurs if there are more than 3 exceedance days (> 124 parts per billion (ppb)) at an individual monitoring site averaged over a 3-year period.

## **1.2 Air Quality Trends**

Regional, statewide, and federal efforts to reduce emissions have led to a decrease in ozone concentrations over the past twenty years. Table 1-1 shows that since 2009 there has only been one exceedance of the 1-Hour standard.

## **1.3 Permanent and Enforceable Control Measures**

Ozone concentrations have and will continue to be reduced through the continued implementation of permanent and enforceable control measures. Continued attainment of the 1979 1-Hour standard is expected due to anticipated emission reductions from mobile sources attributable to fleet turnover, implementation of adopted cleaner engine technology requirements, and implementation of adopted stationary source control measures. These strategies will also be essential in attaining the 8-Hour ozone standards.

## **1.4 Emissions Inventory Trend**

Emission trends show a decrease in emissions, despite increases in population, vehicle miles traveled (VMT), and economic development. The emission inventories for Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOCs) were forecasted out to 2028 (horizon year), using 2009 as the attainment base year, for stationary sources, area-wide sources, on-road motor vehicles, and other mobile sources for the region. The emissions from each of these categories are decreasing over time, supporting future improvement in ambient air quality and indicating that the region will remain in attainment through 2028.

The total emission reductions from 2009 (the last of the three years used to show attainment of the 1979 standard) to 2028 is forecast to be 52% for NO<sub>x</sub> (Table 6-3) and 20% for VOCs (Table 6-4).

## **1.5 Overview of Chapter Contents**

The content of the following chapters is described below:

- Chapter 2: Introduction – describes the existing planning structure and demonstrates how the area meets the redesignation and 185 termination determination requirements.
- Chapter 3: Redesignation Substitution (RS) Requirements for Revoked Standards – Describes the RS Request requirements and the ability of the region to meet the requirements.
- Chapter 4: Ozone Monitoring Network and Air Quality Data - Describes air quality spatial and temporal trends in the SFNA and documents the attainment determination for the 1979 1-Hour standard.
- Chapter 5: Permanent and Enforceable Strategies - Describes the permanent and enforceable control strategies and emissions reduction strategies that are in place.

- Chapter 6: Emissions Inventory - Documents the historical emissions, baseline emissions inventory, future emissions trends, and other trend indicators.
- Chapter 7: Redesignation Substitution Compliance Assessment – Summarizes compliance with RS Request Requirements.
- Chapter 8: Conclusions - Summarizes how the SFNA will remain in attainment and summarizes the key points and major conclusions of this report.

## 1.6 Conclusion

The information presented in this RS Request demonstrates that the former 1979 1-Hour standard is being met. Air quality trends indicate that ambient ozone concentrations are continuing to decline and that since 2009 there has only been 1 exceedance of the 1-Hour standard recorded. With the implementation of permanent and enforceable control strategies, stationary, area-wide, and mobile sources emissions will continue to decrease over time. This supports the conclusion that the region will experience future improvements in ambient air quality and that the region will remain in attainment through 2028. This report was completed in accordance with the USEPA guidance.

## 1.7 References

SMAQMD, et al. *1-Hour Ozone Attainment Determination Request for the Sacramento Federal Nonattainment Area*. Sacramento, CA: Sacramento Air Quality Management District [2010.] Print.

SMAQMD, et al. *SUPPLEMENTAL REPORT: Additional information Supporting the April 26, 2010 1-Hour Ozone Attainment Determination Request for the Sacramento Federal Ozone Nonattainment Area*. Sacramento, CA: Sacramento Metropolitan Air Quality Management District. 24 May [2012.] Print.

USEPA. *Interpretation of the 1-Hour Primary and Secondary National Ambient Air Quality Standards for Ozone*. 40 CFR 50 Appendix H

USEPA. *Transition from the 1997 ozone NAAQS to the 2008 ozone NAAQS and anti-backsliding*. 40 CFR 51.1105

USEPA. (69 FR 23951) *Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard – Phase 1*. Federal Register, Volume 69, 30 April 2004, p. 23951-24000.

USEPA (76 FR 28696 – 28707) *Approval and Promulgation of Air Quality Implementation Plans; California; Determination of Termination of Section 185 Fees*. Federal Register, Volume 76, 18 May 2011, p. 28696 – 28707.

USEPA. (77 FR 64036) *Determination of Attainment of the 1-Hour Ozone National Ambient Air Quality Standards in the Sacramento Metro Nonattainment Area in California, Final Rule*. Federal Register, Volume 77, 18 October 2012, p. 64036-64039. Print.

USEPA. (80 FR 12264) *Final Rule: Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements*. Federal Register, Volume 80, 6 March 2015, p. 12264-12319.

USEPA. *Letter from USEPA to CARB, Exceptional event requests regarding exceedances of the 1-hour ozone NAAQS at Folsom, California in the Sacramento 1-hour Ozone Nonattainment Area*, 13 April 2011.

## 2 INTRODUCTION

### 2.1 Purpose and Objectives

The purpose of the Redesignation Substitution (RS) request is to: (i) demonstrate that the Sacramento Federal Nonattainment Area (SFNA) has met the Clean Air Act (CAA) requirements for attainment redesignation, (ii) document that NSR and anti-backsliding measures required under 40 CFR 51.1105((a)(1) are no longer triggered by the 1979 standard, although they will not be moved to contingency measures since they are separately required to meet the 1997 and 2008 ozone standards, and (iii) request that EPA acknowledge that the 185 penalty fees are no longer in effect.

Attainment of the standard is established using quality-assured and certified ambient air quality monitoring data from 2007 to 2009. Attainment of the standard through 2028 is shown using projected future emissions. NO<sub>x</sub> and VOC concentrations have and will continue to be reduced through rules and regulations that are currently in place and will remain in place in the future.

40 CFR 51.1105(a)(1) requires redesignation areas to maintain the measures identified for their classifications in 40 CFR 51.1100(o). If a redesignated area can demonstrate that the measures are not required to meet the anti-backsliding requirements in CAA sections 110(l) and 193, the USEPA may approve removal of New Source Review requirements and shifting of the other measures to contingency measures (40 CFR 51.1105(b)(2)) within the SIP. These obligations include the possible collection of Clean Air Act (CAA) section 185 fees, nonattainment contingency measures, and major source applicability thresholds for RACT. However, for the SFNA, the 51.1100(o) measures are still applicable because the measures must be included in the SIPs for the 1997 and 2008 standards – independent of the need for anti-backsliding provisions – since the SFNA is classified as severe under those standards.<sup>2</sup> To avoid any future confusion, however, the SFNA requests that USEPA acknowledge that the requirements are no longer triggered by the 1979 standard.

#### CAA section 185 fees

The SFNA did not attain the 1-hour standard by the November 2005 deadline, which triggered the Section 185 fee requirements. The USEPA issued a clean data determination (77 FR 64036) on October 18, 2012, finding that data submitted by the Sacramento Region established that it has attained the federal 1-hour ozone standard.

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<sup>2</sup> The CAA section 185 fee program requirements have already been triggered for the 1979 1-hour standard but will only be triggered if the SFNA does not meet the attainment date for the 1997 8-hour standard in 2018.

## **2.2 Background**

### **2.2.1 Ozone Formation**

Ground-level ozone is one of the six criteria air pollutants regulated under federal and state laws. It is a colorless gas formed in the presence of sunlight and is not emitted directly into the air from emission sources like other pollutants such as carbon monoxide. At ground level, ozone is formed through chemical reactions between two precursor pollutants, volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>), in the presence of sunlight and heat. VOC pollutants are also known as reactive organic gases (ROG). Ozone concentrations are typically the highest during the months of May through October in the Sacramento region.

VOC and NO<sub>x</sub> are emitted by both man-made (anthropogenic) and natural sources. Anthropogenic sources for both pollutants include on-road and off-road combustion engine vehicles, power plants, industrial facilities, gasoline stations, organic solvents, and consumer products. Natural sources of VOC's include emissions from trees and plants and natural sources of NO<sub>x</sub> include anaerobic biological processes.

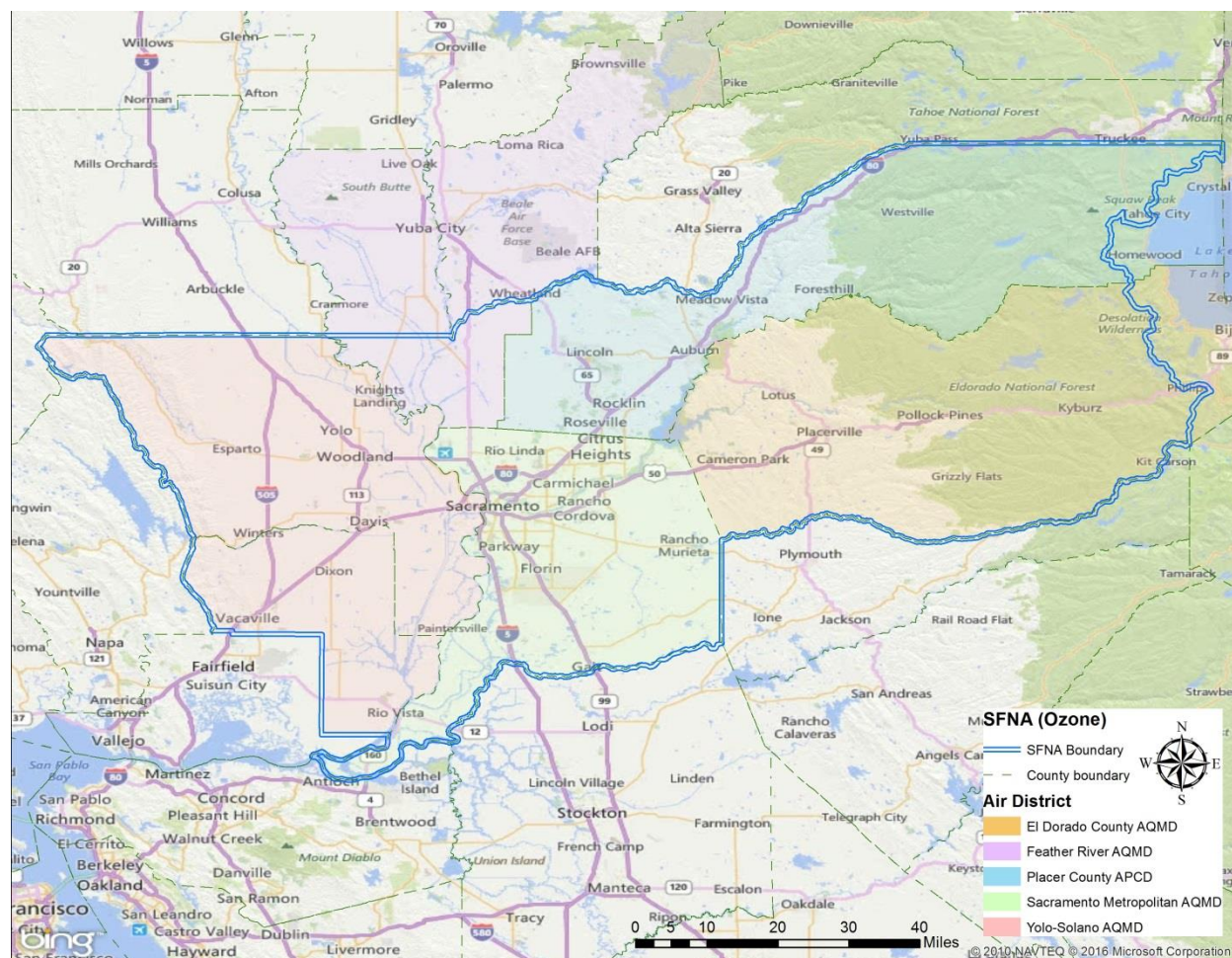
### **2.2.2 Health and Public Welfare Effects**

High ground-level ozone concentrations can reduce lung function and increase respiratory symptoms, which can aggravate asthma, bronchitis, cause chest pains, and wheezing. Ozone exposure increases medical visits and school absenteeism, and is associated with increased susceptibility to respiratory infections, cardiac-related illnesses, and premature death, especially in people with heart and lung disease. Ozone can also cause damage to crops and natural vegetation by acting as a chemical oxidizing agent. (USEPA, 2015a; 2015b)

### **2.2.3 Nonattainment Area**

The RS request covers the air districts that have jurisdiction within the SFNA (see Figure 2-1). This includes all of Sacramento and Yolo counties, and portions of Placer and El Dorado counties (except Lake Tahoe Basin portions), Solano County (eastern portion), and Sutter County (southern portion). These boundaries were established in final rule of Air Quality Designations and Classifications (56 FR 56728) and are the same for the 1979, 1997 and 2008 standards.

Figure 2-1 SFNA Boundaries



## 2.2.4 RS Request Preparation and Review Process

The Sacramento Metropolitan Air Quality Management District (SMAQMD) is a local government air quality regulatory agency for the jurisdiction of Sacramento County. The 1979 1-Hour RS Request for the SFNA was developed by the SMAQMD staff in coordination and collaboration with all air districts in the SFNA. This includes the El Dorado County Air Quality Management District, Feather River Air Quality Management District, Placer County Air Pollution Control District, and Yolo-Solano Air Quality Management District. The CARB staff provided information regarding mobile and area-wide emissions inventory category estimates.

The Board of Directors for the SMAQMD in cooperation with the other air districts in the SFNA will hold a public hearing in September 2017 to receive public comments on the State Implementation Plan (SIP) revision for the SFNA. The final report and documentation of public comments and responses to comments will be sent to CARB for their submittal to USEPA.



## **2.3 1979 1-Hour Ozone NAAQS**

### **2.3.1 Overview**

In 1979, the USEPA revised the NAAQS for ozone to a concentration of 124 parts per billion (ppb) averaged over one hour (44 FR 8202). A violation of the standard occurs when there are more than 3 days over 124 ppb in a consecutive 3-year period at a monitoring site (40 CFR 50, Appendix H).

### **2.3.2 Nonattainment Designation**

The 1990 CAA Amendments included new designation classifications, attainment deadlines, and planning requirements. On November 6, 1991, the Sacramento region was designated nonattainment for the 1-Hour ozone NAAQS (56 FR 56728). Under CAA §181, the area was initially classified as “serious” with an attainment date of no later than November 15, 1999, based on an ozone design value of 160 ppb.

In development of the 1994 Sacramento Area Regional Ozone Attainment Plan (SMAQMD, et al, 1994), attainment demonstration modeling was used to simulate future ozone formation and evaluate the effectiveness of emission control scenarios. The modeling did not project attainment by the 1999 deadline, but demonstrated that attainment could occur by 2005 through a combined strategy of controlling emissions of VOC and NO<sub>x</sub>. Consequently, CARB requested a voluntary bump-up from the serious to severe category. USEPA approved CARB’s request with a new attainment deadline of November 15, 2005 (60 FR 20237).

### **2.3.3 Reclassification**

The USEPA approved the 1994 Sacramento Area Regional Ozone Attainment Plan (SMAQMD et al, 1994), associated elements, and the bump up, which became effective on February 7, 1997 (62 FR 1160). The more stringent requirements that resulted from the bump up included implementation of CAA Section 185 fees on major stationary sources if the attainment deadline was not met, a higher New Source Review (NSR) offset ratio of 1.3 to 1 rather than 1.2:1, a lower conformity threshold of 25 tons per year (tpy) rather than 50 tpy of VOCs or NO<sub>x</sub>, and a transportation growth determination analysis.

### **2.3.4 Standard Revoked**

The USEPA published the Phase 1 Rule to implement the 1997 8-Hour ozone NAAQS which revoked the 1979 1-Hour ozone NAAQS. This became effective June 15, 2004 (69 FR 23954).

A court decision and USEPA rule reconsideration provided that certain previous 1-Hour ozone nonattainment and maintenance control obligations remain in effect (Meyers, 2007). The anti-backsliding regulations retained provisions that include:

1. The 1-Hour ozone NAAQS new source review (NSR) requirements,
2. Contingency measures for failure to attain or make reasonable further progress toward attainment of the 1-Hour ozone NAAQS, and
3. CAA §185 penalty fees for failure of severe and extreme areas to attain the 1-Hour ozone NAAQS.

### 2.3.5 Attainment

Air quality data for 2007-2009 showed attainment of the 1-Hour ozone NAAQS. Three high ozone days (June 23, June 27, and July 10, 2008) at the Folsom monitoring station were excluded from the attainment demonstration analysis calculations due to wildfires. The analysis to demonstrate why this data is excluded is contained in the “Exceptional Events Demonstration for High Ozone in the Sacramento Regional Nonattainment Area Due to Wildfires” (SMAQMD et al, 2009b). This analysis was approved by the USEPA in 2009. The USEPA made a finding that the SFNA attained the 1-Hour ozone standard on October 18, 2012 (77 FR 64036). There has only been one exceedance of the 1-Hour ozone NAAQS since 2009.

### 2.3.6 CAA Section 185 Termination Determination Request

In 2010, the air districts in the Sacramento region submitted a “1-Hour Ozone Attainment Determination Request for the SFNA” (SMAQMD et al, 2010). A Supplemental Report to the 2010 1-Hour Ozone Attainment Determination Request was completed in 2012 (SMAQMD et al, 2012). Both of these Reports requested a Section 185 termination determination which was never acted upon by the USEPA.

## 2.4 References

- CARB. *Letter from Goldstene James N. (CARB Executive Director) to Wayne Nastri (USEPA Region 9 Regional Administrator)*. 14 February 2008. Print.
- Meyers, Robert J. (USEPA) *Decision of the U.S. Court of Appeals for the District of Columbia Circuit on our Petition for Rehearing of the Phase 1 Rule to Implement the 8-Hour Ozone NAAQS*. Memorandum, 15 June 2007.
- SMAQMD, et al. *Sacramento Area Regional Ozone Attainment Plan*. Sacramento, CA: Sacramento Metropolitan Air Quality Management District, [1994.] Print.
- SMAQMD, et al. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (with errata sheets incorporated)*. Sacramento, CA: Sacramento Metropolitan Air Quality Management District, [2009a.] Print.
- SMAQMD, et al. *Exceptional Events Demonstration for High Ozone in the Sacramento Regional Nonattainment Area Due to Wildfires*. Sacramento, CA: Sacramento Metropolitan Air Quality Management District, [2009b.]

SMAQMD, et al. *1-Hour Ozone Attainment Determination Request for the Sacramento Federal Nonattainment Area*. Sacramento, CA: Sacramento Air Quality Management District [2010.]

SMAQMD, et al. *SUPPLEMENTAL REPORT: Additional information Supporting the April 26, 2010 1-Hour Ozone Attainment Determination Request for the Sacramento Federal Ozone Nonattainment Area*. Sacramento, CA: Sacramento Metropolitan Air Quality Management District. 24 May [2012.]

USEPA. *Interpretation of the 1-Hour Primary and Secondary National Ambient Air Quality Standards for Ozone*. 40 CFR 50 Appendix H

USEPA. *Transition from the 1997 ozone NAAQS to the 2008 ozone NAAQS and anti-backsliding*. 40 CFR 51.1105

USEPA. *California*. 40 CFR 81.305

USEPA. (44 FR 8202) *Revisions to the National Ambient Air Quality Standards for Photochemical Oxidants, Final Rule*. Federal Register, Volume 44, 8 February 1979, p. 8202-8237. Print.

USEPA. (56 FR 56724) *Designation of Area for Air Quality Planning Purposes, Final Rule*. Federal Register, Volume 56, 6 November 1991, p. 56694-56858. Print.

USEPA. (60 FR 20237) *California, Sacramento Ozone Nonattainment Area, Reclassification to Severe, Final Rule*. Federal Register, Volume 60, 25 April 1995, p.20237-20238. Print.

USEPA. (69 FR 23951) *Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard – Phase 1*. Federal Register, Volume 69, 30 April 2004, p. 23951-24000. Print.

USEPA. (62 FR 1160) *Approval and Promulgation of Implementation Plans: California – Ozone, Final Rule*. Federal Register, Volume 62, 8 January 1997, p. 1160-1187. Print.

