BOARD MEETING DATE: October 4, 2024 AGENDA NO. 23

PROPOSAL: Determine That Coachella Valley Attainment Plan for 2008 8-Hour Ozone Standard is Exempt from CEQA; and Adopt Coachella Valley Attainment Plan for 2008 8-Hour Ozone Standard

SYNOPSIS: The Coachella Valley is in “extreme” nonattainment for the 2008 8-hour ozone NAAQS with an attainment date of July 20, 2032. On April 7, 2023, the Coachella Valley was reclassified from “severe-15” to “extreme” nonattainment to resolve a transportation conformity freeze. An attainment demonstration and other SIP planning elements have been developed to comply with the federal Clean Air Act and U.S. EPA’s SIP requirements for “extreme” nonattainment areas. Updated emissions inventory and modeling analysis indicate that ongoing implementation of currently adopted regulations and programs by both South Coast AQMD and CARB will lead to attainment of this standard by the attainment date. In addition, the control strategy outlined in the 2022 AQMP will further ensure Coachella Valley attains this standard on time, if not earlier.

COMMITTEE: Mobile Source: August 16, 2024, Reviewed

RECOMMENDED ACTIONS:
Adopt the attached Resolution:
1. Determining that Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard is exempt from the requirements of CEQA; and
2. Adopting the Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard and directing staff to forward the Coachella Valley Ozone Plan to CARB for approval and submission to U.S. EPA for inclusion in the SIP.

Wayne Nastri
Executive Officer

SR:IM:SL:EP:JHL

Background
The Coachella Valley is defined as the desert portion of Riverside County in the Salton Sea Air Basin under the jurisdiction of South Coast AQMD and is the most populated area in this desert region, which encompasses several communities, including Palm Springs, Indio, Coachella, and Mecca. The region fails to meet federal ozone standards mostly due to the transport of air pollution from the South Coast Air Basin.

The Coachella Valley was originally classified as a "severe-15" nonattainment area for the 2008 8-hour ozone standard with an attainment date of July 20, 2027. The 2016 AQMP, submitted to U.S. EPA in 2017, included the strategy to attain the standard by the attainment date. However, as of August 16, 2021, an updated on-road mobile source emissions model estimated higher emissions for the same vehicle classes and traffic activities. This discrepancy resulted in the emissions associated with motor vehicles no longer being consistent with, or "conforming" to, the requirements of the underlying SIP. This in turn resulted in a transportation conformity lockdown – meaning that no new transportation projects could proceed in the region – impacting billions of dollars' worth of transportation projects. To resolve this conformity lockdown, South Coast AQMD requested that U.S. EPA reclassify Coachella Valley to "extreme" nonattainment, which provided an opportunity to resolve the conformity lockdown.

In March 2023, U.S. EPA approved South Coast AQMD's request to reclassify the Coachella Valley to "extreme" nonattainment with a new attainment date of July 20, 2032 and established a deadline of October 7, 2024 for South Coast AQMD to submit a new plan to demonstrate attainment and comply with other planning requirements.[1] An adequacy finding for the updated Motor Vehicle Emissions Budgets (MVEB) was also issued by U.S. EPA, thereby resolving the lockdown.[2]

Proposal
The primary purpose of the Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard (Coachella Valley Ozone Plan or Plan) is to satisfy the "extreme" nonattainment area planning requirements. Specifically, the Coachella Valley Ozone Plan provides the strategy and the underlying technical analysis for how the region will

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[1] U.S. EPA, Designation of Areas for Air Quality Planning Purposes; California; Coachella Valley Ozone Nonattainment Area; Reclassification to Extreme, 88 Fed. Reg. 14291 (March 8, 2023). https://www.federalregister.gov/documents/2023/03/08/2023-04736/designation-of-areas-for-air-quality-planning-purposes-california-coachella-valley-ozone

[2] U.S. EPA, Adequacy Status of Motor Vehicle Emissions Budgets in 2008 8-Hour Ozone Extreme Area and Reasonable Further Progress Plan for Coachella Valley; California, 88 Fed. Reg. 18314 (March 28, 2023). https://www.federalregister.gov/documents/2023/03/28/2023-06344/adequacy-status-of-motor-vehicle-emissions-budgets-in-2008-8-hour-ozone-extreme-area-and-reasonable

meet the 2008 8-hour ozone standard in the attainment year of 2031.[3] The overall control strategy for meeting the 2008 8-hour ozone standard in Coachella Valley is based on the continued implementation of rules and regulations adopted by South Coast AQMD and CARB. Implementation of the control measures in the 2022 AQMP will provide additional reductions and assurance that the 2008 8-hour ozone standard will be met by 2031, if not earlier, although these reductions are not necessary for attainment. Therefore, no new control measures are proposed in this Plan.

Public Process

The Draft Coachella Valley Ozone Plan was released on July 31, 2024 for public review and comment. One written comment was received on the Draft Coachella Valley Ozone Plan and responses are included in Chapter 7 of the Plan. In addition, a public consultation meeting was held on August 14, 2024.

Resource Impacts

The Coachella Valley Ozone Plan will have nominal impacts on South Coast AQMD resources.

California Environmental Quality Act (CEQA)

Pursuant to CEQA Guidelines Sections 15002(k) and 15061, the proposed project (Coachella Valley Ozone Plan) is exempt from CEQA pursuant to CEQA Guidelines Sections 15061(b)(3) and 15308. Further, there is no substantial evidence indicating that any of the exceptions in CEQA Guidelines Section 15300.2 apply to the proposed project. A Notice of Exemption has been prepared pursuant to CEQA Guidelines Section 15062. If the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties, and with the State Clearinghouse of the Governor's Office of Planning and Research.

Socioeconomic Impact Assessment

No socioeconomic impact assessment is required under Health and Safety Code Sections 40440.8 and 40728.5, because the Coachella Valley Ozone Plan does not constitute a rule or regulation within the scope of those statutes. Additionally, the emission reductions relied upon in the Coachella Valley Ozone Plan are already accounted for in the 2022 AQMP. As such, no additional socioeconomic impacts beyond those analyzed in the 2022 AQMP are anticipated. Therefore, the proposed project will not result in any new socioeconomic impacts.

AQMP and Legal Mandates

The Coachella Valley Ozone Plan is consistent with the federal Clean Air Act (CAA)

[3] The attainment year ozone season is defined by 40 CFR 51.1300(g) as the ozone season immediately preceding the nonattainment area's attainment date, which is July 20, 2032; therefore, 2031 is the attainment year for the Coachella Valley.

and the U.S. EPA's guidelines and is required as part of the SIP revision to address the federal CAA planning requirements for "extreme" nonattainment areas.

Attachments

A. Resolution
B. Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard
C. Notice of Exemption from CEQA
D. Board Presentation

ATTACHMENT A

RESOLUTION NO. 24-____

A Resolution of the South Coast Air Quality Management District (South Coast AQMD) Governing Board determining that the Coachella Valley Attainment Plan for the 2008 8-Hour Ozone National Ambient Air Quality Standard (Coachella Valley Ozone Plan) is exempt from the requirements of the California Environmental Quality Act (CEQA).

A Resolution of the South Coast AQMD Governing Board adopting the Coachella Valley Ozone Plan and directing staff to forward the Coachella Valley Ozone Plan to the California Air Resources Board (CARB) for approval and subsequent submission to the United States Environmental Protection Agency (U.S. EPA) for inclusion in the State Implementation Plan (SIP).

WHEREAS, the South Coast AQMD Governing Board finds and determines that the Coachella Valley Ozone Plan is considered a “project” pursuant to CEQA; and

WHEREAS, the South Coast AQMD Governing Board finds and determines after conducting a review of the proposed project (Coachella Valley Ozone Plan) in accordance with CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA, and CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA, that the Coachella Valley Ozone Plan is exempt from CEQA; and

WHEREAS, the South Coast AQMD Governing Board finds and determines that Coachella Valley Ozone Plan is an attainment strategy which relies on the continued implementation of previously adopted rules and regulations, and does not propose new requirements which will result in additional physical modifications, no adverse environmental impacts are expected. Thus, it can be seen with certainty that there is no possibility that the proposed project may have any significant adverse effects on the environment, and is therefore, exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; and

WHEREAS, the South Coast AQMD Governing Board finds and determines that the proposed project is also categorically exempt from CEQA pursuant to CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, because the Coachella Valley Ozone Plan is intended to further protect or enhance the environment; and

WHEREAS, the South Coast AQMD Governing Board has determined that there is no substantial evidence indicating that any of the exceptions to the categorical exemption as set forth in CEQA Guidelines Section 15300.2 – Exceptions, apply to the proposed project; and

WHEREAS, the South Coast AQMD staff has prepared a Notice of Exemption for the proposed project, that is completed in compliance with CEQA Guidelines Section 15062 – Notice of Exemption; and

WHEREAS, the Coachella Valley Ozone Plan and supporting documentation, including but not limited to, the Notice of Exemption and Draft Final Coachella Valley Ozone Plan were presented to the South Coast AQMD Governing Board and the South Coast AQMD Governing Board has reviewed and considered this information, and has taken and considered staff testimony and public comments prior to approving the project; and

WHEREAS, the Coachella Valley was originally classified as a "severe-15" nonattainment area for the 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS) with an attainment date of July 20, 2027; and

WHEREAS, a comprehensive SIP addressing the "severe-15" nonattainment area requirements for the 2008 8-hour ozone NAAQS in the Coachella Valley was submitted as part of the 2016 Air Quality Management Plan (AQMP) to U.S. EPA via CARB on April 27, 2017; and

WHEREAS, as of August 16, 2021, an updated on-road mobile source emissions model estimated higher emissions for the same vehicle classes and traffic activities, resulting in a transportation conformity lockdown impacting billions of dollars' worth of transportation projects. To resolve this conformity lockdown, South Coast AQMD requested that U.S. EPA reclassify Coachella Valley to "extreme" nonattainment, which provided an opportunity to resolve the conformity lockdown; and

WHEREAS, U.S. EPA approved South Coast AQMD's request to reclassify the Coachella Valley to "extreme" nonattainment with a new attainment date of July 20, 2032 and established a deadline of October 7, 2024 for South Coast AQMD to submit a new plan to demonstrate attainment and comply with other planning requirements. An adequacy finding for the updated Motor Vehicle Emissions Budgets (MVEB) was also issued by U.S. EPA, thereby resolving the lockdown; and

WHEREAS, the primary purpose of the Coachella Valley Ozone Plan is to demonstrate attainment of the 2008 8-hour ozone NAAQS by the attainment date and to address "extreme" nonattainment area planning requirements; and

WHEREAS, the Coachella Valley is expected to attain the 2008 8-hour ozone NAAQS with the continued implementation of rules and regulations adopted by South Coast AQMD and CARB. Therefore, no new control measures are proposed in the Coachella Valley Ozone Plan; and

WHEREAS, the Draft Coachella Valley Ozone Plan was released for public review and comment on July 31, 2024 with a comment period ending on August 30, 2024; and

WHEREAS, a public consultation meeting was held on August 14, 2024 to solicit comments and suggestions from the public, affected businesses, and stakeholders. The meeting was conducted in both English and Spanish; and

WHEREAS, the South Coast AQMD Governing Board has determined that no Socioeconomic Impact Assessment is required under Health and Safety Code Sections 40440.8 and 40728.5, because the Coachella Valley Ozone Plan is not a rule or regulation in the meaning of those statutes, and further no socioeconomic impacts will result from the Coachella Valley Ozone Plan; and

WHEREAS, the public hearing has been properly noticed in accordance with all provisions regarding notice of revisions to the SIP in the Code of Federal Regulations Title 40, Part 51, Section 51.102; and

WHEREAS, the South Coast AQMD Governing Board has held a public hearing in accordance with all provisions of law; and

WHEREAS, the South Coast AQMD specifies the Planning and Rules Manager of the Coachella Valley Ozone Plan as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of the Coachella Valley Ozone Plan is based, which are located at the South Coast AQMD, 21865 Copley Drive, Diamond Bar, California; and

NOW, THEREFORE BE IT RESOLVED, that the South Coast AQMD Governing Board does hereby determine, pursuant to the authority granted by law, that the Coachella Valley Ozone Plan is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption and CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for the Protection of the Environment. No exceptions to the application of the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, apply to the proposed project. This information was presented to the South Coast AQMD Governing Board, whose members exercised their independent judgment and reviewed, considered, and approved the information therein prior to acting on the Coachella Valley Ozone Plan; and

BE IT FURTHER RESOLVED, that the South Coast AQMD Governing Board does hereby adopt, pursuant to the authority granted by law, the Coachella Valley Ozone Plan, as set forth in the attached, and incorporated herein by this reference; and

BE IT FURTHER RESOLVED, that staff is hereby directed to forward a copy of this Resolution and the Coachella Valley Ozone Plan to CARB for approval and subsequent submission to U.S. EPA for inclusion in the SIP.