USEPA. (77 FR 64036) *Determination of Attainment of the 1-Hour Ozone National Ambient Air Quality Standards in the Sacramento Metro Nonattainment Area in California, Final Rule*. Federal Register, Volume 77, 18 October 2012, p. 64036-64039. Print.

USEPA. *Ground Level Ozone Health Effect*. Web. 30 April 2015a. <  
<https://www.epa.gov/ozone-pollution/health-effects-ozone-pollution> >

USEPA. *Ground Level Ozone Ecosystems Effect*. Web. 15 June 2015b. <  
<https://www.epa.gov/ozone-pollution/ecosystem-effects-ozone-pollution> >

### **3 REDESIGNATION SUBSTITUTION REQUIREMENTS FOR REVOKED STANDARDS**

#### **3.1 1979 1-Hour NAAQS**

The United States Environmental Protection Agency (USEPA) published the Final Phase 1 Rule (69 FR 23951) to implement the 1997 8-Hour ozone National Ambient Air Quality Standards (NAAQS), which revoked the 1979 1-Hour ozone NAAQS. This became effective June 15, 2004. The revocation and replacement were based on USEPA's determination that the 1979 1-Hour standard was no longer sufficient to protect public health and environment with an adequate margin of safety (73 FR 16436). In 2006, the D.C. Circuit Court upheld USEPA's revocation<sup>3</sup>.

The USEPA has determined that areas may demonstrate attainment with a revoked standard by submitting a Redesignation Substitution Request (RS Request). This approach is based on the Clean Air Acts (CAA) criteria for redesignation to attainment in CAA §107(d)(3)(E) (80 FR 12304). The RS Request ensures that the substance of the redesignation requirements are met (80 FR 12305). The RS Request must demonstrate that: 1) the area has attained the revoked 1-hour ozone NAAQS; 2) the attainment was due to permanent and enforceable emissions reductions; and 3) the area can maintain the standard over the next 10 years (80 FR 12305). This RS Request meets the criteria by using ambient air quality data to demonstrate that the area has attained the 1-hour standard, and by using emissions inventory trends, projected future emissions, and meteorological data to show that the emission reductions were due to permanent and enforceable emissions reductions and can be maintained over the next 10 years.

The following sections of this RS Request demonstrate the ability of the region to meet the redesignation substitution requirements (80 FR 12305):

1. *Requirement: Demonstrate that the area has attained the NAAQS.* The attainment of the revoked ozone standards is addressed in Chapter 3 through ambient air quality ozone trend graphs (Ozone Air Quality Data Trends) for the 1-Hour standard.
2. *Requirement: Show that improvement in air quality is due to permanent and enforceable reductions in emissions.* The permanent and enforceable strategies are described in Chapter 4 (Permanent and enforceable strategies), and tables showing the local and state strategies are in Appendices A – D.

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<sup>3</sup> *South Coast Air Quality Management District v. EPA* 472 F.3d 882 (DC Cir. 2006). The Sierra Club and several environmental groups petitioned for review of the USEPA approval of the 2004 State Implementation Plan for the San Joaquin Valley's nonattainment area for the 1-Hour ozone NAAQS. The ruling required states to impose CAA Section 185 fees on the major stationary sources in an area that failed to meet its attainment deadline under the former 1-Hour standard (Meyers, 2009).

3. *Requirement: Provide for the maintenance of the NAAQS for at least 10 years after the redesignation of the revoked NAAQS.* This is addressed in Chapter 5 (Emissions Inventory Trends and Projection of Future Emissions).

It is important to note that, in October 2012, USEPA determined that the SFNA had attained the 1979 standard (77 FR. 64036). USEPA based its determination on “complete, quality-assured and certified ambient air quality monitoring data,” and found that “since 2009, and continuing through 2010 and 2011, complete, quality-assured and certified air quality data show continuous attainment” (77 FR. 64038). As demonstrated in Chapter 4, the area has maintained the standard since that determination.

### **3.2 1997 8-Hour NAAQS**

On March 6, 2015, the USEPA published the Final Rule to implement the 2008 8-Hour NAAQS, which revoked the 1997 8-Hour standard (80 FR 12264). When the 1997 8-Hour standard was revoked, the 2008 NAAQS nonattainment areas were also required to retain the 51.1100(o) requirements for their attainment classifications for the revoked standard until USEPA approves either a redesignation to attainment request under the 2008 ozone NAAQS; or USEPA approves a demonstration for the area in a redesignation substitution procedure for a revoked NAAQS (40 CFR 51.1105(b)(1)).

The SFNA is still assembling and reviewing data to determine whether it qualifies for a redesignation substitution under the revoked 1997 8-hour ozone NAAQS. Although the peak design value calculations for 2015 reflect that the region did attain the 1997 8-hour ozone standard, concentrations for 2016 indicate a peak design value higher than the 1997 standard. If the SFNA meets the redesignation requirements, a separate RS Request will be prepared for the 1997 standard.

Separate from the future 1997 standard redesignation substitution request, the measures identified to meet the anti-backsliding requirements for severe areas will apply until the region has attained the 2008 8-Hour NAAQS, because those measures are required for all severe areas, and the region is classified as severe for the 2008 standard<sup>4</sup>. The SFNA has an attainment deadline of June 15, 2019<sup>5</sup> for the 1997 8-hour NAAQS.

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<sup>4</sup> On February 14, 2008, California Air Resources Board (CARB), on behalf of the air districts in the Sacramento region, requested USEPA to voluntarily reclassify (bump-up) the SFNA from a “serious” to a “severe” for the 1997 8-Hour standard. A new attainment deadline was established of June 15, 2019 (Goldstene, 2008). USEPA granted the voluntary reclassification request on May 5, 2010 (75 FR 24409). The 2009 Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (SMAQMD et al, 2009a) and subsequent revisions to that plan (SMAQMD et al, 2011; 2013) documented how the region would attain the standard.

<sup>5</sup> In order to attain by June 15<sup>th</sup>, the prior year’s ozone season would need to be in attainment, making 2018 to be the attainment demonstration analysis year.

### 3.3 Anti-Backsliding Requirements

The 2006 D.C. Circuit Court opinion upholding the 1979 standard revocation also vacated certain provisions of the revocation rulemaking. In 2012, USEPA adopted rule amendments correcting the deficiencies (77 FR 28424). The revisions primarily concern anti-backsliding requirements in 40 CFR 51.1100(o).

Generally, after an area is redesignated, the area may request that USEPA approve removal of the New Source Review provisions in 40 CFR 51.1100(o), and move the remaining measures in a SIP to contingency measures. However, the anti-backsliding provisions state that areas – like the SFNA – that are nonattainment for the 2008 and 1997 8-hour ozone NAAQS remain subject to the requirements of 40 CFR 51.1100(o) for any ozone NAAQS for which the area was designated nonattainment at the time of revocation, in accordance with its nonattainment classification (40 CFR 51.1105(a)(1)). The area will remain subject to the anti-backsliding obligations for the revoked NAAQS until USEPA either approves a redesignation request under the 2008 ozone NAAQS, or approves a redesignation substitution under the 1979 or 1997 standards. This redesignation request, if granted, would satisfy the second test.

Once a redesignation request has been granted, the area may request that provisions for nonattainment NSR be removed from the SIP, and that other anti-backsliding obligations for the NAAQS be shifted to contingency measures, provided doing so is consistent with CAA sections 110(l) and 193 (40 CFR 1105.(b)(2)). However, because the SFNA is nonattainment and designated severe for all three standards (1979, 1997 and 2008), it remains subject to the NSR and anti-backsliding measures in 40 CFR 51.1100(o) and therefore has not requested removal or shifting of the measures. The SFNA does request an acknowledgement that neither these measures nor the 185 penalty fees are triggered by the 1979 standard.

### 3.4 References

CARB. *Letter from James N. Goldstene (CARB Executive Director) to Wayne Nastri (USEPA Region 9 Regional Administrator). 14 February 2008.* Print.

SMAQMD, et al. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (with errata sheets incorporated).* Sacramento, CA: Sacramento Metropolitan Air Quality Management District, [2009a.] Print.

SMAQMD, et al. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (With Errata Sheets and 2011 SIP Revisions Incorporated) (2011 SIP Revisions).* Sacramento, CA: Sacramento Metropolitan Air Quality Management District, [2011.]

SMAQMD, et al. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions)*. Sacramento, CA: Sacramento Metropolitan Air Quality Management District, [2013.]

USEPA. *Transition from the 1997 ozone NAAQS to the 2008 ozone NAAQS and anti-backsliding*. 40 CFR 51.1105.

USEPA. (69 FR 23951) *Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard – Phase 1*. Federal Register, Volume 69, 30 April 2004, p. 23951-24000.

USEPA. (73 FR 16436) *National Ambient Air Quality Standards for Ozone, Final Rule*. Federal Register, Volume 69, 27 March 2008, p. 16436-16514.

USEPA. (75 FR 24409) *Designation of Areas for Air Quality Planning Purposes; California; San Joaquin Valley, South Coast Air Basin, Coachella Valley, and Sacramento Metro 8-Hour Ozone Nonattainment Areas; Reclassification*, Federal Register, Volume 75, 5 May, 2010, p. 24409.

USEPA, (77 FR 28424) *Final Rule To Implement the 1997 8-Hour Ozone National Ambient Air Quality Standard: Classification of Areas That Were Initially Classified Under Subpart 1; Revision of the Anti-Backsliding Provisions To Address 1-Hour Contingency Measure Requirements; Deletion of Obsolete 1-Hour Ozone Standard Provision; Final Rule*. Federal Register, Volume 77, 14 May 2012, p. 28424-28446.

USEPA. (77 FR 64036) *Determination of Attainment of the 1-Hour Ozone National Ambient Air Quality Standards in the Sacramento Metro Nonattainment Area in California, Final Rule*. Federal Register, Volume 77, 18 October 2012, p. 64036-64039.

USEPA. (80 FR 12264) *Final Rule: Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements*. Federal Register Volume 80, 6 March 2015, p. 12264-12319.

## **4 OZONE MONITORING NETWORK AND AIR QUALITY DATA**

### **4.1 Introduction to Ozone Data**

Attainment of an ozone standard is demonstrated by analyzing ambient air quality data and comparing concentrations over a given time against a standard. For the 1979 1-Hour standard, an area attains if it has no more than 3 daily exceedances (greater than 124 ppb) over three years at each monitoring station.

The air quality data used in this report was downloaded from the United States Environmental Protection Agency's (USEPA) Air Quality System (AQS) Database<sup>6</sup> (USEPA, 2016) and data was downloaded from California Air Resources Board's (CARB) Air Quality and Meteorological Information System (AQMIS).

### **4.2 Ozone Monitoring Network**

The criteria used to establish the minimum monitoring requirements for ozone are based on several factors, including the population of the Metropolitan Statistical Area (MSA), population density (the number of people living per square mile), complexity of terrain, meteorology (Section 4.6), and air pollution transport patterns (40 CFR 58 Appendix D). Sacramento Area Council of Governments (SACOG) projected (SACOG, 2016) that population for the SACOG area would be about 2.7 million. The Sacramento-Arden-Arcade-Roseville MSA covers Sacramento, El Dorado, Placer, and Yolo counties and was estimated to have a population of 2.2 million in 2014 (U.S. Census Bureau, 2016), and the combine population of Solano and Sutter Counties is estimated to be about 530,000 (U.S. Census Bureau, 2016). Population densities range from 25 people/square mile in rural areas of Sacramento to 7,900 people/square mile in the most densely populated city, Sacramento (ZipAtlas, 2017).

A minimum of 2 monitoring stations is required for a population of between 350,000 and 4 million. There are currently 17 ozone monitoring stations<sup>7</sup> located throughout the Sacramento Federal Nonattainment Area (SFNA) that are operated by either the local air districts (Sacramento Metropolitan AQMD, Placer County APCD, and Yolo-Solano AQMD) or the California Air Resources Board (CARB). All monitors are operated year-round, except the Cool and Echo Summit sites, which are operated only during the SFNA ozone season (May to October). Figure 4-1 shows the location of the 2015 ozone-monitoring network and Table 4-1 identifies their operational start date and

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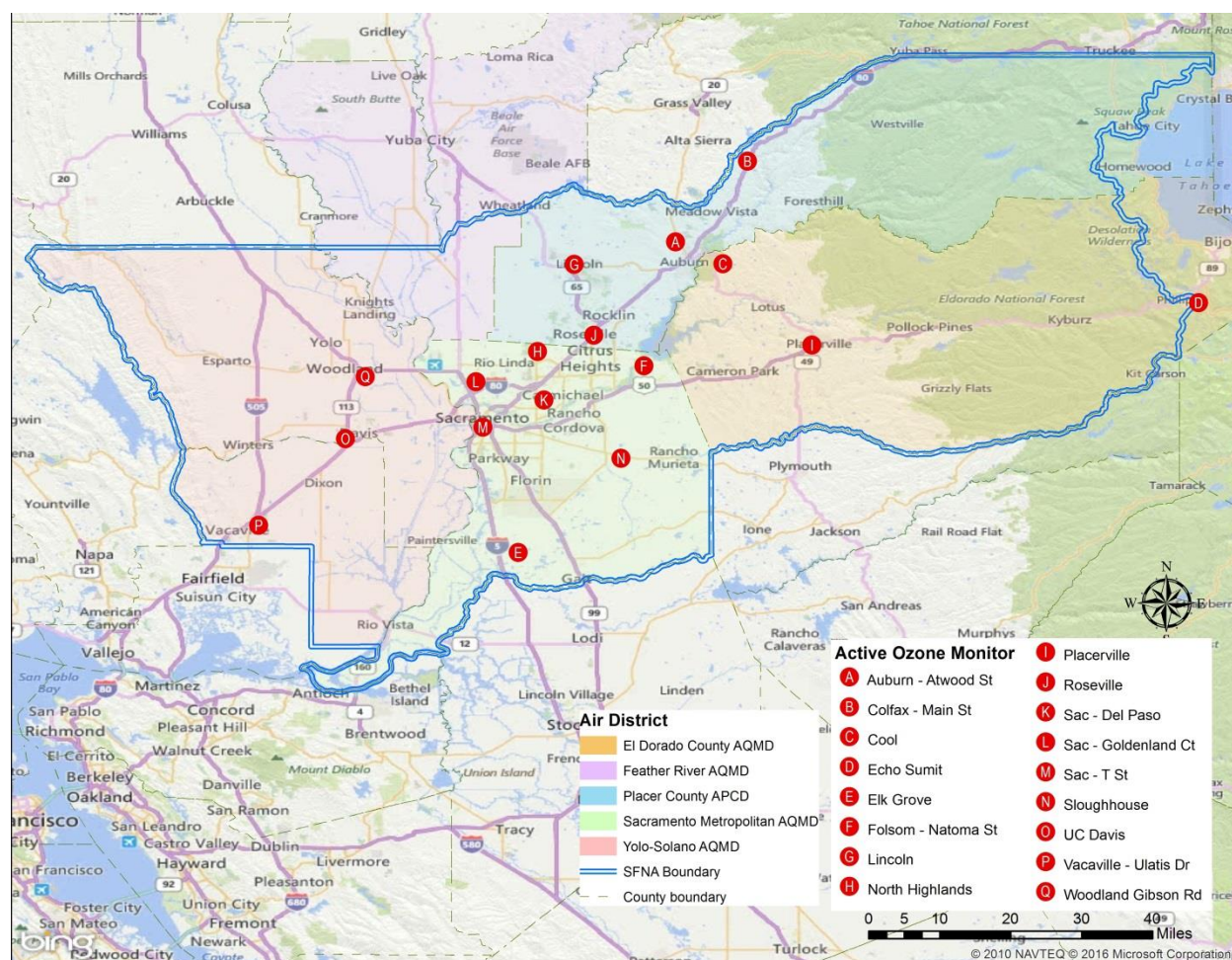
<sup>6</sup> AQS database contains ambient air pollution data collected by USEPA, state, local, and tribal agencies.

<sup>7</sup> Seven (7) monitoring stations are located in Sacramento Metropolitan Air Quality Management District (SMAQMD), 4 in Placer County Air Pollution Control District (PCAPCD), 3 in El Dorado County Air Quality Management District (EDCAQMD), and 3 in Yolo-Solano Air Quality Management District (YSAQMD).



schedule. In addition to monitoring ozone and ozone precursors, different VOC compounds are sampled (referred to as speciation) at three stations – Folsom-Natoma Street, Sacramento Del Paso Manor, and Elk Grove. At two of these stations, Folsom and Del Paso Manor, VOC speciation occurs one in every three days between July and September. At the third, Elk Grove, VOC speciation is only done during a forecasted ozone episode. All but 7 ozone monitoring sites also measure meteorological parameters (i.e. wind direction, speed, relative humidity, etc.). Details regarding ozone monitoring within the SMAQMD are found in the 2015 Annual Monitoring Network Plan (SMAQMD, 2015), and information regarding ozone monitoring in the other districts are covered in the California Air Resource Board 2016 Annual Monitoring Network Plan. (CARB, 2016).

Figure 4-1 Location of ozone monitoring stations operating in the Sacramento Federal Nonattainment Area (SFNA) during 2015



### 4.3 Air Monitoring Network and Reporting Requirements

The monitoring network within the SFNA exceeds the minimum monitoring requirements for all criteria pollutants. The air monitoring network plans listed below describe existing

and proposed monitoring sites, status of the air monitoring network, rationale for each monitor, and evidence that siting and operation of each monitor meets USEPA requirements<sup>8</sup>.

The ozone monitoring network for:

- Sacramento air district is discussed in the 2015 Annual Air Monitoring Network Plan (SMAQMD, 2015: Section 3.0), which was submitted to USEPA - Region 9 by CARB on July 13, 2015, and approved by USEPA on November 13, 2015 (USEPA, 2015a).
- El Dorado, Feather River, Placer, and Yolo-Solano air districts are discussed in the Air Monitoring Network Report for the Twenty-five Districts in California (CARB, 2015). This was submitted by CARB on August 15, 2015, and approved by USEPA on November 10, 2015 (USEPA, 2015b).

Table 4-1 SFNA Ozone monitoring stations information and status

Label on map	Site-ID	Site Name	Latitude	Longitude	Start Date	Operating Schedule
I	06-017-0010-1	Placerville	38.725	-120.822	02/01/1992	All Year Round
D	06-017-0012-1	Echo Summit	38.812	-120.033	01/01/2000	May – October
C	06-017-0020-1	Cool	38.891	-121.003	06/01/1996	May – October
A	06-061-0003-1	Auburn	38.936	-121.100	06/01/2011	All Year Round
B	06-061-0004-1	Colfax	39.100	-120.953	10/01/1989	All Year Round
J	06-061-0006-1	Roseville	38.746	-121.266	01/13/1993	All Year Round
G	06-061-2002-1	Lincoln	38.886	-121.302	10/01/2012	All Year Round
H	06-067-0002-1	North Highlands	38.712	-121.381	01/01/1980	All Year Round
K	06-067-0006-1	Sac-Del Paso	38.614	-121.368	01/01/1980	All Year Round
M	06-067-0010-1	Sac-T Street	38.558	-121.493	12/01/1988	All Year Round
E	06-067-0011-1	Elk Grove	38.303	-121.421	07/01/1992	All Year Round
F	06-067-0012-1	Folsom	38.683	-121.164	06/01/1996	All Year Round
L	06-067-0014-1	Sac-Goldenland Ct	38.651	-121.507	08/12/2008	All Year Round
N	06-067-5003-1	Sloughhouse	38.494	-121.211	07/01/1997	All Year Round
P	06-095-3003-1	Vacaville	38.358	-121.950	07/01/2003	All Year Round
O	06-113-0004-1	UC Davis	38.534	-121.773	09/01/1987	All Year Round
Q	06-113-1003-1	Woodland	38.661	-121.733	05/27/1998	All Year Round

Data source: USEPA AQS database (<https://aqs.epa.gov/aqs/>) Downloaded on 04/11/2016.

## 4.4 Ozone Data Certification

Data from 2007-2009 was used to demonstrate attainment with the 1979 1-Hour standard. This data met quality assurance and quality control requirements, including

<sup>8</sup> USEPA requirements include 40 CFR 58, including Appendices A, C, D, and E, where applicable.

the 75% data completeness requirements set forth in 40 CFR 50 Appendix H. The certified air quality data demonstrates that the region met the 1979 1-Hour ozone NAAQS, and on October 18, 2012, USEPA issued a final rule acknowledging that the SFNA had met the 1-Hour ozone NAAQS (77 FR 64036). The Sacramento Region will continue to monitor ozone concentrations as required by 40 CFR 58.

## **4.5 Ozone Data Trends**

This section provides an analysis of air quality concentrations observed at the 17 monitoring stations within the SFNA. Temporal trends show improvement in air quality at each of the monitoring stations.

### **4.5.1 1979 1-Hour Ozone Standard Trend**

A violation of the standard occurs when there are more than 3 daily exceedances (greater than 124 ppb) over a three year period at a monitoring station (40 CFR 50, Appendix H). Table 4-2 shows the number of days that are greater than the federal 1979 1-Hour ozone standard for the individual monitoring stations from 1990 to 2016. Between 2009 and 2016, there was only one exceedance (128 ppb) of the 1-Hour ozone standard, which was recorded at the Sloughhouse monitoring site on August 13, 2012. The number of exceedances within the SFNA dropped from 12 in 1991 at the Folsom monitoring station to 1 in 2008 at the Folsom monitoring station, which was followed four years later by the single exceedance at Sloughhouse.

#### **4.5.1.1 2008 Exceptional Events**

During the summer of 2008, violations of the federal 1-Hour ozone standard (124 ppb) occurred in the Sacramento region when over 50 catastrophic wildfires burned nearly 1.2 million acres throughout the State. In September 2009, an Exceptional Event Demonstration Request was submitted to USEPA by the SMAQMD and CARB (SMAQMD et al, 2009). The analysis established a clear and causal relationship between the ozone exceedances and the emissions from numerous statewide wildfires. The USEPA approved this analysis on April 13, 2011 (USEPA, 2011). Accordingly, data from June 23, June 27, and July 10, 2008 collected at the Folsom monitor was not included in the violation day counts. As discussed above, on October 18, 2012, USEPA issued a final rule indicating the SFNA had attained the 1-Hour NAAQS (77 FR 64036).

Table 4-2 Number of 1-Hour ozone exceedance day for the SFNA  
(the peak sites are highlighted in yellow)

County	Site Name	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
El Dorado	Placerville			0	0	2	1	1	0	2	2	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0
	Echo Summit											0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cool							2	1	5	2	2	1	6	3	0	0	2	0	2	0	0	0	0	0	0	0	0
Placer	Auburn <sup>1</sup>	9	2	3	0	4	2	1	0	5	2	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	Colfax <sup>2</sup>	4	0	1	0	0	1	0	0	1	1	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0
	Rocklin <sup>3</sup>	4	2	7	3	1	3	1	0	3	3	0	1	2														
	Roseville				3	0	2	2	0	5	2	1	0	2	1	0	0	0	0	2	0	0	0	0	0	0	0	0
	Lincoln																							0	0	0	0	0
Sacramento	Citrus Height	4	6	1	0																							
	North Highlands	0	1	0	0	0	2	1	0	3	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
	Sac-Del Paso	4	5	2	3	1	7	3	0	5	1	0	1	2	2	0	1	1	1	0	0	0	0	0	0	0	0	0
	Sac-T Street	1	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elk Grove <sup>4</sup>	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	Folsom <sup>5</sup>	0	12	9	3	6	7	7	1	10	4	1	2	3	3	0	0	1	1	2*	0	0	0	0	0	0	0	0
	Sac-Goldenland Ct <sup>6</sup>	2	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solano	Sloughhouse							2	8	4	3	0	2	1	0	3	3	0	3	0	0	0	1	0	0	0	0	0
	Vacaville <sup>7</sup>	0					0	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sutter	Pleasant Grove				2		1																					
Yolo	Davis	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	West Sacramento	1																										
	Woodland <sup>8</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak		9	12	9	3	6	7	7	2	10	4	3	2	6	3	0	3	3	1	3	0	0	0	1	0	0	0	0

Data source: 1990 – 2016 data is from the USEPA AQS database (<https://aqs.epa.gov/aqs/>) downloaded on 08/09/2017.

<sup>1</sup> Auburn monitor was moved from 108 C Ave, Auburn to 11645 Atwood St, Auburn in 2011.

<sup>2</sup> Colfax monitor was moved from 10 West Church St. to 33 South Main St in 1992.

<sup>3</sup> Rocklin monitor was moved from Sierra College to 5000 Rocklin Road in 1992. The Rocklin Road monitor ceased operations in 2003.

<sup>4</sup> Elk Grove monitor was moved from 2800 Meadowview Road to Bruceville Blvd in 1992.

<sup>5</sup> Folsom monitor was moved from City Corp Yard to 50 Natoma Street in 1996.

<sup>6</sup> Sacramento-Goldenland Ct monitor was moved from Airport Road in 2009 and 7926 Earhart Drive in 1998.

<sup>7</sup> Vacaville monitor was moved from 1001 Allison Drive to 2012 Ulatis Drive in 2003.

<sup>8</sup> Woodland monitor was moved from 177 West Main Street to 40 Sutter Street in 1992 and subsequently moved to 41929 East Gibson Road in 1998.

\* Data shown excludes exceedances on June 23, June 27, and July 10, 2008 due to exceptional events.

## 4.6 Meteorological Trend Analysis

An area seeking a redesignation substitution must establish that the air quality improvement is not due to unusually favorable meteorology. Since hot ambient conditions are a key factor in the formation of ozone, high temperature days (equal to or

greater than 90°F)<sup>9</sup> (IPCC, 2016) were analyzed to ensure that the attainment of the standard was not attributable to a low number of high temperature days.

Figure 4-2 shows the annual number of high temperature days in May through October from 1990 to 2016. The highest number of high temperature days was 93 in 1996 and 1997, and the lowest number of high temperature days was 48 days in 1998. For the most recent three years of 2014-2016, the totals were 86, 87, and 76, for an annual average of 83, which is higher than the 27-year average (1990 – 2016) of 73.

Figure 4-3 compares the annual number of high temperature days with the annual number of days exceeding the 1979 1-Hour ozone standard from 1990 to 2016. The 26-year trend line for high temperature days is flat, while the trend line for ozone exceedance days is declining.

Figure 4-4 contains a time-series graph of maximum daily temperatures averaged over all days during the May-October ozone season for each year from 1967 to 2016. The average maximum daily temperatures ranged from a low of 82°F to a high of 89°F with a 50-year average of 86°F. The average maximum daily temperatures for the 1-hour ozone attainment years from 2006 -2009 are very close to the 50-year average, ranging from 85°F to 87°F. This shows that the overall improvement in air quality was not due to unusually favorable meteorology.

The SFNA exceedance days for the 1-hour ozone standard have dropped to zero even though the area continues to experience the high temperature days conducive to ozone formation. Consequently, it is reasonable to conclude that the decrease in ozone violations is due to permanent measures put in to control ozone (discussed in Chapter 5).

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<sup>9</sup> Intergovernmental Panel on Climate Change (IPCC) report (IPCC, 2016) stated that there is a nonlinear relationship between temperature and ozone concentrations at ground level: Below temperatures of 22-26°C (70-80°F), there is no relationship between ozone concentrations and temperature; above 32°C (90°F), there is a strong positive relationship. As a result, 90°F is used as a criterion for high temperature.

Figure 4-2 Sacramento Maximum daily Temperatures from May – October, 1990 – 2016

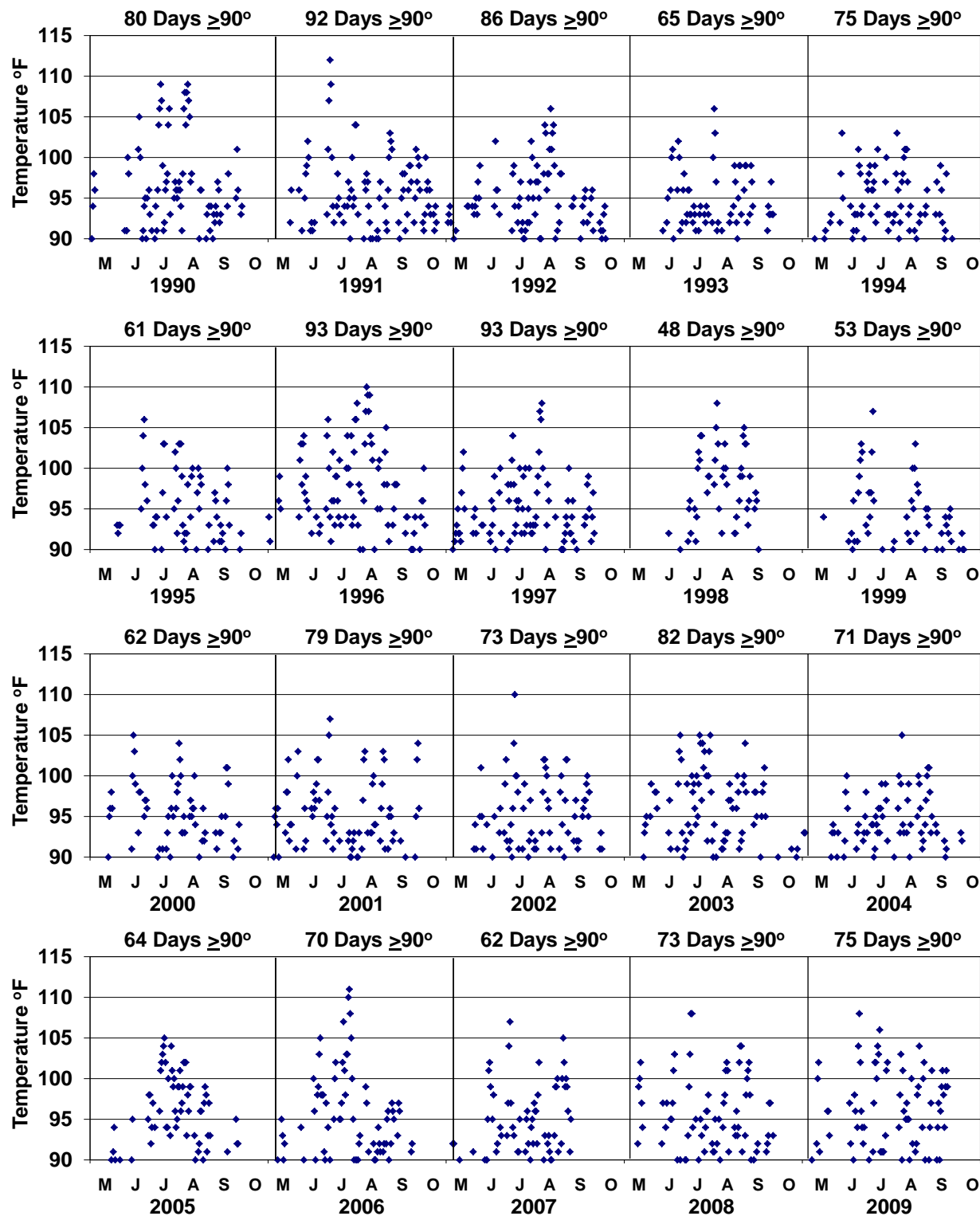
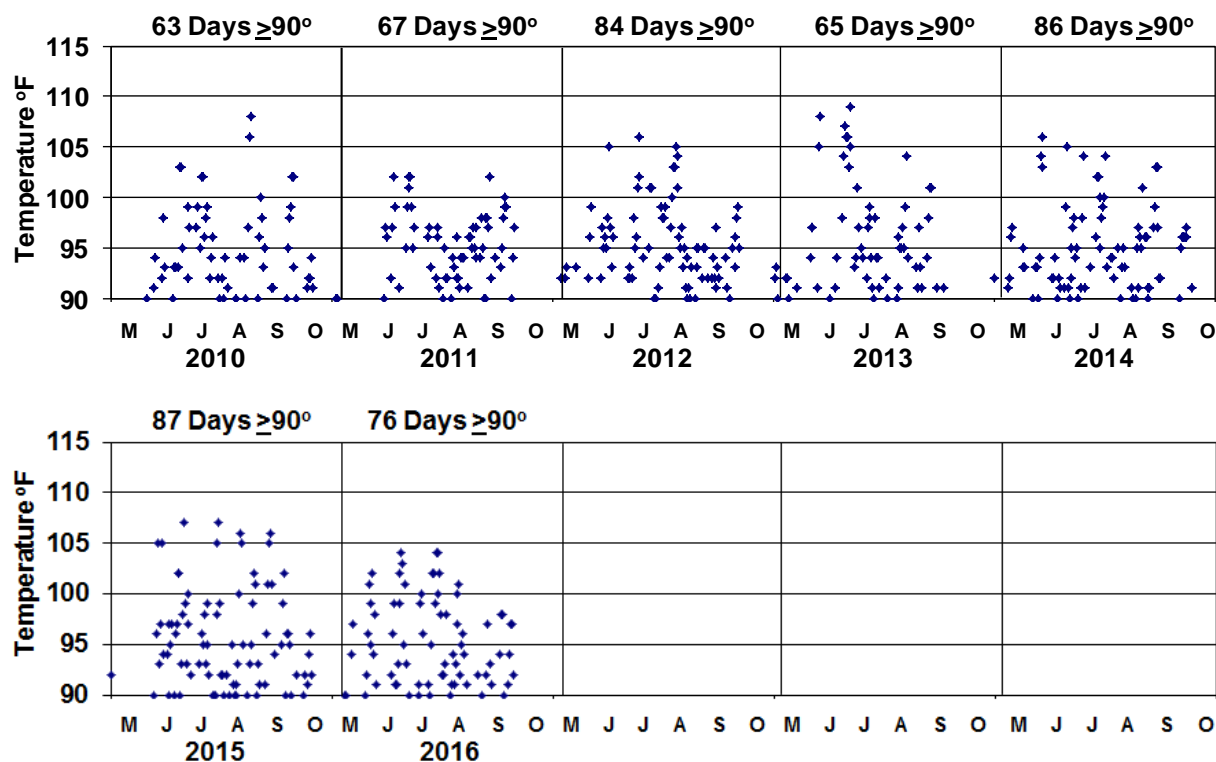


Figure 4-2 (continued)

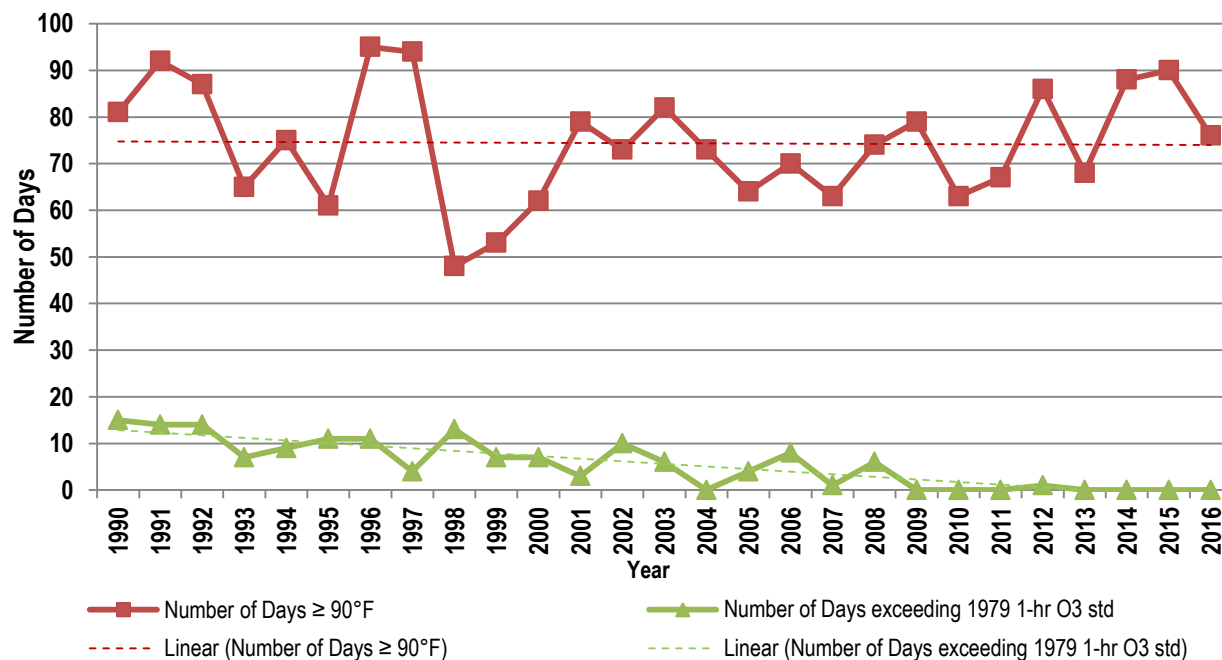
Sacramento Maximum daily Temperatures from May – October, 1990 – 2016



Note: Temperature data is measured at Sacramento Executive Airport and obtained from National Oceanic and Atmospheric Administration National Centers for Environmental Information. (NOAA, 2016)

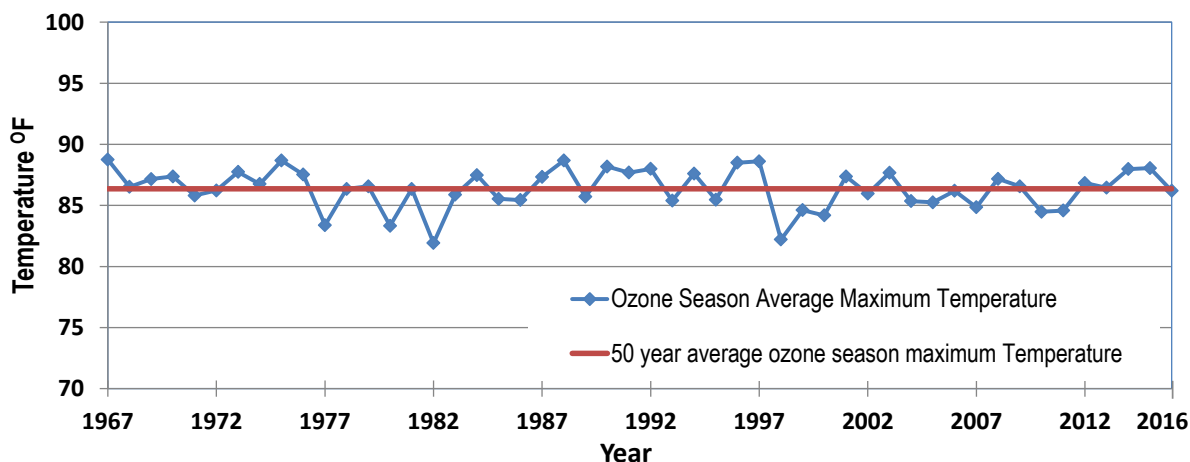


Figure 4-3 1990 – 2016 High Temperature Days vs. Ozone Exceedance Days, SFNA



Note: Temperature data is measured at Sacramento Executive Airport and obtained from National Oceanic and Atmospheric Administration National Centers for Environmental Information. (NOAA, 2016)

Figure 4-4 Sacramento Maximum Average Daily Temperature 1967 – 2016 (Ozone Season Only)



Note: Temperature data is measured at Sacramento Executive Airport and obtained from National Oceanic and Atmospheric Administration National Centers for Environmental Information. (NOAA, 2016)



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## **5 PERMANENT AND ENFORCEABLE EMISSION REDUCTIONS**

### **5.1 Overview**

This chapter describes how implementation of local, state, and federal emission reduction strategies led to attainment of the revoked 1-Hour ozone standard. Control strategies include rules and regulations adopted by local air districts, the California Air Resource Board (CARB), and the United States Environmental Protection Agency (USEPA). Other control strategies include non-regulatory measures such as mobile source incentive programs that provide financial incentives to accelerate the introduction of low emission vehicles and public education and awareness programs like “Spare The Air” that seek voluntary emission reductions by encouraging people to reduce vehicle trips.