DATE: _______________ _______________________________
CLERK OF THE BOARDS

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

~~July~~ October 2024

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Chapter 4 - Control Strategy

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

EXECUTIVE SUMMARY

Executive Summary

The Coachella Valley is one of the regions under the jurisdiction of the South Coast Air Quality Management District (South Coast AQMD). It is defined as the desert portion of Riverside County in the Salton Sea Air Basin, and includes populated areas such as Palm Springs, Indio, and Mecca. The region fails to meet federal ozone standards due to the transport of air pollution from the greater Los Angeles area. The Coachella Valley was originally classified as "severe-15" nonattainment for the 2008 8-hour National Ambient Air Quality Standard (NAAQS or standard) with an attainment date of July 20, 2027. However, as of August 16, 2021, an updated on-road mobile source emissions model estimated higher emissions for the same vehicle classes and traffic activities. This discrepancy resulted in the emissions associated with motor vehicles no longer being consistent with, or "conforming" to, the requirements of the underlying State Implementation Plan (SIP). This in turn resulted in a transportation conformity lockdown – meaning that no new transportation projects could proceed in the region - impacting billions of dollars' worth of transportation projects. To resolve this conformity lockdown, South Coast AQMD requested that U.S. EPA reclassify the region to "extreme" nonattainment. With this reclassification, the new attainment date for the Coachella Valley is July 20, 2032.[1]

The reclassification necessitated the development of a new plan to comply with the "extreme" nonattainment area planning requirements specified in federal Clean Air Act (CAA) Section 182(e). The Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard (Coachella Valley Ozone Plan or Plan) has been developed to demonstrate attainment of the 2008 8-hour ozone standard by the required deadline of July 20, 2032. The Plan includes an updated emissions inventory and modeling analysis, an evaluation of control strategies and emission reductions needed for attainment, and a demonstration of compliance with other CAA requirements.

The updated inventory and modeling analysis indicate that the Coachella Valley will attain the 2008 8-hour ozone standard in 2031 through the continued implementation of rules and regulations adopted by the South Coast AQMD and the California Air Resources Board (CARB). Both agencies pursue innovative approaches to reduce emissions and have recently adopted multiple rules resulting in substantial reductions of nitrogen oxides (NOx) emissions, which is the key pollutant to improve ozone levels in Coachella Valley and the South Coast Air Basin. The reductions from these recently adopted rules, as well as those already reflected in the 2022 Air Quality Management Plan (AQMP) business-as-usual condition, are relied upon for attainment. Implementation of the control measures in the 2022 AQMP will provide additional reductions and assurance that the 2008 8-hour ozone standard will be met by 2031, if not earlier, although these reductions are not necessary for attainment. Therefore, no new control measures are proposed in this Plan.

[1] U.S. EPA, Designation of Areas for Air Quality Planning Purposes; California; Coachella Valley Ozone Nonattainment Area; Reclassification to Extreme, 88 Fed. Reg. 14291 (March 8, 2023). https://www.federalregister.gov/documents/2023/03/08/2023-04736/designation-of-areas-for-air-quality-planning-purposes-california-coachella-valley-ozone

In addition to demonstrating attainment, this Plan also addresses other “extreme” nonattainment area planning requirements under the CAA. Certain requirements have already been implemented since the Coachella Valley is in “extreme” nonattainment for the 1997 8-hour ozone standard. For example, Regulation XIII – New Source Review, Regulation XX – RECLAIM, and Regulation XXX – Title V already reflect the more stringent “extreme” area major stationary source threshold in Coachella Valley. In addition, contingency measures for the 2008 8-hour ozone standard were already addressed through a separate SIP revision adopted by South Coast AQMD in March 2024.[2]

South Coast AQMD intended~~s~~ to conduct a robust public process for this Plan. Following release of the Draft Plan on July 31, 2024, a public consultation meeting ~~will~~ was ~~be~~ held on August 14, 2024 to solicit feedback from stakeholders. Meeting materials for the public consultation meeting w~~ill be~~ere translated to Spanish and the meeting ~~will~~ provided live Spanish translation. The Plan w~~il~~as~~l~~ also ~~be~~ discussed at South Coast AQMD’s Mobile Source Committee meeting on August 16, 2024, and the Community Steering Committee meeting for the Eastern Coachella Valley, an AB 617 community in the Coachella Valley, on September 5, 2024. ~~Finally, a public hearing will be held on October 4, 2024 (subject to change).~~

[2] South Coast AQMD, Coachella Valley Contingency Measure SIP Revision for the 2008 8-Hour Ozone Standard, March 2024. https://www.aqmd.gov/docs/default-source/clean-air-plans/ozone-plans/coachella-valley-contingency-measure-sip-revision/c-final-coachella-valley-contingency-sip-staff-report.pdf?sfvrsn=6