While mobile source emissions form the largest emission category in the Sacramento Federal Nonattainment Area (SFNA), the percent of total emissions that are attributable to mobile sources has been decreasing. From 2009 (attainment year) to 2028 (horizon year), VOC and NO<sub>x</sub> emissions are expected to decrease 69% for on-road motor vehicles and 42% for other mobile sources.

The 2013 Sacramento 8-Hour Ozone Attainment and Reasonable Further Progress Plan<sup>10</sup> was completed to demonstrate future attainment of the 1997 8-hour NAAQS. This was the most recent attainment Plan approved by the USEPA and contains a RACM analysis that documents the SFNA’s evaluation of reasonably available control measures and the area’s commitment to adopt the measures (SMAQMD, et al, 2013). Each district within the SFNA evaluated all source categories of mobile, stationary, and area sources to determine the potential for additional reductions. USEPA’s approval of the SIP elements for control measures, RFP, and attainment indicates that the RACM requirement was met for the ozone control measure commitments. As air quality standards continue to become more stringent, additional strategies and improved technologies will be required.

### **5.2 Local Strategies**

Air districts are responsible for reducing stationary and area-wide sources of air pollution through local control measures. Appendix A contains a list of permanent and enforceable local stationary and area source ozone control measures that were

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<sup>10</sup> Air Districts within the SFNA and CARB prepared an attainment demonstration and reasonable further progress plan that included the updated emissions inventory, commitments to adopt and implement new reasonably available control measures, and new emission budgets for transportation and general conformity. On January 29, 2015, USEPA approved (80 FR 4795) the Sacramento Regional 8-hour Ozone Attainment and Reasonable Further Progress Plan (SMAQMD et al., 2013).

implemented for each District in the SFNA from 1990 through 2013. The emissions reductions from these control measures are reflected in the emissions inventory for VOC and NO<sub>x</sub>. These strategies helped reduce NO<sub>x</sub> and VOC emissions and led to attaining the 1979 1-Hour standard.

For stationary sources, measures include limits on:

- Solvents/Coatings
- Petroleum Products/Marketing
- Industrial Processes
- Landfill

For Area-Wide sources, measures include limits on:

- Residential Water Heaters
- Architectural Coatings
- Livestock Waste

Additional emissions reductions have been achieved through implementation of local control measures adopted after 2013. The emissions reductions from these control measures are not included in the emissions inventories shown in Chapter 6. This includes implementation of measures that have more stringent limits on existing stationary source and area-wide source measures such as solvents/coatings, residential water heaters, and architectural coatings. These new control measures further support the continued attainment and maintenance of the 1-hour ozone standard in the SFNA.

Each air district will continue to work toward achieving further emission reductions by updating existing strategies, adopting new control measures, and implementing incentive programs. Local programs are evaluated to determine if they need to be modified or expanded, or if new measures need to be developed to reach attainment of future, more stringent, ozone standards. The emissions reductions from the implementation of local control strategies are included in the emissions inventory trend in Chapter 6 under stationary and area-wide sources.

### **5.3 State Strategies**

The single largest NO<sub>x</sub> and VOC emission category is mobile sources - automobiles, trucks, buses, motorcycles and off-road engines (Chapter 6 – Tables 6-1 and 6-2); therefore, reducing emissions from these sources was critical to attaining the 1979 1-hour ozone standard. CARB has the primary responsibility for reducing mobile source emissions.

CARB has adopted a number of permanent and enforceable statewide measures that have been approved by USEPA and will continue to reduce ozone precursor emissions in the SFNA. Appendices B through D, described below, are from the Technical Support Document (USEPA Region 9, 2014) for the Attainment Plan for the 1997 8-Hour Ozone

Standard (SMAQMD et al, 2013). Each Appendix lists rules by specific categories that generated reductions from 1990 through 2013. The hearing date reflects the date CARB adopted a resolution approving a measure or amendments to an existing measure.

- Appendix B: Fuels measures adopted by CARB. This list includes revisions to CARB's reformulated gasoline program and clean diesel program, which in turn includes measures for addressing other motor vehicle fuels and fuels standards for off road sources
- Appendix C: On-Road mobile sources measures adopted by CARB
- Appendix D: Off-Road mobile sources measures adopted by CARB

Since 2013, CARB has adopted additional mobile source control measures which include smog check improvements, advanced clean car program adjustments, truck and bus regulation amendments and other programs. These recently implemented programs have further reduced VOC and NO<sub>x</sub> emissions within the SFNA.

CARB has adopted a number of regulations aimed at reducing NO<sub>x</sub> emissions from existing "in-use" diesel sources like heavy-duty diesel trucks. Phased implementation of these regulations has and will continue to produce emission reduction benefits over time, as the regulated fleets are retrofitted, and as older and dirtier portions of the fleets are replaced with newer and cleaner models. CARB's programs to reduce emissions from passenger vehicles, including the smog check program, will also provide continuing benefits needed for attainment of new ozone standards.

CARB released a Mobile Sources Strategy report (CARB, 2016), which discusses mobile source strategies that will help the state meet air quality standards over the next 15 years. CARB evaluated scenarios with varying assumptions about potential technology and fuel mixes, and explored different rates at which the technologies could become widely used. This report (CARB, 2016) demonstrates how the state can simultaneously meet air quality standards, achieve greenhouse gas emission reduction targets, decrease health risk from transportation emissions, and reduce petroleum consumption.

## 5.4 References

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## **6 EMISSIONS INVENTORY**

### **6.1 Overview**

This chapter uses an emission inventory trend analysis to demonstrate that the region will be able to maintain attainment of the 1979 NAAQS for the 10-year period following USEPA action on the Redesignation Substitution (RS) request. This analysis will specifically look at the precursor pollutants that form ozone: volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>). The trend analysis includes emissions for area-wide sources, stationary sources, and on-road and off-road mobile sources within the Sacramento Federal Nonattainment Area (SFNA).

Ozone precursor emissions have decreased steadily in the SFNA due to implementation of local, state, and federal programs. This has resulted in a decrease in ozone concentrations, which is expected to continue.

The RS request uses 2009 as the attainment base year<sup>11</sup> for the revoked 1979 1-Hour standard. Future emissions inventories are forecasted for 2018 (the expected USEPA RS Request approval date), 2023 (the mid-term year), and 2028, (the 10 year horizon date). Emission inventory trends show a significant decrease in VOC and NO<sub>x</sub> mobile sources emissions in future years with respect to the 2009 attainment base year.

### **6.2 Introduction to Emissions Inventory**

The VOC and NO<sub>x</sub> emission inventories were prepared in accordance with USEPA guidance (USEPA, 2005). These inventories, presented in tons per day (tpd) for an average summer day, are forecasted using the socio-economic growth indicators and applying the emission reduction benefits from control strategies adopted through 2013. The emission inventories are generated using the same California Emission Projection Analysis Model (CEPAM) emission forecast tool (CARB, 2012) as that used in the USEPA approved 2013 Sacramento Regional 8 Hour Ozone Attainment and Reasonable Further Progress (RFP) Plan for the 1997 NAAQS (2013 Revision) (SMAQMD, et al, 2013).

The emission inventory identifies the amount of emissions by source category within the SFNA. A detailed emissions inventory for 2009, 2018, 2023 and 2028 is shown in Appendix E for VOC and NO<sub>x</sub>. Identification by different source categories allows strategies to be developed that better target and track emission reductions from specific sources.

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<sup>11</sup> This is consistent with the memorandum entitled Procedures for Processing Requests to Redesignate Areas to Attainment (USEPA, 1992). The attainment base year for the Emissions Inventory may be one of three years used to determine the design value for the attainment year.

The emission inventory forecasts take into account anticipated population growth, economic growth, and emission benefits from the federal, state, and local control measures. Category-specific off-road models were used to forecast off-road mobile source emissions. The models used growth rates that were based on category-specific economic indicators such as employment, expenditures, and fuel use. Future on-road emissions were determined using California's EMFAC2011<sup>12</sup> model and the Vehicle Miles Travelled (VMT) activities in the released EMFAC2011 model<sup>13</sup>.

### 6.3 Inventory Categories

USEPA emission inventory guidance (USEPA, 2005) requires that the planning emissions inventory be based on estimates of actual emissions for an average summer weekday, typical of the ozone season (May – October). The anthropogenic emissions inventory is divided into four broad source categories: stationary sources, area-wide sources, on-road motor vehicles, and other mobile sources. Each of these major categories is further defined into more descriptive equipment types and specific emission processes. The biogenic VOC emissions from vegetation for natural areas, crops, and urban landscapes are a separate emissions category not reported in this analysis.

State and federal laws limit local air district authority to regulate certain emissions sources, notably motor vehicles, off-road engines, and consumer products. USEPA retains almost exclusive regulatory authority for emissions from trains, aircraft, and ships. Air districts have regulatory authority for categories that include solvents, architectural coatings, petroleum marketing, and stationary fuel combustion.

### 6.4 Emissions Inventory Trends

The emissions inventory trends show a significant reduction in overall anthropogenic emissions because of local, state, and federal emissions control strategies. Tables 6-1 and 6-2 summarize the VOC and NO<sub>x</sub> emissions inventory for the SFNA by the four major emission categories. From 2009 to 2028, the total projected VOC emissions reduction is 23% and the total projected NO<sub>x</sub> emissions reduction is 51%. The largest emissions reduction category from 2009 to 2028 is on-road motor vehicles: 66% for VOCs (Table 6-3) and 71% for NO<sub>x</sub> (Table 6-4). These reductions occurred despite increases in population, vehicle use, and economic development in the Sacramento region.

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<sup>12</sup> EMFAC2011 software and detailed information on the vehicle emission model can be found on the CARB website: <http://www.arb.ca.gov/msei/modeling.htm>.

<sup>13</sup> The forecasted VMT activity data in the released EMFAC2011 was submitted by Sacramento Area Council to CARB in February 2011. It has higher activities than the subsequent and current VMT activity projections, and correspondently, higher on-road emissions.



Table 6-1 SFNA VOC Emissions

	2009	2018	2023	2028
<b>TOTAL EMISSIONS</b>	123	102	99	98
STATIONARY	18	23	24	25
AREA-WIDE	29	31	32	34
ON-ROAD MOTOR VEHICLES	38	17	14	13
OTHER MOBILE SOURCES	34	24	22	20
ADJUSTMENTS	4	7	7	7

Note: Emission numbers are in tons per day (tpd). Emission trends are based on forecast model, CEPAM: NORCAL 2012 SIP PM 2.5 Baseline Emissions Projections, used for USEPA approved 2013 Revision (1997 O<sub>3</sub> NAAQS). Adjustments are added for MV safety budgets, non-creditable reduction, VOC ERC adjustment and composting/dairy.

Table 6-2 SFNA NO<sub>x</sub> Emissions

	2009	2018	2023	2028
<b>TOTAL EMISSIONS</b>	118	81	64	57
STATIONARY	11	11	11	11
AREA-WIDE	3	3	3	3
ON-ROAD MOTOR VEHICLES	71	37	24	20
OTHER MOBILE SOURCES	33	26	22	19
ADJUSTMENTS	0	4	4	4

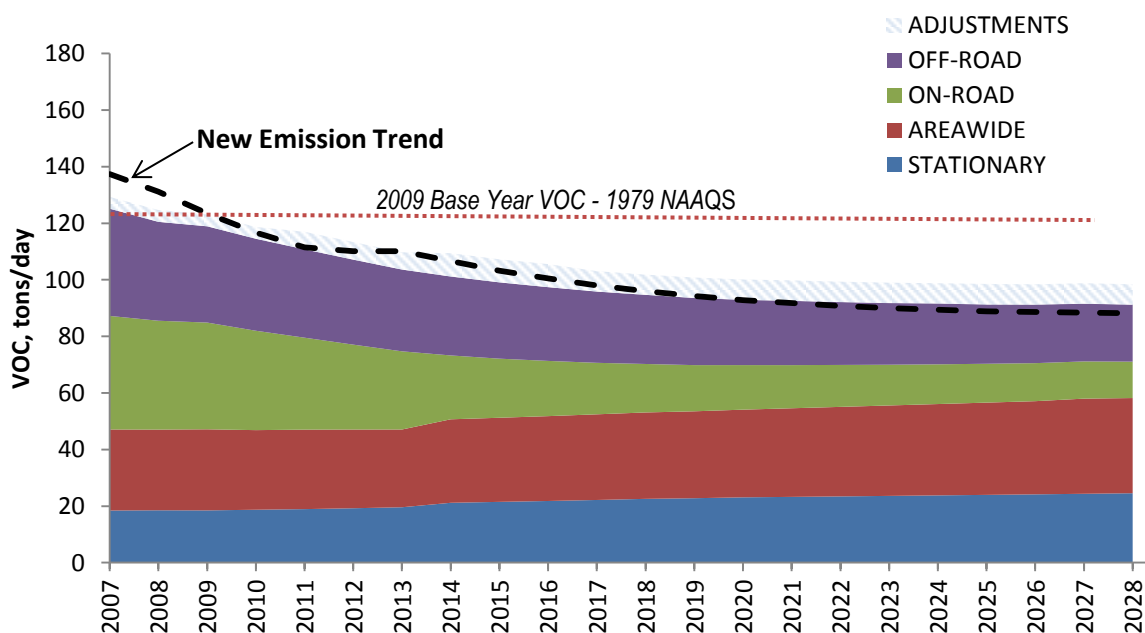
Note: Emission trends are based on forecast model, CEPAM: NORCAL 2012 SIP PM 2.5 Baseline Emissions Projections, used for USEPA approved 2013 Revision (1997 O<sub>3</sub> NAAQS). Adjustments are added for MV safety budgets, NO<sub>x</sub> ERC adjustment and non-creditable reduction.

The decline in ozone precursor emissions resulted in lower ozone concentrations and the attainment of the 1-Hour Standard in 2009. These lower ozone concentrations are reflected in the reduction in the number of ozone exceedance days from 1990 – 2016 as shown in Table 4-2. The declining emission trends after the 2009 attainment base year demonstrate that the SFNA will continue to attain the revoked 1979 1-Hour ozone standard in the 2028 horizon year and beyond.

Between 2009 and 2028, the largest VOC emission source category is expected to shift from on-road motor vehicles to area-wide sources (consumer products, architectural coatings, pesticides, livestock waste), and NO<sub>x</sub> emissions from on-road sources are expected to significantly decrease but remain the largest NO<sub>x</sub> emission source category. Figures 6-1 and 6-2 show the SFNA's VOC and NO<sub>x</sub> trends from 2007 to 2028 for stationary sources, area-wide sources, on-road and off-road mobile sources in

color shaded areas. The emission trends show significant declines in emissions after the 2009 attainment base year. Adjustments are added to the forecasts to account for motor vehicle safety margin, non-creditable reductions<sup>14</sup> and composting/dairy emissions. New emission trends, represented by a black dashed line in the emission trend figures, are based on the latest emission forecast model<sup>15</sup> used for preparing the 2008 8-hour ozone NAAQS SIP. They show similar trends and lower emissions in 2028, substantiating the trends generated by the older emission forecast model used for this RS request.

Figure 6-1 SFNA VOC Emissions Trends from 2007 through 2028

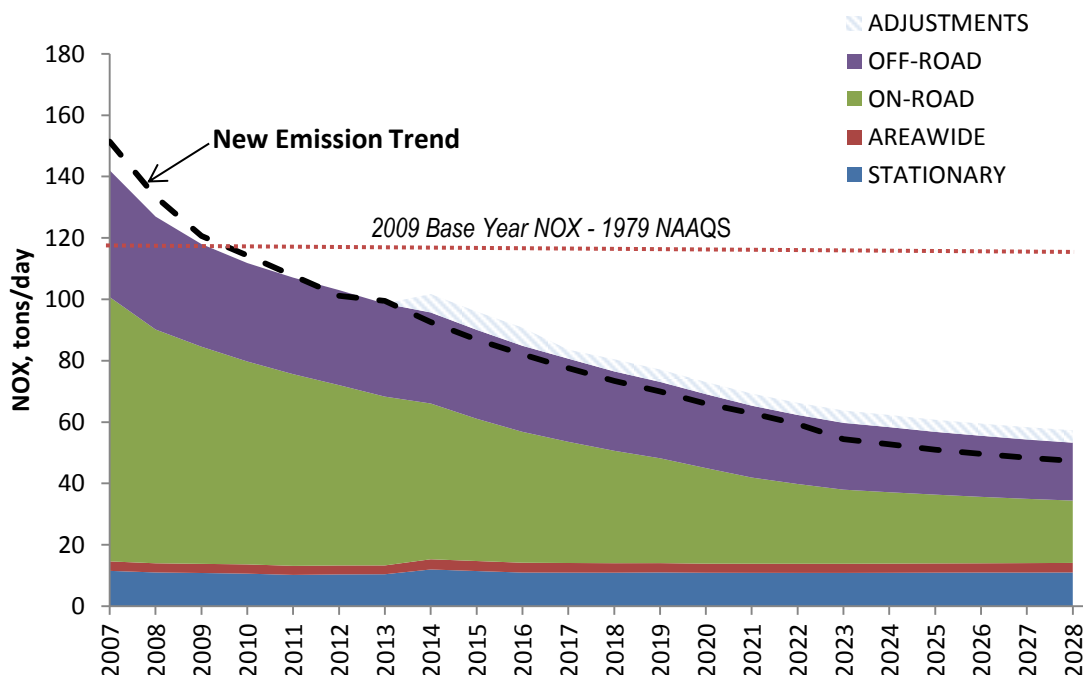


Note: Color shaded emission trends are based on emission forecast model, CEPAM: NORCAL 2012 SIP PM 2.5 Baseline Emissions Projections, used for USEPA approved 2013 Revision (1997 O3 NAAQS). Adjustments are added for MV safety budgets, non-creditable reduction, VOC ERC adjustment and composting/dairy. Black dashed line depicts the new emission trend generated using the latest emission forecast model, CEPAM 2016 SIP.

<sup>14</sup> Non-creditable Reductions are the reductions from measures identified in USEPA Technical Support Document for Approval and Promulgation of Implementation Plans, but not yet approved by USEPA; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard, September 24, 2014.

<sup>15</sup> The latest emission forecast model uses EMFAC2014, 2012 base year, new VMT activities, and updated growth and control data. New emission trends include 5 tpd VOC and 4 tpd NO<sub>x</sub> emission reduction credits (ERCs) in years after 2012 base year.

Figure 6-2 SFNA NO<sub>x</sub> Emissions Trends from 2007 through 2028



Note: Color shaded emission trends are based on emission forecast model, CEPAM: NORCAL 2012 SIP PM 2.5 Baseline Emissions Projections, used for USEPA approved 2013 Revision (1997 O<sub>3</sub> NAAQS). Adjustments are added for MV safety budgets, NO<sub>x</sub> ERC adjustment and non-creditable reduction. Black dashed line depicts the new emission trend generated using the latest emission forecast model, CEPAM 2016 SIP.

Mobile fleet turnover and existing control strategies implemented by the District's within the SFNA and CARB will continue to reduce future VOC and NO<sub>x</sub> emissions from stationary and area sources, on-road motor vehicles, and other mobile source categories (predominantly off-road equipment).

Tables 6-3 and 6-4 show the percent change in VOC and NO<sub>x</sub> emissions by category from the base year (2009), to the interim years (2018 and 2023), and to the horizon year (2028). The largest emission reductions are from on-road motor vehicles, which are a result of statewide on-road mobile source regulations, such as low emission vehicle programs, bus and truck rule, advanced clean cars, and others. Local control measures adopted by the districts have also achieved significant emission reductions, especially from regulations affecting gasoline stations, coating and solvent use operations such as auto refinishing and house painting, and stationary combustion equipment.

Reductions from all emission sources will continue in the future as mobile fleets turn over and older higher emitting vehicles are replaced by newer lower emitting vehicles, and additional state and local controls from the Sacramento Regional 8-Hour Ozone

Attainment and Reasonable Further Progress Plan (SMAQMD et al, 2013) are fully implemented.

Tables 6-3 and 6-4 show that from 2009, the last year used to demonstrate attainment, to 2028, the horizon year, the percent emissions reductions is 20% for VOCs and 52% for NO<sub>x</sub>. This decrease in emissions from 2009 to 2028 support that future VOC and NO<sub>x</sub> emission levels are not expected to cause exceedances of the one hour ozone NAAQS.

Table 6-3 Percent Change in VOC Emissions Reductions (-) or Increase (+) from Attainment Year (2009) to Future Year

	2018	2023	2028
<b>TOTAL EMISSIONS</b>	-17%	-20%	-20%
STATIONARY	22%	28%	33%
AREA-WIDE	7%	12%	17%
ON-ROAD MOTOR VEHICLES	-55%	-62%	-66%
OTHER MOBILE SOURCES	-28%	-36%	-41%

Table 6-4 Percent Change in NO<sub>x</sub> Emissions Reductions (-) or Increase (+) from Attainment Year (2009) to Future Year

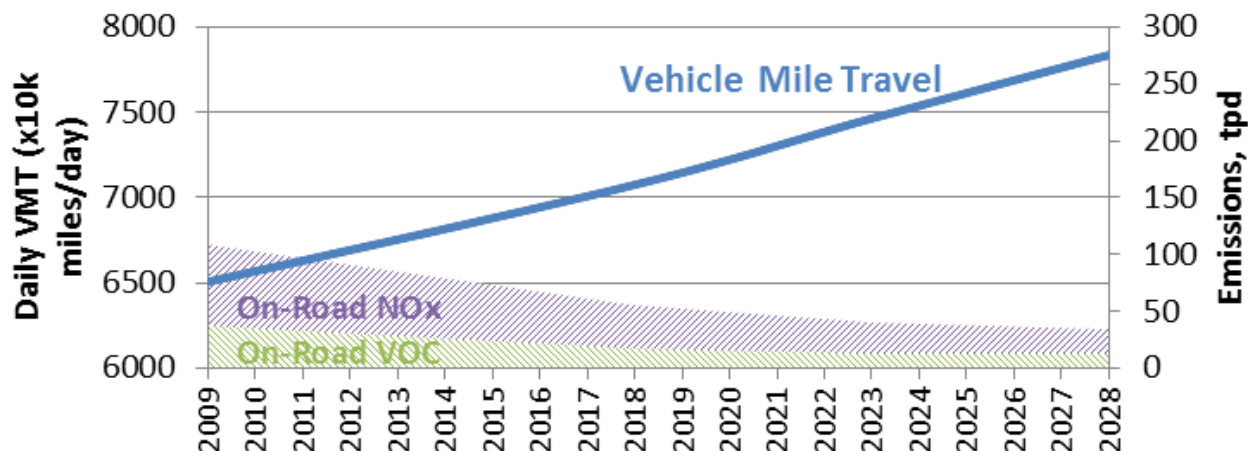
	2018	2023	2028
<b>TOTAL EMISSIONS</b>	-32%	-46%	-52%
STATIONARY	1%	0%	2%
AREA-WIDE	3%	0%	4%
ON-ROAD MOTOR VEHICLES	-48%	-66%	-71%
OTHER MOBILE SOURCES	-23%	-35%	-44%

## 6.5 Other Trend Indicators

### 6.5.1 Population and VMT

Figure 6-3 compares the daily VMT trends from 2009 to 2028 for on-road NO<sub>x</sub> and VOC emissions. From the attainment base year (2009) to the horizon year (2028), VMT is expected to increase 20% (Figure 6-3), on-road VOC emissions are expected to decrease 66% (Table 6-3), and on-road NO<sub>x</sub> emissions are expected to decrease 71% (Table 6-4).

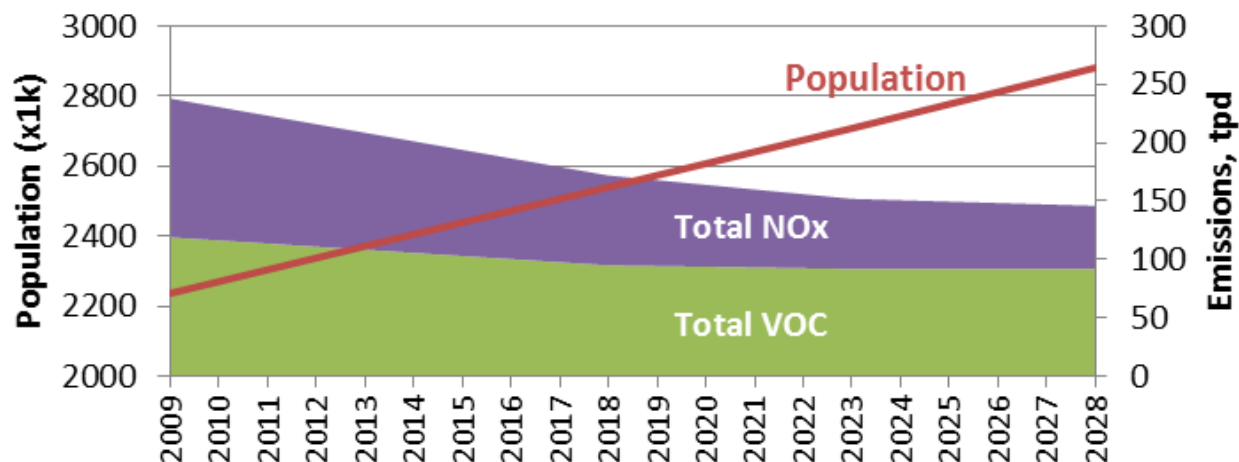
Figure 6-3 SFNA Daily VMT Trends compared to VOC and NO<sub>x</sub> On-Road Emission Trends, 2009 to 2028



Source: SFNA VMT is based on VMT data in the released EMFAC2011 model.

Figure 6-4 compares trends from 2009 to 2028 for SFNA population to the total SFNA NO<sub>x</sub> and VOC emissions. From the attainment base year (2009) to the horizon year (2028), the population is expected to increase 28% (Figure 6-4), total VOC emissions are expected to decrease 20% (Table 6-3), and total NO<sub>x</sub> emissions are expected to decrease 52% (Table 6-4).

Figure 6-4 SFNA Population Trends compared to Total VOC and NO<sub>x</sub> Trends, 2009 to 2028



Source: Population data is from the 2013 Sacramento Regional 8 Hour Ozone Attainment and Reasonable Further Progress (RFP) Plan for the 1997 NAAQS (SMAQMD, et al, 2013)

### 6.5.2 Economic growth

In addition to an increase in population, the Sacramento region has experienced a steady growth in sales, housing, and employment. The strong economy during the period of improved air quality demonstrates that a reduction in emissions was not from a

slowdown in the economy. From 2008 to 2012, the region, like most of the nation, experienced significant job loss.<sup>16</sup> SACOG (2016) reported that between 2007 and 2011, the construction sector lost 31,000 jobs, manufacturing lost 8,000 jobs, and the retail sector lost 12,000 jobs. Employment in all three of these sectors grew from 2001 to 2007 and is expected to grow from 2012 and beyond. This further supports the importance that federal, state and local strategies had in reducing ozone concentrations and that the improvement in ozone concentrations was not due to stagnant growth (SACOG, 2016).

## 6.6 References

CARB. *CEPAM: NORCAL 2012 PM<sub>2.5</sub> SIP Baseline Emission Projections – Version 1.02 MAIN Planning Inventory Tool*. Sacramento, CA: California Air Resources Board, 12 July 2012. Web. 15 May 2017 < <https://www.arb.ca.gov/app/emsinv/2012pm25sip/norcal2012pm25sip/fcmasterdetail/cefs2/index.php> >

USEPA, *Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations*. (EPA-454/R-05-001, August 2005, updated November 2005) p. 17.

SACOG. *2016 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS)*, Sacramento, CA: Sacramento Area Council of Governments 18 February 2016. Web. 17 May 2016 < <http://www.sacog.org/general-information/2016-mtpscs> >

SMAQMD, et al. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions)*. Sacramento Metropolitan Air Quality Management District: Sacramento, CA. [2013.]

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<sup>16</sup> For California, the U.S. Bureau of Labor Statistics reported 855,200 fewer private-sector jobs in four years, going from 12,640,500 in January 2008 to 11,785,300 in 2012.

## 7 REDESIGNATION SUBSTITUTION COMPLIANCE ASSESSMENT

### 7.1 Overview

This Redesignation Substitution (RS) Request demonstrates that the Sacramento Federal Nonattainment Area (SFNA) has met United States Environmental Protection Agency’s (USEPA’s) requirements to be formally re-designated as attainment for the former 1979 1-Hour ozone standard. Attainment and maintenance of the standard is shown through ambient air quality data, permanent and enforceable control strategies, and emissions inventory trends. Table 7-1 includes the RS Request requirements and how these requirements were satisfied.

Table 7-1: Criteria and Compliance Assessment

Requirement	Requirement Completion
<i>Demonstrate that the area has attained the NAAQS.</i>	Chapter 4 of the RS Request shows that the SFNA has attained the 1979 1-Hour Standard. On October 18, 2012 (77 FR 64036), the USEPA made a finding that the SFNA attained the 1979 1-Hour ozone standard. This was based on data from 2007-2009. There have been no exceedances of the 1-Hour ozone standard since 2009.
<i>Show that improvement in air quality is due to permanent and enforceable reductions in emissions.</i>	Chapter 5 of the RS Request demonstrates that ozone concentrations have and will continue to be reduced through the continued implementation of permanent and enforceable control measures. These measures will remain in effect after this RS Request is approved. The local and state control measures that have been, and continue to be implemented are shown in Appendices A – D.
<i>Provide for the maintenance of the NAAQS for at least 10 years after the redesignation of the revoked NAAQS for 10 years.</i>	Chapter 6 shows long-term trends establishing that emissions will continue to decrease for at least 10 years, through the horizon year of 2028. This decrease in emissions is predicted despite a projected increase in vehicle miles traveled and population growth.

### 7.2 References

USEPA. (77 FR 64036) *Final Rule: Determination of Attainment of the 1-Hour Ozone National Ambient Air Quality Standards in the Sacramento Metro Nonattainment Area in California*. Federal Register, Volume 77, 18 October 2012, p. 64036-64039.

## **8 SUMMARY AND CONCLUSIONS**

### **8.1 Ozone Air Quality Trends**

The number of 1-Hour ozone exceedances has decreased throughout the Sacramento Federal Ozone Nonattainment Area (SFNA), from a high of 12 in 1991 to 0 in 2016. High temperatures are a key factor in the ozone formation and literature shows a positive relationship when ambient temperature is over 90°F. To determine if temperature played a role in high ozone values, temperatures over a 50-year period were compared against the 3-year attainment period to determine any unusual patterns. The overall trend analysis indicates that the air quality improvement occurred despite temperature being a little higher during this period. Unusual favorable meteorology did not cause lower ozone concentrations.

### **8.2 Emissions Inventory Trend**

Emission inventory precursor trends for nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs) from 2015 to 2028 are expected to continue to decrease over time. This decrease is despite increasing population, vehicle miles traveled, and economic development.

### **8.3 Permanent and Enforceable Emission Reductions**

Attainment of the revoked 1979 1-Hour standard has been achieved through the implementation of existing local, state, and federal strategies. These emission control strategies include reductions of both VOC and NO<sub>x</sub> air pollutants. These strategies will continue to be implemented, and future strategies will be evaluated as part of the development of future air quality planning efforts in achieving more stringent ozone standards.

### **8.4 Attainment Determination**

Ambient air monitoring data shows that the SFNA has attained the 1-Hour ozone NAAQS for the 2007 – 2009 monitoring period in accordance with the Clean Air Act. During 2007-2009, there was one peak ozone exceedance day in 2008 and one in 2009 recorded at the Folsom monitoring site. Three high ozone days (June 23, June 27, and July 10, 2008) at the Folsom monitoring station were excluded from the attainment demonstration analysis calculations due to wildfires. The exceptional event demonstration was approved by the United States Environmental Protection Agency (USEPA) in 2009. The USEPA made a finding that the SFNA attained the 1-Hour ozone standard on October 18, 2012 (77 FR 64036). There has only been one exceedance of the 1-Hour ozone National Ambient Air Quality Standard (NAAQS) since 2009.



## 8.5 Conclusions

This report has demonstrated that the area has attained the 1979 1-Hour standard and fulfilled USEPA's RS requirements. Attainment of the revoked 1979 1-Hour ozone standard is due to permanent and enforceable emission reductions from federal, state and local strategies. This was evident in the downward air quality ozone trends and the continued reduction in emissions in the future. The SFNA requests that EPA acknowledge that the anti-backsliding control requirements related to the implementation of Clean Air Act §185 major stationary source penalty fees no longer apply.

## 8.6 References

USEPA. (77 FR 64036) *Final Rule: Determination of Attainment of the 1-Hour Ozone National Ambient Air Quality Standards in the Sacramento Metro Nonattainment Area in California*. Federal Register, Volume 77, 18 October 2012, p. 64036-64039.

## APPENDIX A. CONTROL MEASURES ADOPTED BY AIR DISTRICTS IN THE SFNA

The following table is based on information from the Technical Support Document developed by the EPA as part of the Approval and Promulgation of Implementation Plans; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard (USEPA Region 9, 2014, pp 1 -17) for the Attainment Plan for the 1997 8-Hour Ozone Standard (SMAQMD et al, 2013).

Rule No.	Rule	Date Rule Approved into the SIP	Federal Register
<b>Sacramento Metropolitan Air Quality Management District NO<sub>x</sub> and VOC Rules</b>			
411	NO <sub>x</sub> from Boilers, Process Heaters and Steam Generators	05/06/2009	74 FR 20880
412	Stationary Internal Combustion Engines	04/30/1996	61 FR 18959
413	Stationary Gas Turbines	01/10/2008	73 FR 1819
414	Natural Gas-fired Water Heater, Boilers and Process Heaters Rated Less Than 1,000,000 BTU	11/01/2011	76 FR 67366
*442	Architectural Coatings	10/4/2016	81 FR 68320
443	Leaks from Synthetic Organic Chemical & Polymer Manufacturing	11/09/1998	63 FR 60214
446	Storage of Petroleum Products	09/16/1994	59 FR 47544
447	Organic Liquid Loading (VOC)	11/26/1999	64 FR 66393
448	Gasoline Transfer into Stationary Storage Containers	03/08/2013	78 FR 897
449	Transfer of Gasoline into Vehicle Fuel Tanks	03/08/2013	78 FR 897
450	Graphic Arts	04/09/2010	75 FR 18068
451	Surface Coating of Manufactured Metal Parts & Products	11/21/2011	76 FR 71886
452	Can Coating	04/09/2010	75 FR 18068
454	Degreasing Operations	04/09/2010	75 FR 18068
456	Aerospace Assembly and Component Coating Operations	07/14/2010	75 FR 40726
458	Large Commercial Bread Bakeries	11/09/1998	63 FR 60214
459	Automotive, Truck and Heavy Equipment Refinishing Operations	10/09/2012	77 FR 47536
463	Wood Products Coatings	04/09/2010	75 FR 18068
464	Organic Chemical Manufacturing Operations	10/03/2011	76 FR 61057
465	Polyester Resin Operations	07/26/2011	76 FR 44493
466	Solvent Cleaning	11/28/2011	76 FR 60376
<b>El Dorado County Air Quality Management District NO<sub>x</sub> and VOC Rules</b>			
215	Architectural Coatings	07/18/1996	61 FR 37390
224	Cutback Asphalt Paving Material	08/21/1995	60 FR 43383

225	Solvent Cleaning (Degreasing)	08/21/1995	60 FR 43383
229	Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters	10/10/2001	66 FR 51578
230	Motor Vehicle & Mobile Equipment Coating	04/30/1996	61 FR 18962
231	Graphic Arts	07/11/1997	62 FR 37136
232	Biomass Boilers	10/14/2003	68 FR 59121
233	Stationary Internal Combustion Engines	09/13/2002	67 FR 57960
234	VOC RACT Rule - Sierra Pacific Industries	09/12/1995	60 FR 47273
235	Surface Preparation and Cleanup	04/30/1996	61 FR 18962
236	Adhesives	07/18/1996	61 FR 37390
237	Wood Products Coatings	07/18/1996	61 FR 37390
238	Gasoline Transfer and Dispensing	08/27/2001	66 FR 44974
239	Natural Gas-Fired Residential Water Heaters	03/30/1999	64 FR 15129
240	Polyester Resin Operations	07/17/2001	66 FR 37154
244	Organic Liquid Loading and Transport Vessels	07/08/2002	67 FR 45067
245	Valves And Flanges	08/27/2001	66 FR 44974
<b>Feather River Air Quality Management District NO<sub>x</sub> and VOC Rules</b>			
3.8	Storage and Transfer of Gasoline	07/08/2015	80 FR 38959
*3.14	Surface Preparation and Clean-up	04/23/2015	80 FR 22646
*3.15	Architectural Coatings	12/08/2015	80 FR 76222
*3.19	Vehicle and Mobile Equipment Coating Operations	06/11/2015	80 FR 33195
*3.20	Wood Product Coatings Operations	04/23/2015	80 FR 22646
*3.21	Industrial, Institutional, and Commercial Boilers, Steam Generators and Process Haters	04/23/2015	80 FR 22646
3.22	Stationary Internal Combustion Engines	03/01/2012	77 FR 12493
<b>Placer County Air Pollution Control District NO<sub>x</sub> and VOC Rules</b>			
209	Fossil Fuel-Steam Facility	04/30/1997	62 FR 23365
212	Storage Of Organic Liquids	06/11/2009	74 FR 27714
*213	Gasoline Transfer Into Stationary Storage Containers	02/10/2015	80 FR 7345
*214	Transfer Of Gasoline Into Vehicle Fuel Tanks	02/10/2015	80 FR 7345
215	Transfer Of Gasoline Into Tank Trucks, Trailers and Railroad Tank Cars At Loading Facilities	01/31/2011	76 FR 5277
216	Degreasing Operations	05/05/2010	75 FR 24406
217	Cutback And Emulsified Asphalt Paving Materials	04/30/1997	62 FR 23365
218	Architectural Coatings	12/05/2011	76 FR 75795
219	Organic Solvents	04/30/1997	62 FR 23365

223	Metal Container (Can) Coating	03/23/1995	60 FR 15241
231	Industrial, Institutional, And Commercial Boilers,	11/01/2011	76 FR 67366
233	Biomass Boilers	08/29/2013	78 FR 53250
234	Automotive Refinishing Operations	12/05/2011	76 FR 75795
235	Adhesives	08/30/2013	78 FR 53680
236	Wood Products Coating Operations	11/21/2011	76 FR 71886
238	Factory Coating Of Flat Wood Paneling	11/21/2011	76 FR 71886
*239	Graphic Arts Operation	03/13/2014	79 FR 14178
*240	Surface Preparation and Cleanup	03/13/2014	79 FR 14178
242	Stationary Internal Combustion Engines	11/01/2011	76 FR 67366
243	Polyester Resin Operations	10/03/2011	76 FR 61057
244	Semiconductor Operations	07/25/1996	61 FR 38571
245	Surface Coating of Metal Parts and Products	05/24/2011	76 FR 30025
246	Natural Gas-Fired Water Heaters	11/01/2011	76 FR 67366
*247	Natural Gas-Fired Water Heaters, Small Boilers and Process Heaters	10/07/2014	79 FR 60437
*249	Surface Coatings of Plastic Parts and Products	03/27/2015	80 FR 16289
*250	Stationary Gas Turbines	08/01/2016	81 FR 50348
<b>Yolo-Solano Air Quality Management District NO<sub>x</sub> and VOC Rules</b>			
2.13	Organic Solvents	04/30/1996	61 FR 18962
2.14	Architectural Coatings	01/02/2004	69 FR 34
2.21	Organic Liquid Storage & Transfer	10/31/2006	71 FR 63694
*2.22	Gasoline Dispensing Facilities	02/09/2016	81 FR 6763
2.23	Fugitive Hydrocarbon	11/26/1999	64 FR 66393
2.24	Solvent Cleaning Operations (Degreasing)	12/13/1994	59 FR 64130
2.25	Surface Coating or Manufactured Metal Parts and Products	02/12/1996	61 FR 5288
*2.26	Motor Vehicle & Mobile Equipment Coating Operations	12/08/2015	80 FR 76220
2.27	Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters	06/17/1997	62 FR 32691
2.28	Cutback & Emulsified Asphalt	02/05/1996	61 FR 4215
2.29	Graphic Arts Printing Operations	08/21/1998	63 FR 44792
2.30	Polyester Resin Operation	07/21/1999	64 FR 39037
*2.31	Solvent Cleaning and Degreasing (Rule 2.24 - Solvent Cleaning got rescinded)	4/28/2015	80 FR 23449
2.32	Stationary Internal Combustion Engines	01/28/2002	67 FR 3816
2.33	Adhesives Operation	03/22/2004	69 FR 13234
*2.34	Stationary Gas Turbines	02/09/2016	81 FR 6763

2.35	Pharmaceutical Manufacturing Operations	02/24/1997	62 FR 8172
2.37	Natural Gas-Fired Water Heaters and Small Boilers	5/10//2010	75 FR 25778
2.41	Expandable Polystyrene Manufacturing Operations	09/08/2011	76 FR 55581
2.42	Nitric Acid Production	5/10//2010	75 FR 25778
2.43	Biomass Boilers	07/02/2012	77 FR 39181

NOTE: \* Indicates that the rule was updated/revised since 2013 (USEPA Region 9, 2014), and a more recent version of the rule has been approved by the USEPA.