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

CHAPTER 1 - INTRODUCTION

Purpose

The Coachella Valley is the eastern portion of the region under the South Coast AQMD jurisdiction, extending from the San Gorgonio Pass to the Salton Sea. The region fails to meet federal ozone standards mostly due to the transport of air pollution from the greater Los Angeles area. It was originally classified as “severe-15” nonattainment for the 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS or standard) with an attainment date of July 20, 2027. Following a request by South Coast AQMD, the region was reclassified to “extreme” nonattainment with a new attainment date of July 20, 2032.[3] South Coast AQMD voluntarily requested the reclassification to resolve a transportation conformity lockdown impacting billions of dollars’ worth of transportation projects. The reclassification triggered the need to develop a State Implementation Plan (SIP) revision to address new requirements associated with the reclassification. The primary purpose of the Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard (Coachella Valley Ozone Plan or Plan) is to satisfy the ~~new~~ “extreme” nonattainment area planning requirements. Specifically, the Coachella Valley Ozone Plan provides the strategy and the underlying technical analysis for how the region will meet the 2008 8-hour ozone standard by the attainment year of 2031.[4]

Background

Coachella Valley is defined as the desert portion of Riverside County in the Salton Sea Air Basin (SSAB) under the jurisdiction of South Coast AQMD. Coachella Valley excludes the tribal lands which are under the jurisdiction of the U.S. EPA. Coachella Valley is the most populated area in this desert region, which encompasses several communities, including Palm Springs, Desert Hot Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, Indio, Coachella, Thermal, and Mecca. Figure 1-1 provides a map of the area and the surrounding topography.

[3] U.S. EPA, Designation of Areas for Air Quality Planning Purposes; California; Coachella Valley Ozone Nonattainment Area; Reclassification to Extreme, 88 Fed. Reg. 14291 (March 8, 2023). https://www.federalregister.gov/documents/2023/03/08/2023-04736/designation-of-areas-for-air-quality-planning-purposes-california-coachella-valley-ozone

[4] The attainment year ozone season is defined by 40 CFR 51.1300(g) as the ozone season immediately preceding the nonattainment area’s attainment date, which is July 20, 2032; therefore, 2031 is the attainment year for the Coachella Valley.

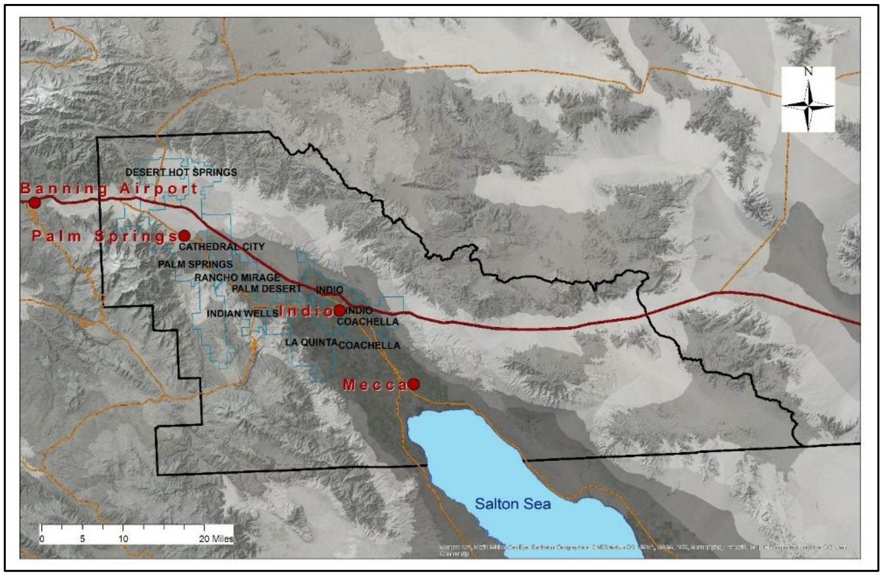

FIGURE 1-1
LOCATION AND TOPOGRAPHY OF COACHELLA VALLEY

The Coachella Valley is located downwind of the South Coast Air Basin, which is also under the jurisdiction of South Coast AQMD. The combination of topography and climate of Southern California makes the South Coast Air Basin an area of high air pollution potential. Ozone levels in the Coachella Valley are impacted by pollutants directly transported from the South Coast Air Basin as well as pollutants formed secondarily through photochemical reactions from precursors emitted upwind. Local pollutants emitted within the Coachella Valley have limited impact on the ozone levels in the Coachella Valley. While local emission controls benefit Coachella Valley air quality, the area must rely on emission controls being implemented upwind to improve air quality and attain the federal ozone standards.

Attainment Status for Ozone National Ambient Air Quality Standards

The U.S. EPA classifies areas of ozone nonattainment (i.e., Extreme, Severe, Serious, Moderate, or Marginal) based on the extent to which an area exceeds the standard. The higher the classification, the more time is allowed to demonstrate attainment in recognition of the greater challenge to improve ozone air quality. Nonattainment areas with higher classifications are also subject to more stringent requirements. The Coachella Valley is designated by U.S. EPA as a “severe-15” nonattainment area for the 2015 8-hour ozone standard and an “extreme” nonattainment area for both the 1997 and 2008 8-hour ozone standards. South Coast AQMD submitted a request to reclassify the Coachella Valley to “extreme” nonattainment for the 2015 8-hour ozone standard as part of the 2022 Air Quality Management Plan (AQMP), which is pending U.S. EPA’s approval. The ozone nonattainment classifications and attainment deadlines are listed in Table 1-1.

TABLE 1-1
ATTAINMENT STATUS OF FEDERAL OZONE AIR QUALITY STANDARDS IN COACHELLA VALLEY

Criteria Pollutant	Averaging Time	Designation (Classification)	Attainment Date
Ozone (O_3)	(1979) 1-Hour (0.12 ppm)	Attainment	11/15/2007 (attained 12/31/2013)
	(1997) 8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024^
	(2008) 8-Hour (0.075 ppm)	Nonattainment (Extreme)	7/20/2032
	(2015) 8-Hour (0.070 ppm)	Nonattainment (Severe-15)*	8/3/2032

^South Coast AQMD ~~will~~ considers requesting U.S. EPA a one-year extension of the attainment date
*Reclassification request to "extreme" nonattainment submitted as part of the 2022 AQMP

SIP Revisions for the 1997 and 2015 8-hour Ozone Standards

While the Coachella Valley Ozone Plan only addresses the 2008 8-hour ozone standard, South Coast AQMD has previously submitted SIP revisions to address the 1997 and 2015 8-hour ozone standards. These SIP revisions are summarized below.