**References:**

SMAQMD, et al. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions)*. Sacramento, CA: Sacramento Metropolitan Air Quality Management District, [2013.]

USEPA. Region 9. *Technical Support Document: Approval and Promulgation of Implementation Plans; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard*. San Francisco, CA: United States Environmental Protection Agency Region 9. 24 September, [2014.] Print.

## APPENDIX B. FUEL MEASURES ADOPTED BY CARB, 1990 TO 2013

The following table is from the Technical Support Document developed by the EPA as part of the Approval and Promulgation of Implementation Plans; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard (USEPA Region 9, 2014, pp 43 - 46) for the Attainment Plan for the 1997 8-Hour Ozone Standard (SMAQMD et al, 2013).

Measure	Hearing Date	Comments
Wintertime Limits for Sulfur in Diesel Fuel. T 13, CCR, 2255	06/21/1990	Renumbered to section 2281. Approved 60 FR 43379 (8/21/95)
California Reformulated Gasoline (CaRFG), Phase I. T 13, CCR, 2251.5	09/27/1990	RVP standard for period between 1992 and 1996. Obsolete.
Limit on Aromatic Content of Diesel Fuel. T 13, CCR, 2256	12/13/1990	Renumbered to section 2282. Approved 60 FR 43379 (8/21/95) (listed as 4/15/01 adoption in FR)
California Reformulated Gasoline, Phase II. T 13, CCR, 2250, 2255.1, 2252, 2260 - 2272, 2295	11/21/1991	Approved 60 FR 43379 (8/21/95)
Wintertime Gasoline Program. T 13, CCR, 2258, 2298, 2251.5, 2296	11/21/1991	Approved 60 FR 43379 (8/21/95)
Wintertime Oxygenate Program. T 13, CCR, 2258, 2251.5, 2263(b), 2267, 2298, 2259, 2283, 2293.5	09/09/1993	Carbon monoxide control measure
Diesel Fuel Regulations - Emergency. T 13, CCR, 2281(h), 2282(1)	10/15/1993	Approved 60 FR 43379 (8/21/95)
Predictive Model for Phase II CaRFG. T 13, CCR, 2261, 2262- 2270	06/09/1994	Superseded by 11/18/04 & 6/14/07 rules
Small Refiner Diesel. T 13, CCR, 2282(e)(1)	07/24/1994	Approved 60 FR 43379 (8/21/95)
Test Method for Oxygen in Gasoline. T 13, CCR, 2251.5(c), 2258(c), 2263(b)	06/29/1995	Section 2251.5 - obsolete; section 2258 wintertime; section 2263, superseded
Test Methods for CaRFG 13, CCR, 2263(b)	10/26/1995	Superseded by 11/18/04 & 6/14/07 rules
Required Additives in Gasoline (Deposit Control Additives). T 13, CCR, 2257 and incorporates testing procedures.	11/16/1995	Superseded by 11/18/04 & 6/14/07 rules
CaRFG Housekeeping & CARBOB. T 13, CCR, 2263.7, 2266.5, 2260, 2262.5, 2264, 2265, 2272	12/14/1995	Superseded by 11/18/04 & 6/14/07 rules
CaRFG Variance Requirements. T 13, CCR, 2271 (Emergency)	01/25/1996	Superseded by 11/18/04 & 6/14/07 rules
Regulation Improvements and Repeals (fuel additives). T 13, CCR, 2201, 2202	05/30/1996	Repealed sections
Diesel Fuel Test Methods. T 13, CCR, 1956.8(b), 1960.1(k), 2281(c), 2282(b), (c) and (g)	10/24/1996	Approved 75 FR 26653 (5/12/10)

Measure	Hearing Date	Comments
Liquefied Petroleum Gas Propane Limit Specification Delay. T 13, CCR, 2292.6	03/27/1997	Expired
Cleaner Burning Gasoline Model Flexibility. T 13, CCR, Sections 2260, 2262.1, 2262.3, 2262.4, 2262.5, 2262.6, 2262.7 and 2265	08/27/1998	Superseded by 11/18/04 & 6/14/07 rules
Gasoline Deposit Control Additive Regulation. T 13, CCR, 2257, and incorporating test procedures	09/24/1998	Superseded by 11/18/04 & 6/14/07 rules
Cleaner Burning Gasoline (Increasing the Oxygen Content). T 13, CCR, sections 2262.5(b) and 2265(a)(2)	12/11/1998	Wintertime gasoline for South Coast and Imperial County.
Specifications for Liquid Petroleum Gas Used as a Motor Vehicle Fuel. T 13, CCR, 2292.6	12/11/1998	No identifiable emissions reductions
Cleaner Burning Gasoline, Oxygen Requirement for Wintertime In Lake Tahoe Area/Gas Pump Labeling for MTBE. T 13, CCR, 2262.5, and 2273	06/24/1999	Not applicable to the SC area/Obsolete
CaRFG Phase 3 Amendments (Phase out of MTBE, standards, predictive model). T 13, CCR, 2260, 2261, 2262.1, 2262.5, 2263, 2264, 2264.2, 2265, 2266 etc.	12/09/1999	2262.1 renumber to 2262.4; 2264 (designation of alternative limits) not approved; otherwise superseded by 11/18/04 and 6/14/07 rules
CaRFG Phase 3 Test Methods. T 13, CCR, sections 2263(b)	11/16/2000	Superseded by 11/18/04 & 6/14/07 rules
CaRFG Phase 3 Follow-up Amendments. T 13, CCR, sections 2260, 2261, 2262.3, 2262.5, 2263, 2264, 2265, 2266, 2266.5, 2270, 2272, 2273, 2282, 2296, 2297, 2262.9 and incorporated test procedures	11/16/2000	Superseded by 11/18/04 & 6/14/07 rules
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	07/25/2002	Superseded by 11/18/04 & 6/14/07 rules
CaRFG Phase 3 Amendments (specifications for De Minimus 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	Superseded by 11/18/04 & 6/14/07 rule. Approved 75 FR 26653 (5/12/10) (except for section 2272 (CaRFG3 standards for small refineries) and 2273.5 (requirement to identify gasoline containing ethanol when delivered to retail station))
Specifications for Motor Vehicle Diesel Fuel. T 13 & T 17, CCR, 1961, 2281, 2282, 2701, 2284, 2285, 93114, and incorporated test procedure	07/24/2003	Approved 75 FR 26653 (5/12/10)
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	Approved 75 FR 26653 (5/12/10)

Measure	Hearing Date	Comments
Diesel Fuel Standards for Harbor Craft & Locomotives. T 13, CCR, 2299, 2281, 2282, and 2284, and T 17, CCR, 93117	11/18/2004	See CARB 6/29/09 Letter
Emergency Regulation for Temporary Delay of Diesel Fuel Lubricity Standard. T 13, CCR, 2284	11/24/2004	Temporary delay of standard. Expired
Reid Vapor Pressure Limit. Emergency Rule. T 13, CCR, 2262 and 2262.4	08/08/2005	Operative for September and October 2005 only. Obsolete.
Phase 3 Reformulated Gasoline (Ethanol Permeation). T 13, CCR, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2270, 2271, and 2273	06/14/2007	Approved 75 FR 26653 (5/12/10)
Cleaner Fuels in Ocean-Going Vessel Main Engines and Auxiliary Boiler. T 13, CCR, 2299.2 and T 17, CCR, section 93118.2	07/24/2008	U.S. Secretary of State has accepted the designation by the International Maritime Organization of an Emission Control Area (ECA) in the waters off the North American coasts. Under this designation, ships are required to meet tighter fuel and emissions standards. Within the North American ECA, first-phase fuel sulfur standard (August 2012), second phase (January 2015), and NO <sub>x</sub> after treatment requirements (2016). Under the terms of CARB's regulation, the requirements set forth therein shall remain in effect until the CARB Executive Order issues written findings that federal requirements are in place that will achieve equivalent emissions reduction within the Regulated California Waters and are being enforced within the Regulated California Waters. 13 CCR, section 2299.2(j)(1).
Ocean-Going Vessels (OGV) Within California Waters and 24 Nautical Miles of the California Baseline. T 13, CCR, 2299.3; T 17, CCR, 93118.3.	06/23/2011	Adjusts the offshore regulatory boundary; facilitates successful transition to very low sulfur fuels by aligning implementation dates more closely with recently approved federal requirements; See above comment in 7/24/08 OGV measure regarding North American ECA.
California Reformulated Gasoline Regulations. T 13, CCR, Repeal section 2258, and amend sections 2260, 2261, 2264, 2265, 2265.1, 2266, 2266.5, and 2271.	10/20/2011	See staff report. No additional reductions expected.
Gasoline and Diesel Fuel Test Methods. T 13, CCR, 2262, 2263, 2282.	01/25/2013	Additional test methods



Measure	Hearing Date	Comments
Alternative Fuel Conversion Certification Procedures. T 13, CCR, 2030, 2031.	09/26/2013	Administrative and procedural changes. Impact on emissions will depend on sales of vehicle conversions of cleaner versus the same emission standards. This measure has not yet been approved by the State of CA's Office of Administrative Law (OAL).

**References:**

SMAQMD, et al. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions)*. Sacramento, CA: Sacramento Metropolitan Air Quality Management District, [2013.]

USEPA. Region 9. *Technical Support Document: Approval and Promulgation of Implementation Plans; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard*. San Francisco, CA: United States Environmental Protection Agency Region 9. 24 September, [2014.] Print.

## APPENDIX C. ON-ROAD MOBILE SOURCE MEASURES ADOPTED BY THE CARB, 1990 to 2013

The following table is from the Technical Support Document developed by the EPA as part of the Approval and Promulgation of Implementation Plans; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard (USEPA Region 9, 2014, pp 47 -55) for the Attainment Plan for the 1997 8-Hour Ozone Standard (SMAQMD et al, 2013).

Measure	Hearing Date	Comments
Certification Procedure for Aftermarket Parts. VC 27156 & 38391	02/08/1990	Compliance provisions
Emission Standards for Medium Duty Vehicles. T 13, CCR, 1900, 1956.8, 1960.1, 1968.1, 2061, 2112, 2139	06/14/1990	Waiver granted September 16, 1994 (59 FR 48625 (9/22/94))
Evaporative Emission Standards. T 13, CCR, 1976	08/09/1990	Waiver granted August 25, 1994 (59 FR 46979 (9/13/94))
Low Emission Vehicles and Clean Fuels. T 13, CCR, 1900, 1904, 1956.8, 1960.1, 1960.1.5, 1960.5 and 2111, 2112, 2125, and 2139, 2061.	09/28/1990	Waivers granted January 7, 1993 & April 6, 1998 (58 FR 4166 (1/13/93) & 63 FR 18403 (4/15/98))
Heavy Duty Diesel Smoke Emission Testing. T 13, CCR, 2180-2187	11/08/1990	Inspection program
Onboard Diagnostics for Light-Duty Trucks and Light & Medium- Duty Motor Vehicles. T 13, CCR, 1977, 1968.1	09/12/1991	Waiver granted October 2, 1996 (61 FR 53371, 10/11/96)
Onboard Diagnostic, Phase II. T 13, CCR, 1968.1, 1977	11/12/1991	
Low Emission Vehicles amendments revising reactivity adjustment factor (RAF) provisions and adopting a RAF for M85 transitional low emission vehicles. T 13, CCR, 1960.1	11/14/1991	Confirm within the scope finding requested February 18, 1993
Alternative Motor Vehicle Fuel Certification Fuel Specification. T 13 & 26, CCR, 2290-2292.7, 1960.1(k), 1956.8(b), 1956.8(d)	03/12/1992	Confirm within the scope finding requested February 17, 1994
Standards and Test Procedures for Alternative Fuel Retrofit Systems. T 13, CCR, 2030, 2031	05/14/1992	Compliance provisions
Phase 2 RFG certification fuel specifications. T 13, CCR, 1960.1, 1956.8(d)	08/13/1992	Confirm within the scope finding requested February 17, 1994
Substitute Fuel or Clean Fuel Incorporated Test Procedures. T 13, CCR, 1960.1(k), 2317	11/12/1992	Confirm within the scope finding requested February 17, 1994

Measure	Hearing Date	Comments
Smoke Self Inspection Program for Heavy Duty Diesel & Gasoline Engines. T 13, CCR, 2190-2194, 2180-2187, 1956.8(b)	12/10/1992	Inspection program
Certification Requirements for Low Emission Passenger Cars, Light-Duty Trucks & Medium Duty Vehicles. T 13, CCR, 1960.1, 1976, 2061, 1900	01/14/1993	Confirm within the scope finding requested February 21, 1994
Onboard Diagnostic, Phase II. T 13, CCR, 1968.1	07/09/1993	Waiver granted October 2, 1996 (61 FR 53371, 10/11/96)
Urban Transit Buses. T 13, CCR, 1956.8, 1965, 2112	06/10/1993	Found within the scope September 28, 2004 (69 FR 59920, October 6, 2004)
Evaporative Emission Standards and Test Procedures. T 13, CCR, 1976	02/10/1994	Waiver granted July 28, 1999 (64 FR 42689, 8/5/99)
Diesel Fuel Certification. T 13, CCR, 1956.8(b)&(d), 1960.1(k), 2292.6	09/22/1994	Confirm within the scope finding requested September 14, 1995
Self-Inspection Program for Heavy Duty Diesel Engines. T 13, CCR, 2190-2194, 2180-2187, 1956.8(b)	11/09/1994	Inspection program
Onboard Diagnostics, Phase II. T 13, CCR, 1963.1, & Certification Procedures	12/08/1994	Waiver granted October 2, 1996 (61 FR 53371, 10/11/96)
Periodic Smoke Inspection Program. T 13, CCR, 2190	12/08/1994	Inspection program
Heavy Duty Vehicle Exhaust Emission Standards. T 13, CCR, 1956.8 and incorporate test procedures.	06/29/1995	Found within the scope September 28, 2004 (69 FR 59920, 10/6/04)
Onboard Refueling Vapor Recovery Standards. T 13, CCR, 1976, 1978 and incorporate test procedures	06/29/1995	Waiver granted August 13, 2002 (67 FR 54180, 8/21/02)
Retrofit Emission Standards. T 13, CCR, 1956.9, 2030, 2031, and incorporate test procedures	07/27/1995	Compliance provision
Low Emission Vehicle Standards 3 (LEV 3). T 13, CCR, 1956.8, 1960.1, 1965, 2101, 2061, 2062, and incorporate test procedures	09/28/1995	Confirm within the scope finding requested October 8, 1996.
Postpone Zero Emission Vehicle Requirements. T 13, CCR, 1900, 1960.1, 1976	03/28/1996	Found within the scope January 18, 2001 (66 FR 7751, 1/25/01)
Diesel Fuel Certification Test Methods. T 13, CCR, 1956.8(b), 1960.1(k), 2281(c), 2282(b), (c) and (g)	10/24/1996	Confirm within the scope finding requested November 24, 1997
Onboard Diagnostics, Phase II, Technical Status. T 13, CCR, 1968.1, 2030, 2031	12/12/1996	Initial notice 69 FR 5542 (February 5, 2004)
Postpone Enhanced Evaporative Emission Requirements for Ultra- Small Volume Vehicle Manufacturers. T 13, CCR, 1976 and incorporate test procedures	05/22/1997	Found within the scope July 28, 1999 (64 FR 42689 (8/5/99))

Measure	Hearing Date	Comments
Off-Cycle Emissions Supplemental Federal Test Procedures (SFTPs). T 13, CCR, 1960.1, 2101 and incorporate test procedures	07/24/1997	Waiver granted September 30, 2004 (69 FR 60996, 10/14/04)
Heavy Duty Vehicle Smoke Inspection Program/Periodic Smoke Inspection Program. T 13, CCR, 2180-2188 and 2190-2194	12/11/1997	Inspection program
Heavy Duty Vehicle Regulations: 2004 Standards. T 13, CCR, 1956.8, 1965, 2036, 2112 and test procedures	04/23/1998	Confirm within the scope finding requested December 26, 2001
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	11/05/1998	Waiver granted April 11, 2003 (68 FR 19811 (4/22/03))/found within the scope (1999 ZEV amendments) December 21, 2006 (71 FR 78190 (12/28/06))
Exhaust Standards for (On-Road) Motorcycles. T 13, CCR, 1958	12/10/1998	Waiver granted July 27, 2006 (71 FR 44027, 8/3/06)
Voluntary Accelerated Light Duty Vehicle Retirement Regulations. T 13, CCR, 2600-2610	12/10/1998	Establishes standards for a voluntary accelerated retirement program. Revised 2/21/06 and 12/7/06
Clean Fuels Regulation Requirements. T 13, CCR, sections 2300- 2317, and 2303.5, 2311.5	07/22/1999	Removal of obsolete provisions, streamlining and other minor changes to 9/1990 rule.
Transit Bus Standards. T 13, CCR, 1956.1, 1956.2, 1956.3, 1956.4, 1956.8, 1965	02/24/2000	Waiver granted for LDV & HDV July 15, 2013 (78 FR 44112, July 23, 2013). Combination of fleet requirements, emission standards, and zero-emission bus standards. Federal & state emission standards are the same for 2010 MY buses.
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	12/07/2000	Waiver granted for LDV & HDV April 11, 2003 (68 FR 19811, 4/22/03). Initial notice on within-the-scope finding request for HDGE: 72 FR 27114 (5/14/07).
Heavy Duty Diesel Engines "Not-to-Exceed (NTE)" Test Procedures. T 13 CCR, 1956.8, 2065	12/07/2000	Confirm within the scope finding requested December 26, 2001.
Zero Emission Vehicle Regulation Update. T 13, CCR, 1900, 1960.1(k), 1961, 1962 & incorporated Test Procedure	01/25/2001	Found within the scope finding and waiver granted on December 21, 2006 (71 FR 78190, 12/28/06)
Zero Emission Vehicle Infrastructure and Standardization of Electric Vehicle Charging Equipment. T 13, CCR, 1900(b), 1962(b) 1962.1	06/28/2001	Found within the scope and waiver granted on December 21, 2006 (71 FR 78190, 12/28/06)

Measure	Hearing Date	Comments
Heavy Duty Diesel Engine Standards for 2007 and Later. T 13, CCR, 1956.8 and incorporate test procedures	10/25/2001	Waiver granted August 19, 2005 (70 FR 50322, 8/26/05)
Low Emission Vehicle Regulations. T 13, CCR, 1960.1, 1960.5, 1961, 1962 and incorporate test procedures and guidelines	11/15/2001	Found within the scope April 21, 2005 (70 FR 22034, 4/28/05)
California Motor Vehicle Service Information Rule. T 13&17, CCR, 1969 & 60060.1 - 60060.7	12/13/2001	Compliance provision. Very similar to EPA regulations at 40 CFR 86.1808.01
Voluntary Accelerated Light Duty Vehicle Retirement Regulations. T 13, CCR, 2601-2605, 2606 & appendices C & D, and 2607-2610	02/21/2002	Establishes standards for a voluntary accelerated retirement program. Revised 12/7/06.
On-Board Diagnostic II Review Amendments. T 13, CCR, 1968.1, 1968.2, 1968.5	04/25/2002	Initial notice 69 FR 5542 (2/5/04)
Diesel Retrofit Verification Procedure, Warranty and In-Use Compliance Requirements. T 13, CCR, 2700-2710	05/16/2002	Procedures to verify diesel retrofit technology.
Revision to Transit Bus Regulations Amendments. Public Transit Fleet Rule and Emission Standards for New Urban Buses. T 13, CCR, 1956.1, 1956.2, 1956.4, 1956.8, and 2112, & documents incorporated by reference	10/24/2002	Waiver granted for LDV & HDV July 15, 2013 (78 FR 44112, July 23, 2013). Slight relaxation in requirements over 2000 rule.
Low Emission Vehicles II. Align Heavy Duty Gas Engine Standards with Federal Standards; minor administrative changes. T 13, CCR, 1961, 1965, 1956.8, 1956.1, 1978, 2065 and documents incorporated by reference	12/12/2002	Waiver granted August 19, 2005 (70 FR 50322 (8/26/05)) for all but HDGE. HDGE standards adopted to harmonize with EPA's. Initial notice on within-the-scope finding request for HDGE: 72 FR 27114 (5/14/07).
Airborne Toxic Control Measure for Diesel Particulate from School Bus Idling. T13, CCR, 2480	12/12/2002	No emissions reductions claimed.
Zero Emission Vehicle Amendments for 2003. T 13, CCR, 1960.1(k), 1961(a) and (d), 1900, 1962, and documents incorporated by reference	03/25/2003	Found within the scope and waiver granted on December 21, 2005 (71 FR 78190, 12/28/06)
Solid Waste Collection Vehicles. T 13, CCR, 2020, 2021, 2021.1, 2021.2	09/24/2003	Diesel reduction program. Minimal reductions. See CARB, "Staff Report: Initial Statement Of Reasons, Proposed Diesel Particulate Matter Control Measure for On-Road Heavy-Duty Residential and Commercial Solid Waste Collection Vehicles," June 6, 2003, p. 53.
Diesel Retrofit Verification Procedure, Warranty and In-Use Compliance Requirements (Amendments). T 13, CCR, 2701-2707 & 2709	12/11/2003	Procedures to verify diesel retrofit technology.

Measure	Hearing Date	Comments
CA Motor Vehicle Service Information Rule. T 13, CCR, 1969	01/22/2004	Compliance provision. Very similar to EPA regulations at 40 CFR 86.1808.01
Heavy Duty Diesel Engine-Chip Reflash. T 13, CCR, 2011, 2180.1, 2181, 2184, 2185, 2186, 2192, and 2194	03/27/2004	Compliance provision.
Engine Manufacturer Diagnostic System Requirements for 2007 and Subsequent Model Heavy Duty Engines. T 13, CCR, 1971	05/20/2004	Waiver granted December 22, 2005 (71 FR 335, 1/4/06)
Urban Bus Engines/Fleet Rule for Transit Agencies. T 13, CCR, 1956.1, 1956.2, 1956.3, and 1956.4	06/24/2004	Waiver granted for LDV & HDV 7/15/13 (78 FR 44112, 7/23/13). Added optional exhaust emission standards for diesel-fueled hybrid-electric urban bus engines for authorized transit agencies with NOX mitigation plans for the 2004–2006 model years.
Airborne Toxic Control Measure for Diesel Particulate from Diesel Fueled Commercial Vehicle Idling. T 13, CCR, 2485	07/22/2004	CARB has requested that EPA confirm requirement is not preempted. Initial notice 75 FR 43975 (7/27/10)
Greenhouse Gas Standards. T 13, CCR, 1900, 1961 and Incorporated Test Procedures	09/23/2004	Waiver granted 6/30/09 (74 FR 32744, 7/8/09)
Transit Fleet Rule. T 13, CCR, 2023, 2023.1, 2023.2, 2023.3, 2023.4, 1956.1, 2020, 2021, repeal 1956.2, 1956.3, 1956.4	02/24/2005	Waiver granted for LDV & HDV 7/15/13 (78 FR 44112, 7/23/13). Diesel reduction program. Clarified the optional standards for hybrid-electric buses that were allowed in the 2004 rulemaking.
On-Board Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Engines (HD OBD). T 13, CCR, 1971.1	07/21/2005	Waiver granted 8/13/08 (73 FR 52042, 9/8/08)
2007-2009 Model-Year Heavy Duty Urban Bus Engines and the Fleet Rule for Transit Agencies. T 13, CCR, 1956.1, 1956.2, and 1956.8	10/20/2005	Waiver granted for LDV & HDV 7/15/13 (78 FR 44112, 7/23/13). Aligns State emission standards with federal emission standards for heavy-duty diesel engines.
Requirements to Reduce Idling Emissions from New and In-Use Trucks, Beginning in 2008. T 13, CCR section 1956.8 and the incorporated document	10/20/2005	Waiver granted on 2/8/12 (77 FR 9239, 2/16/12).
Diesel Particulate Matter Control Measure for On-Road Heavy- Duty Diesel-Fueled Vehicles Owned or Operated by Public Agencies and Utilities. T 13, CCR, 2022 and 2022.1	12/08/2005	Diesel reduction program. Minimal reductions. See CARB, “Staff Report: Initial Statement Of Reasons, Proposed Diesel Particulate Matter Control Measure for On-Road Heavy-Duty Diesel-Fueled Vehicles Owned or Operated By Public Agencies And Utilities,” 10/21/05, p. 55.

Measure	Hearing Date	Comments
Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards. T 13, CCR, 2479	12/08/2005	Waiver (and authorization) granted on 11/28/11 (77 FR 9916, 2/21/12)).
AB 1009 Heavy-Duty Vehicle Smoke Inspection Program. T 13, CCR, 2180, 2180.1, 2181, 2182, 2183, 2184, 2185, 2186, 2187, and 2188, 2189	01/26/2006	Requires trucks have emission control labels.
Diesel Verification Procedure, Warranty & In-Use. T 13, CCR, 2702, 2703, 2704, 2706, 2707, and 2709.	03/23/2006	Procedures to verify diesel retrofit technology, supporting rule for in-use control measures.
Technical Amendments to Evaporative Exhaust and Evaporative Emissions Test Procedures. T 13, CCR, 1961, 1976 and 1978.	05/25/2006	Within the scope finding 7/22/10 (75 FR 44948, 7/27/10).
California Motor Vehicle Service Information Rule. T 13, CCR, 1969 and incorporated documents	06/22/2006	Compliance provision. Very similar to EPA regulations at 40 CFR 86.1808.01
Evaporative and Exhaust Emissions Test Procedures. T 13, CCR, 1961, 1976, and 1978	06/22/2006	Waiver granted 7/27/10 (75 FR 44951, 7/30/10).
On-Board Diagnostic II. T 13, CCR, 1968.2, 1968.5, 2035, 2037 and 2038	09/28/2006	ARB request sent to EPA on 1/22/08
Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	09/28/2006	Compliance provision. Compliance program "essentially identical to EPA's." See Updated Information Digest for the Rule.
Zero Emission Bus Regulation. T13, CCR, 2023.1, 2023.3, & 2023.4	10/19/2006	Delays ZEB requirements due to high bus costs and unproven durability, reliability and ability to produce the number of buses required by the regulation. See Updated Information Digest.
Voluntary Accelerated Retirement Regulation. T 13, CCR, 2601- 2610 and appendices A-D	12/07/2006	Establishes standards for a voluntary accelerated retirement program.
Aftermarket (New) Catalytic Converters and Used Catalytic Converters. T 13, CCR, 2222	10/25/2007	Establishes more stringent emissions performance and durability requirements for new aftermarket converters offered for sale in CA, and eliminates current provisions allowing the sale and use of used catalytic converters in CA. ARB has indicated this falls under CAA 209(c) because of a preexisting waiver.
Heavy-Duty Diesel In-Use Compliance ~ Gaseous Pollutant Measurement. T 13, CCR, 1956.8	12/06/2007	Modifies the measurement allowances during compliance testing.
In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks. T 13, CCR, 2027.	12/06/2007	77 FR 20308 (4/4/12).

Measure	Hearing Date	Comments
Verification Procedure, Warranty and In-Use Compliance to Control Emissions from Diesel Engines. T 13, CCR, 2700-2710	01/24/2008	Improves verification process and better support ARB's in-use fleet rules.
Zero Emission Vehicle Regulation. (Six parts) T 13, CCR, 1900, 1962, and California Exhaust Emission Standards and Test Procedures.	03/27/2008	Waiver granted 9/26/11 (76 FR 61098, 10/3/11)).
Air Quality Improvement Program For the Alternative and Renewable Fuel and Vehicle and Technology Program. T 13, CCR, 2340-2345.	09/25/2008	Ensures that both the Air Quality Improvement Program and the Alternative and Renewable Fuel and Vehicle Technology Program complement existing air quality programs and maintain or improve upon the emission benefits achieved.
Truck / Bus Regulation 2008. T 13, CCR, 2025, 2020 and 2022, 2451- 2453, 2455, 2456, 2458, 2461, and 2462.	12/11/2008	Revised 12/16/10. Revised version approved at 77 FR 20308 (4/4/12).
Greenhouse Gas Emissions from Heavy-Duty Vehicles (Tractor- Trailers). T 17, CCR, 95300-95311.	12/11/2008	Waiver granted 7/30/14 (79 FR 46256, 8/7/14)
Aftermarket Critical Emission Control Parts on Highway Motorcycles. T 13, CCR, 2222	01/22/2009	Amendments allow manufacturers to sell, offer for sale, advertise, or install aftermarket emission control parts for highway motorcycles.
Plug-In Hybrid Electric Vehicle Test Procedure Amendments and Aftermarket Parts Certification Requirements. T 13, CCR, 1961, 1962, 1976, and 1978, and California Exhaust Emission Standards and Test Procedures	05/28/2009	Amendments to adapt existing exhaust and evaporative emission test procedures to more accurately reflect the exhaust and evaporative emissions generated from new configurations of plug-in hybrid electric vehicles.
Air Quality Improvement Program	04/23/2009	Guidelines for Air Quality Improvement Program to fund air quality improvement projects (AB 118)
Heavy-Duty On-Board Diagnostics. T 13, CCR, 1968 and 1971	05/28/2009	Waiver granted 11/29/12 (77 FR 73459, 12/10/12)
Enhanced Fleet Modernization Program (Car Scrap) (formerly "Expanded Vehicle Retirement Program"). T 13, CCR, 2620-2630	06/26/2009	Expands CA's existing vehicle retirement program to improve CA's air quality through the voluntary early retirement of vehicles in the South Coast and San Joaquin Valley.



Measure	Hearing Date	Comments
New Passenger Motor Vehicle Greenhouse Gas Emission Standards. T 13, CCR, 1961 and 1961.1, and the California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.	09/24/2009	Allows manufacturers to meet the fleet average GHG emission requirements by pooling the CA and CAA Sec. 177 State Vehicle sales; allows use of data from the federal CAFE program to demonstrate compliance with CA's new passenger motor vehicle GHG regulations; administrative amendments to align with current federal requirements.
Emission Warranty Information Reporting and Recall Regulations. T 13, CCR, 1956.8, 1958, 1961, 1976, 1978, 2111, 2112, 2122, 2136, and 2141, and related test procedures.	11/19/2009	Repeal 2007 Emission Warranty Information Reporting and Recall (EWIR) amendments and readopt 1998 version of the EWIR regulation.
Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines. T 13, CCR, 2700- 2707, and 2711.	01/28/2010	Amendments to improve the verification process.
New Passenger Motor Vehicle Greenhouse Gas Emission Standards. T 13, CCR, 1961 and 1961.1, and amendments to the CA Exhaust Emission Standards and Test Procedures	02/25/2010	Allows manufacturer compliance with EPA standards to be deemed as compliant with CA's standards for the 2012 through 2016 MYs.
Periodic Smoke Inspection Program. T 13, CCR, 2190	10/21/2010	Eliminates duplicative emissions testing requirements for owners of diesel fleet vehicles that operate in CA.
Truck and Bus Regulation 2010. (Includes three parts: Truck and Bus regulation, Tractor-Trailer GHG regulation, and the Drayage Truck regulation.) T 13, CCR, 2025; T17, CCR, 95300- 95311; T13, CCR, 2027.	12/16/2010	Approved 77 FR 20308 (4/4/12). For portions of the measure a waiver was granted on 7/30/14 and published at 79 FR 46256 (8/7/14).
Low Carbon Fuel Standard Intensity Lookup Tables. T 17, CCR, 95486.	02/24/2011	Amends the LCFS carbon intensity Lookup Tables through the adoption of 28 additional fuel pathways.
Heavy-Duty Diesel In-Use Compliance Regulation. T 13, CCR, 1956 and CA Exhaust Emission Standards and Test Procedures.	06/23/2011	PM measurement allowance to compensate for uncertainties when performing compliance testing.
Mobile Cargo Handling. T 13, CCR, 2479	09/22/2011	Waiver request submitted by CARB on 5/16/13. Provides additional flexibility to CHE owners/ operators in complying with requirements by reducing compliance costs while continuing to reduce emissions of diesel PM and NO <sub>x</sub> .

Measure	Hearing Date	Comments
Specially Constructed Vehicles (Kit Cars). T 13, CCR, 2210-2218.	11/17/2011	New regulation and associated certification procedures for new light-duty engines for use in specially constructed vehicles.
Low Carbon Fuel Standard. T 17, CCR, 95480-95482, 95484- 95486, 95488, and 95490	12/16/2011	Refines and improves certain aspects of the regulation; vast majority of the regulation remains unchanged.
Zero Emission Vehicle Regulation, Low-Emission Vehicle and GHG 2012 (Advanced Clean Cars Program) . T 13, CCR, 1900, 1956, 1960-1962, 1965, 1968, 1976, 1978, 2037, 2038, 2062, 2112, 2139, 2140, 2145, 2147, 2235, 2300, 2302-2304, 2306-2318.	01/27/2012	Waiver granted 12/27/12 (78 FR 2112, January 9, 2013).
Heavy-Duty OBD and OBD II Regulation. T 13, CCR, 1968 and 1971	08/23/2012	Waiver request submitted by CARB on February 14, 2014. Amends monitoring and performance requirements of OBD II systems in diesel fueled medium-duty vehicles, the monitoring and performance requirements of HD OBD systems, and the enforcement provisions applicable to OBD II systems and HD OBD systems
Verification Procedures Regulation. T 13, CCR, 2700-2711.	08/23/2012	Reduces the amount of in-use testing.
Emergency Regulation for Tractor Trailer Greenhouse Gas Regulation. T 17, CCR, 95300-95312	N/A	Corrects an oversight that required registration and compliance deadlines that preceded effective date of the rule.
LEV III GHG and ZEV Regulation Amendments for Federal Compliance Option. T 13, CCR, 1900, 1956, 1960-1962, and 1976	11/15/2012	Amendments to new passenger motor vehicle GHG emission standards for MY 2017-2025 to permit compliance based on federal GHG emission standards and additional minor revisions to the LEV III and ZEV regulations.
Zero Emission Vehicle Regulation. T 13, CCR, 1962 and California Exhaust Emissions Standards and Test Procedures.	10/24/2013	Minor amendments

Measure	Hearing Date	Comments
Heavy Duty GHG Phase 1. (Five parts: GHG Regulations for Medium- and Heavy-Duty Engines and Vehicles; Optional Reduced Emission Standards for Heavy-Duty Engines; and amendments to the Tractor-Trailer GHG Regulation, the Diesel- Fueled Commercial Motor Vehicle Idling Rule, and the Heavy-Duty Hybrid-Electric Vehicles Certification Procedures.) T 13, CCR, 1900, 1956, 2036, 2037, 2112, 2139, 2140, and 2147; T17, CCR, 95660-95664, and California Exhaust Emissions Standards and Test Procedures.	12/12/2013	All related to on-road medium- and heavy-duty vehicles and engines; intended to help usher in new generations of lower-emitting trucks, to enhance the enforcement and implementation of existing requirements, and to establish new, optional provisions. This measure has not yet been approved by OAL.

**References:**

SMAQMD, et al. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions)*. Sacramento, CA: Sacramento Metropolitan Air Quality Management District, [2013.]

USEPA. Region 9. *Technical Support Document: Approval and Promulgation of Implementation Plans; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard*. San Francisco, CA: United States Environmental Protection Agency Region 9. 24 September, [2014.] Print.

## APPENDIX D. OFF-ROAD MOBILE SOURCE MEASURES ADOPTED BY CARB, 1990 TO 2013

The following table is from the Technical Support Document developed by the EPA as part of the Approval and Promulgation of Implementation Plans; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard (USEPA Region 9, 2014, pp 56 - 61) for the Attainment Plan for the 1997 8-Hour Ozone Standard (SMAQMD et al, 2013).