Extreme Nonattainment Area Plan for the 1997 Ozone Standard

In 2019, the Coachella Valley failed to attain the 1997 8-hour ozone standard by the "severe-15" deadline. Subsequently, South Coast AQMD requested, and U.S. EPA approved, a reclassification to "extreme" nonattainment.[5] The reclassification triggered the need to develop an "extreme" area attainment plan. Adopted in December 2020, the 1997 Extreme Area Plan provided the strategy for the Coachella Valley to attain the 1997 standard by 2023.[6] U.S. EPA recently approved select elements in that plan.[7]

[5] U.S. EPA, Designation of Areas for Air Quality Planning Purposes; California; Coachella Valley 8-Hour Ozone Nonattainment Area; Reclassification to Extreme, 84 Fed. Reg. 32841 (July 10, 2019). https://www.federalregister.gov/documents/2023/03/08/2023-04736/designation-of-areas-for-air-quality-planning-purposes-california-coachella-valley-ozone

[6] South Coast AQMD, Final Coachella Valley Extreme Area Plan for the 1997 8-Hour Ozone Standard, December 2020. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/2-final-coachella-valley-extreme-area-plan-for-1997-8-hour-ozone-standard.pdf?sfvrsn=6

[7] U.S. EPA, Approval and Promulgation of Implementation Plans; State of California; Coachella Valley; Extreme Attainment Plan for 1997 8-Hour Ozone Standards, 89 Fed. Reg. 49815 (June 12, 2024). https://www.federalregister.gov/documents/2024/06/12/2024-12786/approval-and-promulgation-of-implementation-plans-state-of-california-coachella-valley-extreme

~~Preliminary~~ O~~o~~zone monitoring data indicates that the Coachella Valley was close to attainment of the 1997 8-hour ozone standard in 2023. While the three-year design value remains above the standard, the single year 4th highest 8-hour ozone maximum daily average (MDA8) was 83~~4~~ ppb in 2023, pending U.S. EPA's approval of an exceptional event demonstration to exclude ozone measurements on two days in 2023 that were impacted by a wildfire. Following approval of the exceptional event demonstration, the 4th highest MDA8 will be below the attainment threshold of the 1997 8-hour ozone standard. In this case, Clean Air Act (CAA) Section 181(a)(5) allows South Coast AQMD to request that U.S. EPA grant a one-year extension of the attainment date. South Coast AQMD must also demonstrate that it is complying with approved elements in the applicable SIP to be eligible for the extension. Were U.S. EPA to grant the extension, the new attainment date for the 1997 8-hour ozone standard in Coachella Valley would be June 15, 2025.

2022 AQMP

Adopted in December 2022, the 2022 AQMP provided the strategy for the South Coast Air Basin and Coachella Valley to meet the 2015 8-hour ozone standard by 2037.[8] As part of the 2022 AQMP, South Coast AQMD committed to implement 30 stationary source and 18 mobile source control measures. These measures sought to transition to zero emission technology wherever feasible. While these control measures are not needed for attainment of the 2008 8-hour ozone standard in Coachella Valley, their implementation will further reduce emissions and provide assurance that the standard will be met by 2031. As of July 2024, U.S. EPA has not acted on the 2022 AQMP.

2008 8-Hour Ozone Standard SIP Revisions

South Coast AQMD has previously submitted SIP revisions to address planning requirements for the 2008 ozone standard in Coachella Valley. Among the recently adopted SIPs are the Reclassification Request and Reasonable Further Progress (RFP) SIP, and the Contingency Measure SIP. The purpose of these SIPs is summarized below.

Reclassification Request and RFP SIP

This SIP was adopted by South Coast AQMD in November 2022 to address a transportation conformity lockdown caused by the Motor Vehicle Emissions Budget (MVEB).[9] Under the Clean Air Act, the MVEB is required for each air quality standard for which an area is in nonattainment. The MVEB is the portion of the total allowable emissions allocated to highway and transit vehicles and is defined in the SIP for the

[8] South Coast AQMD, 2022 Air Quality Management Plan. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16

[9] South Coast AQMD, Request to Reclassify Coachella Valley for the 2008 8-Hour Ozone Standard and the Updated Motor Vehicle Emissions Budgets, November 2022. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/cv-mveb/coachella-valley-reclassification-for-the-2008-8-hour-ozone-standard-and-mveb---final-staff-report.pdf?sfvrsn=8

purpose of demonstrating Reasonable Further Progress (RFP) for interim milestone years and the attainment year of the NAAQS.[10] The budget represents the maximum allowable emissions from on-road motor vehicles within a nonattainment area. In 2020, Coachella Valley's MVEB for the 2008 Ozone Standard was approved by U.S. EPA.[11] Since then, an updated on-road mobile source emissions model estimated higher emissions than the approved MVEB for the same vehicular activities. To avoid a transportation conformity lockdown under which no new transportation projects are allowed in the region, reclassification of the Coachella Valley to "extreme" nonattainment was requested to provide an opportunity to update the MVEB. The Reclassification Request and RFP SIP only contained the SIP elements required to update the MVEB including the baseline emissions inventory, RFP demonstration, and the MVEB. South Coast AQMD committed to develop a comprehensive attainment plan for the 2008 8-hour ozone standard to address the remaining "extreme" area SIP elements. Following submission of the Reclassification Request and RFP SIP to U.S. EPA via CARB, an adequacy finding was issued for the MVEB, effective April 12, 2023, thereby resolving the lockdown.[12]

Contingency Measure SIP

In August 2022, South Coast AQMD, via CARB, withdrew the contingency measure elements that had been submitted as part of the 2016 AQMP as they were no longer approvable by U.S. EPA. As a result of this withdrawal, U.S. EPA finalized a finding of failure to submit contingency measure elements for the 2008 ozone NAAQS in Coachella Valley effective October 31, 2022.[13] The finding established an 18-month deadline for the South Coast AQMD to submit contingency measures or face stationary source permitting sanctions as defined in CAA Section 179(b)(2). In response, South Coast AQMD developed a SIP revision to address the contingency measure elements specified in CAA Sections 172(c)(9) and 182(c)(9) and U.S. EPA's guidance.[14] The SIP revision was adopted by the South Coast AQMD Governing Board in March 2024[15] and

[10] Title 40, Code of Federal Regulations (CFR) Part 93 (40 CFR Part 93), Section 93.101. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-93

[11] U.S. EPA, Approval of Air Quality Implementation Plans; California; Coachella Valley; 2008 8-Hour Ozone Nonattainment Area Requirements, 85 Fed. Reg. 57714 (September 16, 2020). https://www.federalregister.gov/documents/2020/09/16/2020-19162/approval-of-air-quality-implementation-plans-california-coachella-valley-2008-8-hour-ozone

[12] U.S. EPA, Adequacy Status of Motor Vehicle Emissions Budgets in 2008 8-Hour Ozone Extreme Area and Reasonable Further Progress Plan for Coachella Valley; California, 88 Fed. Reg. 18314 (March 28, 2023). https://www.federalregister.gov/documents/2023/03/28/2023-06344/adequacy-status-of-motor-vehicle-emissions-budgets-in-2008-8-hour-ozone-extreme-area-and-reasonable

[13] U.S. EPA, Finding of Failure to Submit Contingency Measures for the 2008 8-Hour Ozone NAAQS; Coachella Valley, California, and West Mojave Desert, California, 87 Fed. Reg. 59012 (September 29, 2022). https://www.federalregister.gov/documents/2022/09/29/2022-20874/finding-of-failure-to-submit-contingency-measures-for-the-2008-8-hour-ozone-naaqs-coachella-valley

[14] U.S. EPA, Draft Guidance on the Preparation of State Implementation Plan Provisions that Address the Nonattainment Area Contingency Measure Requirements for Ozone and Particulate Matter, March 17, 2023. https://www.epa.gov/system/files/documents/2023-03/CMTF%202022%20guidance%203-17-23.pdf

[15] South Coast AQMD, Coachella Valley Contingency Measure SIP Revision for the 2008 8-Hour Ozone Standard Final Staff Report, March 2024. https://www.aqmd.gov/docs/default-source/clean-air-plans/ozone-plans/coachella-valley-contingency-measure-sip-revision/c-final-coachella-valley-contingency-sip-staff-report.pdf?sfvrsn=6

subsequently submitted to US. EPA.[16] The SIP revision includes South Coast AQMD's commitment to address contingency measure provisions in Rule 463, Organic Liquid Storage. It also justifies that there was no other opportunity to develop a contingency measure due to the maturity of South Coast AQMD's rules and the timeline and technological readiness required for a contingency measure. On April 26, 2024, U.S. EPA issued a completeness determination, thereby permanently stopping the sanction clocks.[17]

Need for the Coachella Valley Ozone Plan

In April 2023, U.S. EPA approved the Reclassification Request and RFP SIP which established a deadline of October 7, 2024 for South Coast AQMD to submit the remaining "extreme" area SIP elements.[18] The Coachella Valley Ozone Plan intends to address those remaining elements, except for the contingency measure elements which were already addressed by the Contingency Measure SIP.

Format of This Document

This document is organized into 9 chapters, each addressing a specific topic. Each of the chapters is summarized here.

Chapter 1, "Introduction," includes background on the Coachella Valley, the 2008 8-hour ozone standard, and the need for a new attainment plan to address the standard.

Chapter 2, "Air Quality," discusses the Coachella Valley's current air quality in comparison with federal and state health-based air pollution standards and exceptional events.

Chapter 3, "Base and Future Year Emissions," summarizes the emissions inventory, estimates current emissions by source, and projects future emissions.

Chapter 4, "Control Strategy," presents the adopted rules and regulations that reduce emissions to levels needed for attainment of the 2008 8-hour ozone standard.

Chapter 5, "Attainment Demonstration," describes the air quality modeling approach used to demonstrate attainment of the 2008 8-hour ozone standard by 2031.

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[16] Letter from Dr. Steven Cliff, Executive Officer, CARB to Martha Guzman, Regional Administrator, U.S. EPA Region 9, dated April 3, 2024.

[17] Letter from Matthew Lakin, Director, Air and Radiation Division, U.S. EPA Region 9 to Dr. Steven Cliff, Executive Officer, CARB, dated April 26, 2024.

[18] U.S. EPA, Designation of Areas for Air Quality Planning Purposes; California; Coachella Valley Ozone Nonattainment Area; Reclassification to Extreme, 88 Fed. Reg. 14291 (March 8, 2023). https://www.federalregister.gov/documents/2023/03/08/2023-04736/designation-of-areas-for-air-quality-planning-purposes-california-coachella-valley-ozone

Chapter 6, "Federal Clean Air Act Requirements," discusses other required "extreme" area SIP elements including Reasonably Available Control Measures, the motor vehicle emissions budget, Reasonable Further Progress, and New Source Review.

Chapter 7, "Public Process and Participation," describes South Coast AQMD's public outreach effort associated with development of the Coachella Valley Ozone Plan.

Chapter 8, "California Environmental Quality Act," discusses legal requirements related to CEQA.

Chapter 9, "Staff Recommendation," recommends adoption of the Coachella Valley Ozone Plan.

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

CHAPTER 2 – AIR QUALITY

Air Quality Monitoring in the Coachella Valley

South Coast AQMD has historically monitored Coachella Valley ozone concentrations at Indio and Palm Springs. The Palm Springs air monitoring station is located closer to San Gorgonio Pass (also known as Banning Pass), predominantly downwind of the densely populated South Coast Air Basin. Indio is further east in the Coachella Valley, on the downwind side of the most populated areas of the Coachella Valley. Both sites have routinely measured ozone, particulate matter with a diameter less than 10 micron (PM10), particulate matter with a diameter less than 2.5 micron (PM2.5), sulfates (from PM10), and several meteorological parameters. The Palm Springs station also measures carbon monoxide (CO), and nitrogen dioxide (NO2). The Indio station was closed in the spring of 2022 due to issues securing the lease and reopened at a nearby location in January 2024. This chapter provides an overview of how ozone is formed and transported to the Coachella Valley and summarizes historic ozone data from the area.

Factors that Influence Ozone Concentrations in the Coachella Valley

Ozone is not emitted directly into the atmosphere; ozone is formed by the reaction of volatile organic compounds (VOCs) with oxides of nitrogen (NOx) in the presence of sunlight. In this context, VOCs and NOx are known as ozone precursors. Figure 2-1 illustrates the processes influencing ozone concentrations in the Coachella Valley. NOx is generated from combustion of fossil fuels, whereas VOCs are emitted from a wide variety of sources such as consumer products, mobile sources, vegetation, and combustion. Wildfires generate both NOx and VOCs. The chemical reactions that form ozone are highly complex and depend not only on NOx and VOC levels, but also on the ratio of VOC to NOx concentrations. Meteorological conditions such as temperature (T), relative humidity (RH), the amount of sunlight also influence the chemical formation of ozone. NOx emissions can even reduce ozone concentrations in the immediate vicinity of an emission source but will contribute to ozone formation downwind.

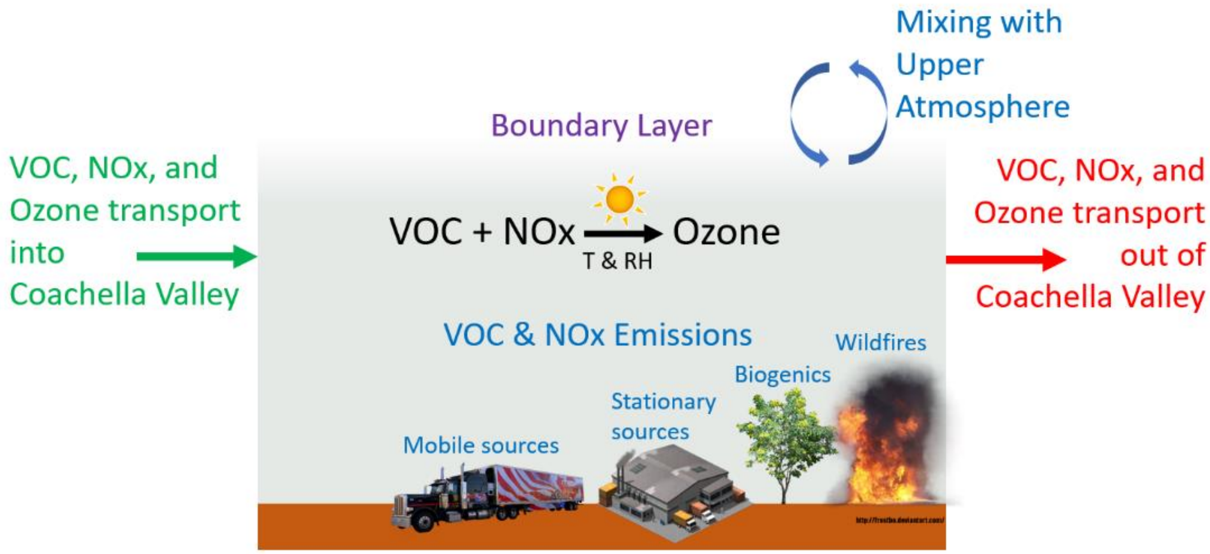

FIGURE 2-1
SCHEMATIC OF PROCESSES INFLUENCING OZONE CONCENTRATIONS IN THE COACHELLA VALLEY

Transport from upwind areas and ozone formation

Ozone in the Coachella Valley is both directly transported from the South Coast Air Basin (Basin) and formed photochemically from precursors emitted upwind and within the Coachella Valley. The precursors are emitted in the greatest quantity in the coastal and central Los Angeles County areas of the Basin. The Basin's prevailing sea breeze causes polluted air to be transported inland. As the air is being transported inland, ozone is formed, with peak concentrations occurring in the inland valleys of the Basin, extending from eastern San Fernando Valley through the San Gabriel Valley into the Riverside-San Bernardino area and the adjacent mountains. Ozone and its precursors from these upwind areas mostly enter the Coachella Valley through the San Gorgonio Pass. Ozone levels in the Coachella Valley are therefore mostly due to emissions upwind of the area, with a smaller influence from sources within. As the air is transported further inland into the Coachella Valley through the San Gorgonio Pass, ozone concentrations typically decrease due to dilution, but can remain high enough to exceed ozone standards.

Averaged ozone concentrations by time of day for various stations along the corridor from Los Angeles County into Riverside County and into the Coachella Valley also shows this pollution transport. Figure 2-2 shows averaged 1-hour ozone concentrations for the May–October smog season, by hour, for the 2021–2023 period. At stations near where most ozone precursors are emitted (source region), ozone peaks occur just after mid-day on average. This peak corresponds to the peak of incoming solar radiation and therefore the peak of ozone production via chemical reactions. Ozone peaks near the emissions source region are not as high as those further downwind, due to the time required for ozone to form. From Los Angeles to Banning, ozone peaks occur later in the day as ozone and ozone precursors are transported downwind and ozone-forming reactions continue. At Palm Springs and Indio, ozone concentrations mostly plateau below the levels measured in Banning, between late morning and early evening. This suggests there is little additional ozone buildup downwind of Banning in the Coachella Valley itself. Any new ozone formed within the Coachella Valley is approximately counter-balanced by enhanced atmospheric dispersion caused by intense daytime heating.

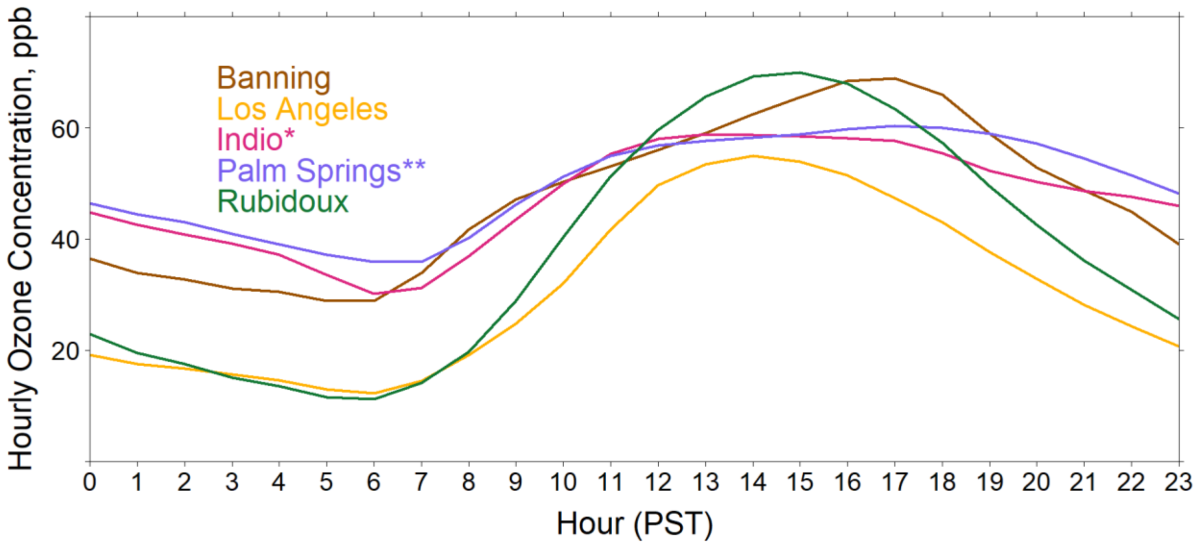

FIGURE 2-2
DIURNAL PROFILE OF 3-YEAR (2021–2023) MAY-OCTOBER HOURLY OZONE CONCENTRATIONS ALONG THE TRANSPORT ROUTE INTO THE COACHELLA VALLEY

* Based on 2021 data only
** Data likely to be approved as exceptional events by U.S. EPA removed from analysis.

Figure 2-3 shows the locations of the monitoring sites mentioned in Figure 2-2.

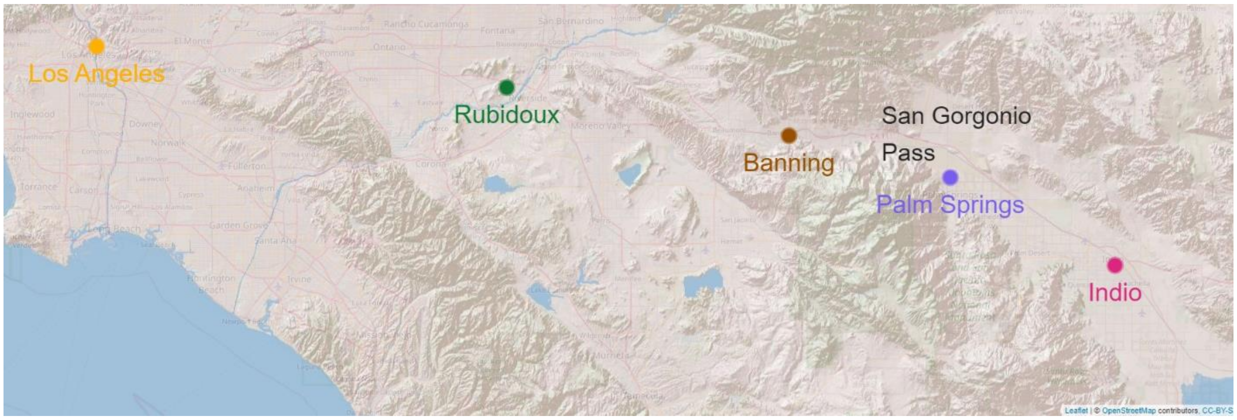

FIGURE 2-3
LOCATIONS OF OZONE MONITORS FOR WHICH DIURNAL PROFILES ARE SHOWN IN FIGURE 2-2

Palm Springs also shows higher morning ozone concentrations as compared to the concentrations in the morning in the South Coast Air Basin closer to the main emissions source areas (i.e., Los Angeles and Rubidoux). The stations in the Basin have more local NOx emissions (mostly from mobile sources) that titrate ozone during nighttime whereas the Coachella Valley has limited local NOx emissions to titrate the ozone at night.

Meteorology and emissions

Ozone concentrations are heavily dependent on meteorological conditions. High ozone concentrations and the number of days exceeding the federal ozone standards are greatest in the late spring and summer months, with no exceedances during the winter in the Coachella Valley. Ozone concentrations are a strong function of season for several reasons. First, the rate of the reactions that produce ozone in the atmosphere proceeds faster at higher temperatures. Second, elevated temperatures lead to increased precursor concentrations – the chemicals that react together to form ozone – by hastening the evaporation of VOCs into the air. Third, ozone concentrations are also dependent on sunlight intensity and duration, which are stronger during the summer months. Finally, the stability of the atmosphere also influences ozone concentrations as strong inversions limit mixing with the upper atmosphere, leading to elevated concentrations at the surface.

Year-to-year changes in meteorology can alter transport patterns, leading to changes in precursors and upwind ozone entering the Coachella Valley. Elevated temperatures and reduced atmospheric mixing can also contribute to additional ozone formation. In addition, the North American Monsoon, which can increase humidity and afternoon thunderstorms in the Coachella Valley between July and September can affect ozone concentrations.

Biogenic VOC emissions (those emitting from vegetation) may also exhibit large year-to-year variations. Vegetation is a large source of VOCs, especially during summer months. Vegetative growth is highly dependent on rainfall during the growing season, which exhibits significant year-to-year variations throughout California. High temperatures during summer months promotes higher amount of biogenic VOC emissions and consequently more ozone.

While it is difficult to measure anthropogenic emissions (emissions from human activity) of NOx and VOCs directly, South Coast AQMD's emissions inventory included in the recent Air Quality Management Plans indicates that emissions from anthropogenic sources in the South Coast Air Basin have declined and will continue to decline.

Ozone Monitoring Data

Figure 2-4 shows that Palm Springs exceeds the 1997, 2008, and 2015 8-hr ozone standards more frequently than Indio. This is consistent with Palm Springs being closer to source areas. Note that since the Indio site did not operate in the ozone seasons of 2022 and 2023, the last available 3-year period (2019-2021) for both sites are shown, as is the latest 3-year period for Palm Springs (2021-2023). The distribution of ozone levels at higher concentrations at Palm Springs did not change significantly between 2019-2021 and 2021-2023.