Measure	Hearing Date	Comments
Emission Standards for Utility and Lawn and Garden Engines. T 17, CCR, 2400 et. seq.	12/13/1990	Authorization granted July 5, 1995 (60 FR 37440, 7/20/95)
1-year Implementation Delay in Emission Standards for Utility Engines. T 13, CCR, 2400, 2403-2407	04/08/1993	
Heavy Duty Diesel Cycle Engines. T 13, CCR, 2420-2427	01/09/1992	Authorization granted May 15, 1995 (60 FR 48981, 9/21/1995)
Off-Highway Recreational Vehicles. T 13, CCR, 2410-2414, 2111-2140	01/03/1994	Authorization granted December 23, 1996 (61 FR 69093, 12/31/1996)
Utility and Lawn and Garden Equipment Engines. T 13, CCR, 2403(c), 11(a)(1)(I)(ii), 4(a)(1)(I)(ii)	07/28/1994	Within the scope finding November 9, 2000 (65 FR 69763, 11/20/00)
Exemption of Military Tactical Vehicles. T 13, CCR, 1905, 2400, 2420	12/14/1995	Within the scope finding November 9, 2000 (65 FR 69763, 11/20/00)
Utility and Lawn and Garden Equipment Engines. CO Standards	01/25/1996	Within the scope finding November 9, 2000 (65 FR 69763, 11/20/00)
Wintertime Requirements for Utility Engines & Off-Highway Vehicles. T 13, CCR, 2403	09/26/1996	Within the scope finding November 9, 2000 (65 FR 69763, 11/20/00)
Portable Equipment Registration Program. T 13, CCR, 2450- 2465	03/27/1997	Revised on 12/10/98. Waiver request withdrawn/replaced.
Small Off-Road Engines (SORE). T 13, CCR, 2400, 2410-2414	03/26/1998	Within the scope finding 11/9/00 (65 FR 69767, 11/20/00), Authorization granted (durability requirements), 10/10/03 (65 FR 65702, 11/21/03).
Large Off-Road Spark-Ignition Engine Regulations. T 13, CCR, 2430 et seq., and 2411-2414	10/22/1998	Authorization granted 5/15/06 (71 FR 29623, 5/23/06)
1997 & Later Model Off-Highway Recreational Vehicles and Engines. T 13, CCR, 2410-2414, 2415	12/10/1998	Authorization granted 1/27/14 (79 FR 6584, 2/4/14)
Revisions to Statewide Portable Equipment Registration Program. T 13, CCR, 2450-2463	12/10/1998	Superseded on 2/26/04.
Emission Standards and Test Procedures for 2001 Marine Engines. T 13, CCR, 2440 et seq.	12/10/1998	Authorization granted 3/22/07 (59 FR 14546, 3/28/07)
Aftermarket Parts for Off-Road Engines. T 13, CCR,	11/19/1998	Compliance measure

Measure	Hearing Date	Comments
2470-2476		
Portable Container Spillage Control Measure. T 13, CCR, 2470- 2478	09/23/1999	Similar federal regulation. 40 CFR part 59, subpart F.
Off-Road Compression Ignition Engines. T 13, CCR, 2111, 2112, 2137, 2139, 2140, 2141, 2144, 2400, 2401, 2403, 2420, 2421, 2423-2427, & appendix A to article 2.1.	01/27/2000	Authorization granted, 2/5/10 (75 FR 8056, 2/23/2010)
Marine Inboard Engines. T 13, CCR, 2111, 2112, 2139, 2140, 2147, 2440-2442, 2443.1-2443.3, 2444, 2445.1, 2445.2, 2446, 2444.2 and incorporation of documents by reference	07/26/2001	Authorization granted in part 3/22/07 (59 FR 14546, 3/28/07)) 2007 standards waiver granted 4/26/11 (76 FR 24872, 5/3/11)
Off-Highway Recreation Vehicles. T13, CCR, 2415	07/24/2003	Authorization granted 1/27/14 (79 FR 6584, 2/4/14).
Small Off-Road Engines (SORE). T 13, CCR, 2400-2409, 2405.1, 2405.2, 2405.3, 2750-2754, 2754.1, 2754.2, 2755-2767, 2767.1, 2768-2773 and the documents incorporated by reference	09/25/2003	Authorization granted, 12/11/06 (71 FR 75536, 12/15/06)
Airborne Toxic Control Measure for Diesel Particulate for Transport Refrigeration Units. T 13, CCR, 2022 & 2477	12/11/2003	Authorization granted (non-road) 1/9/09 (74 FR 3030, 1/16/09)
Airborne Toxic Control Measure for Diesel-Fueled Portable Engines. T 17, CCR, 93116, 93116.1, 93116.2, 93116.3, 93116.4, and 93116.5	02/26/2004	Authorization granted on 11/29/12 (77 FR 72846, 12/6/12).
Modifications to the Statewide Portable Equipment Registration Program (PERP) Regulations. T 13, CCR Amendments to 2450-2465, and repeal of 2466	02/26/2004	Superseded on 6/22/06 and 3/22/07.
Off-Road Compression Ignition Engines. T 13, CCR, 2420, 2421, 2423, 2424, 2425, 2427	12/09/2004	Authorization granted 2/5/10 (75 FR 8056, 2/23/10)
Portable Fuel Containers (PFC) [Part 1 of 2]. T 13, CCR, 2467 and 2467.1	09/15/2005	Similar federal regulation. 40 CFR part 59, subpart F.
Portable Fuel Containers (PFC) [Part 2 of 2]. T 13, CCR 2467.2, 2467.3, 2467.4, 2467.5, 2467.6, 2467.7; repeal of 2467.8, and adoption of new 2467.8 and 2467.9.	09/15/2005	Similar federal regulation. 40 CFR part 59, subpart F.
Airborne Toxic Control Measure for Cruise Ships Onboard Incineration. T 17, CCR, 93119	11/17/2005	See Initial Statement of Reasons for Rule, p. II-1.
Marine Inboard Sterndrive Engines. T 13 CCR 2111, 2112, 2441, 2442, 2444.2, 2445.1, 2446, 2447, and incorporated document	11/17/2005	Revision to year 2007 standards in 7/26/2001 marine inboard engine standards. Waiver requested by CARB on 2/7/08. No impact on reductions after 2020.

Measure	Hearing Date	Comments
Auxiliary Diesel Engines and Diesel-Electric Engines Operated on Ocean-Going Vessels within California Waters and 24 Nautical Miles of the California Baseline. T 13, CCR, 2299.1 and T 17, CCR, 93118	12/08/2005	In <i>Pacific Merchant Shipping Association v. Goldstene</i> , 517 F.3d 1108, 1109–10 (9th Cir. 2008), the Ninth Circuit enjoined California from enforcing this measure. The measure adopted on 07/24/08.
Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards. T 13, CCR, 2479	12/08/2005	Authorization (and waiver) granted on 11/28/11 (77 FR 9916, 3/21/12).
Fork Lifts and Other Industrial Equipment. (Large Off-Road Spark Ignition Engines > 1 liter) T 13, CCR 2430, 2433, 2434. Adopt 2775, 2775.1, 2775.2, 2780, 2781, 2783, 2784, 2785, 2786, 2787, 2788, and 2789.	05/26/2006	Authorization granted on 3/29/12 (77 FR 20329, 4/4/12).
Portable Equipment Registration Program. T 13, CCR, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, and 2465	06/22/2006	Superseded on 3/22/07.
Off-Highway Recreational Vehicles and Engines. T 13, CCR, 2411-2413, 2415 & documents incorporated by reference	07/20/2006	Authorization granted 1/27/14 (79 FR 6584 (2/4/14).
Emergency Regulation for Portable Equipment Registration Program Airborne Toxic Control Measures and Portable and Stationary diesel-Fueled Engines. T 13, CCR, 2452, 2455, 2456, 2461; T17 CCR 93115, 93116.2, 93116.3	12/06/2006	Expired.
Portable Equipment Registration Program and Airborne Toxic Control Measure for Diesel-Fueled Portable Engines. T 13, CCR, 2451, 2452, 2456, 2458, 2459, 2460, 2461, and 2462, T 17, CCR, 93116.1, 93116.2, 93116.3 , 93116.3.1	03/22/2007	Authorization granted on 11/29/12 (77 FR 72851, 12/6/12).
In-Use Off-Road Diesel Vehicles. T 13, CCR, 2449	07/26/2007	Superseded on 1/22/09
Commercial Harbor Craft. T 13, CCR, section 2229.5 and T 17, CCR section 93118.5.	11/15/2007	Authorization granted on 12/5/11 (77 FR 77521, 12/13/11)
Ocean-Going Vessels At Berth (Shore Power). T 13, CCR, 2299.3 and T 17, CCR, 93118.3 and documents incorporated by reference	12/06/2007	Authorization granted on 11/28/11 (77 FR 77515, 12/13/11)
<u>Spark-Ignition Marine Engine and Boat Regulations</u> . T 13, CCR, 2111, 2112 (including Appendix A), 2139, 2147, 2440, 2441, 2442, 2443.1, 2443.2, 2443.3, 2444.1, 2444.2, 2445, and the repeal of section 2448.	07/24/2008	Notice of opportunity for public hearing and comment published on 8/19/13 (78 FR 50413).

Measure	Hearing Date	Comments
Cleaner Fuels in Ocean-Going Vessel Main Engines and Auxiliary Boiler. T 13, CCR, 2299.2 and T 17, CCR, section 93118.2	07/24/2008	U.S. Secretary of State has accepted the designation by the International Maritime Organization of an Emission Control Area (ECA) in the waters off the North American coasts. Under this designation, ships are required to meet tighter fuel and emissions standards. Within the North American ECA, first-phase fuel sulfur standard (August 2012), second phase (January 2015), and NO <sub>x</sub> after treatment requirements (2016). Under the terms of CARB's regulation, the requirements set forth therein shall remain in effect until the CARB Executive Order issues written findings that federal requirements are in place that will achieve equivalent emissions reduction within the Regulated California Waters and are being enforced within the Regulated California Waters. 13 CCR, section 2299.2(j)(1).
<u>Portable Outboard Marine Tanks and Components</u> . T 13, CCR, Chapter 9, article 6.5, section 2468, and adoption of "CP-510 Certification Procedure for Portable Outboard Marine Tanks and Components", "TP-511 Diurnal Rate from Portable Outboard Marine Tanks", and "TP-512 Permeation Rate from Portable Outboard Marine Tank Fuel Hoses and Portable Outboard Marine Tank Primer Bulbs"	09/25/2008	Requires permeation and evaporative technologies to reduce gasoline vapor emissions. Analogous federal requirement at 40 CFR 1060.105.
<u>Large Spark Ignition Engines</u> . T 13, CCR, 2433 and California Exhaust Emissions Standards and Test Procedures	11/21/2008	Authorization request sent to EPA on 6/2/2014. Amended regulations to include more stringent exhaust emission standards; new regulations to control evaporative emissions. CARB is preparing package to request authorization. Authorization previously granted for prior Large SI engines measure. See 05/26/06 measure.
<u>Small Off Road Engine Regulations</u> . T 13, CCR, 2403, 2405, 2406, 2408, and 2409, and California Exhaust Emission Standards and Test Procedures	11/21/2008	Notice of opportunity for public hearing and comment published on 4/28/14 (79 FR 30610). Modifies SORE regulations to address emission credits, etc.
Cleaner In-Use Heavy-Duty Trucks. T 13, CCR, 2025	12/11/2008	Authorization granted on 5/16/13 (78 FR 31536, 5/24/13) for portion of rule that applies to in-use nonroad yard trucks and auxiliary engines used in two-engine

Measure	Hearing Date	Comments
		sweepers.
<u>In-Use Off-Road Diesel Fueled Fleets</u> . T 13, CCR, 2449, 2449.1, and 2449.2	01/22/2009	Superseded on 7/23/09
<u>In-Use Off-Road Diesel Fueled Fleets</u> . T 13, CCR, 2449, 2449.1, and 2449.2	07/23/2009	Superseded on 12/16/10.
<u>Portable Equipment Registration Program (PERP), Portable Engine ATCM, and In-Use Off-Road Diesel-Fueled Vehicles</u> . (Part 1) T 13, CCR, 2025, 2449, 2452, 2453, 2456, 2458, 2460, 2461 and 2462; T17, CCR, 93116; (Part 2) T 13, CCR, 2451, 2452, 2453, 2456, 2458, 2460- 2462; T 17, CCR, 93116.	01/28/2010	Operating extension for certain uncertified portable engines in small and medium fleets; revises the applicability of the regulations for water well drilling rigs; ... (more)
<u>Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline</u>	06/24/2010	Authorization request sent to EPA on 5/28/2014. Authorization granted for prior harbor craft measure.
<u>Transport Refrigeration Units</u> . T 13, CCR, 2477	11/18/2010	Authorization granted on 6/19/13 (see 78 FR 38970, 6/28/13) .
<u>In-Use Off-Road Diesel-Fueled Fleets</u> . T 13, CCR, 2775	12/16/2010	Authorization granted on 9/13/13 (78 FR 58090, 9/20/13).
<u>Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline</u> . T 13, CCR, 2299.3; T 17, CCR, 93118.3.	06/23/2011	Adjusts the offshore regulatory boundary; facilitates successful transition to very low sulfur fuels by aligning implementation dates more closely with recently approved federal requirements; See above comment regarding North American ECA.
<u>Mobile Cargo Handling</u> . T 13, CCR, 2479	09/22/2011	Notice of opportunity for public hearing and comment published on 4/28/14 (79 FR 30608). Provides additional flexibility to CHE owners/operators in complying with the regulation's requirements by reducing compliance costs while continuing to reduce emissions of diesel PM and NO <sub>x</sub> .
<u>Transport Refrigeration Units</u> . T 13, CCR, 2477	10/20/2011	Provides MY 2001 through 2003 TRU engines that complied with applicable Low Emission TRU in-use performance standards by specified time periods, a one or two year extension from the more stringent Ultra-Low Emission TRU in-use performance standards.



Measure	Hearing Date	Comments
<u>Small Off-Road Engine and Tier 4 Off-Road Compression- Ignition Engine Regulations and Test Procedures; and, Amendments to the Exhaust Emission Certification Test Fuel for Off-Road Spark-Ignition Engines, Equipment, and Vehicles.</u> T 13, CCR, 2403, 2404, 2407, 2412, 2421, 2423, 2424, 2425, 2425.1, 2426, 2427, 2433, 2447, 2783, 2784 and incorporated by reference various California Exhaust Emission Standards and Test Procedures.	12/16/2011	The amendments provide better harmonization with federal certification and exhaust emission testing requirements for SORE and tier 4 ORCI engine regulations and associated test procedures.
<u>Verification Procedures Regulation.</u> T 13, CCR, 2700-2711	08/23/2012	To reduce testing costs, reduces the amount of in-use testing required.
<u>Off-Highway Recreational Vehicles.</u> T 13, CCR, 2416-2419 and TP-933.	07/25/2013	Adds OHRV test procedure and evaporative emissions standard. This measure has not yet been approved by CA's OAL.

#### References:

SMAQMD, et al. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions)*. Sacramento, CA: Sacramento Metropolitan Air Quality Management District, [2013.]

USEPA. Region 9. *Technical Support Document: Approval and Promulgation of Implementation Plans; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard*. San Francisco, CA: United States Environmental Protection Agency Region 9. 24 September, [2014.] Print.

## APPENDIX E. EMISSIONS INVENTORY BREAKDOWN FOR VOC AND NO<sub>x</sub> EMISSIONS IN THE SFNA

Emissions of NO<sub>x</sub><sup>a</sup> (tons per day)

EMISSOINS DESCRIPTION	2009	2018	2023	2028
TOTAL EMISSIONS	118	81	64	57
STATIONARY	11	11	11	11
AREA-WIDE	3	3	3	3
ON-ROAD MOTOR VEHICLES	71	37	24	20
OTHER MOBILE SOURCES	33	26	22	19
ADJUSTMENTS	0	4	4	4
STATIONARY				
Fuel Combustion	7.2	8.8	8.9	9.1
Ag Irrigation Pumps	3.0	1.2	0.9	0.7
Industrial Process	0.6	0.9	1.0	1.1
AREA-WIDE				
Residential Fuel Combustion	2.5	2.5	2.4	2.5
Ag Burn/Other Managed Burn	0.5	0.6	0.6	0.6
ON-ROAD				
Heavy Duty Diesel Trucks	37.5	20.1	12.0	10.8
Lt/Med Duty Trucks	15.8	7.2	4.9	3.5
Automobiles	9.7	3.4	2.3	1.7
Heavy Duty Gas Trucks	4.0	2.9	2.4	2.0
Buses/Motor Homes	3.2	2.3	1.9	1.7
Motorcycles	0.6	0.6	0.6	0.7
OTHER MOBILE				
Construction & Mining Equip	4.8	3.9	2.8	2.0
Trains	6.8	7.1	0.0	5.7
Farm Equipment	9.9	5.3	0.3	2.4
Boats (Rec/Ships/Harbor Craft)	4.2	3.2	9.5	3.1
Comm/Ind Equipment	2.5	1.4	1.2	0.8
Aircraft	2.1	2.8	3.0	3.0
Oil Drilling/Workover	1.1	0.5	0.2	0.3
Other	1.4	1.1	5.0	1.0

EMISSOINS DESCRIPTION	2009	2018	2023	2028
Trans Refrig Units	0.7	0.5	0.0	0.5
ADJUSTMENTS				
Non-Creditable Reduction <sup>b</sup>	0	0	0	0
MV Safety Margin <sup>c</sup>	0	3	3	3
NO <sub>x</sub> ERC Adjustment <sup>d</sup>	0	0.8	0.8	0.8

Notes:

- a Except adjustments, the emissions are from CEPAM: NORCAL 2012 SIP PM 2.5 Baseline Emission Projections, CARB CEPAM website, <http://www.arb.ca.gov/app/emsinv/2012pm25sip/norcal2012pm25sip/>; CEPAM: NORCAL 2012 PM 2.5 SIP Baseline Emission Projections, Section a1 – Emission Projections With External Adjustments
- b Non-creditable Reduction are the reductions from measures not yet approved by USEPA in 2013 identified in EPA Technical Support Document for Approval and Promulgation of Implementation Plans; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard, September 24, 2014. Reductions from Moyer (nonroad) and Prop 1B are not included in CEPAM2012 forecast and all other non-creditable reductions except SMAQMD Rule 460 and YSAQMD Rule 2.39 are now creditable, because they have been adopted and approved by the EPA.
- c Motor vehicle “safety margin” from Chapter 11, Table 11-1 of 2013 Revision to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan. These emissions are not included in the CEPAM: NORCAL 2012 SIP PM 2.5 Baseline Emission Projections.
- d Emission Reduction Credit (ERC) adjustment to make NO<sub>x</sub> ERC equal 3 tpd from Appendix A5, Table A5-1 of 2013 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan.

Emissions of VOC<sup>a</sup> (tons per day)

EMISSOINS DESCRIPTION	2009	2018	2023	2028
TOTAL EMISSIONS	123	102	99	98
STATIONARY	18	23	24	25
AREA-WIDE	29	31	32	34
ON-ROAD MOTOR VEHICLES	38	17	14	13
OTHER MOBILE SOURCES	34	24	22	20
ADJUSTMENTS	4	7	7	7
STATIONARY				
Solvent/Coatings	7.5	9.2	9.4	9.4
Petroleum Production/Marketing	4.8	6.0	6.2	6.5
Industrial Process	3.5	4.8	5.4	6.2
Waste Composting	0.2	0.3	0.3	0.3
Other	2.4	2.4	2.3	2.3
AREA-WIDE				
Consumer Products	13.2	13.2	13.9	14.6
Architectural Coatings	8.0	9.3	10.0	10.7
Pesticides/Fertilizers	0.9	1.2	1.2	1.1
Livestock Waste	2.6	2.8	2.8	2.8
Ag Burn/Other Managed Burn	1.0	1.0	1.0	1.0
Other	3.0	3.2	3.1	3.5
ON-ROAD				
Automobiles	14.7	4.3	3.0	2.2
Lt/Med Duty Trucks	14.5	7.6	6.4	5.7
Heavy Duty Gas Trucks	3.2	1.6	1.3	1.1
Heavy Duty Diesel Trucks	2.1	1.3	1.2	1.2
Motorcycles	2.8	2.2	2.3	2.5
Buses/Motor Homes	0.5	0.2	0.2	0.2
OTHER MOBILE				
Recreational Boats	16.9	11.9	9.9	8.4
Equipment (Const/Ind/Farm)	4.7	2.5	2.0	1.8
Lawn & Garden Equipment	6.4	5.1	5.1	5.3
Gas Can	2.0	1.4	1.2	1.1

EMISSOINS DESCRIPTION	2009	2018	2023	2028
Off-Road Recreational Vehicles	2.8	2.5	2.6	2.7
Trains	0.4	0.3	0.3	0.3
Aircraft	0.7	0.6	0.6	0.6
Ocean Vessels & Harbor Craft	0.1	0.1	0.1	0.1
ADJUSTMENTS				
Non-Creditable Reduction <sup>b</sup>	0	1.2	1.2	1.2
MV Safety Margin <sup>c</sup>	0	1	1	1
Composting & Dairy <sup>d</sup>	4.2	4.2	4.2	4.2
VOC ERC Adjustment <sup>e</sup>	0	0.7	0.7	0.7

Notes:

- a Except adjustments, the emissions are from CEPAM: NORCAL 2012 SIP Baseline Emission Projections, CARB CEPAM website, <http://www.arb.ca.gov/app/emsinv/2012pm25sip/norcal2012pm25sip/>; CEPAM: NORCAL 2012 PM 2.5 SIP Baseline Emission Projections, Section a1 – Emission Projections With External Adjustments
- b Non-creditable Reduction are the reductions from measures not yet approved by EPA in 2013 identified in EPA Technical Support Document for Approval and Promulgation of Implementation Plans; State of California; Sacramento Metro Area; Attainment Plan for 1997 8-Hour Ozone Standard, September 24, 2014. Reductions from Moyer (nonroad) and Prop 1B are not included in CEPAM2012 forecast and all other non-creditable reductions are now creditable, because they have been adopted and approved into the SIP since 2013.
- c Motor vehicle “safety margin” from Chapter 11, Table 11-1 of 2013 Revision to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan. These emissions are not included in the CEPAM 2012 SIP Emissions Projections.
- d Emissions from composting (Jepson Composting) and dairy (Heritage Dairy) operations missing from CEPAM baseline and forecasts are added as adjustments.
- e Emission Reduction Credit (ERC) adjustment to make VOC ERC equal 4 tpd from Appendix A5, Table A5-1 of 2013 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan.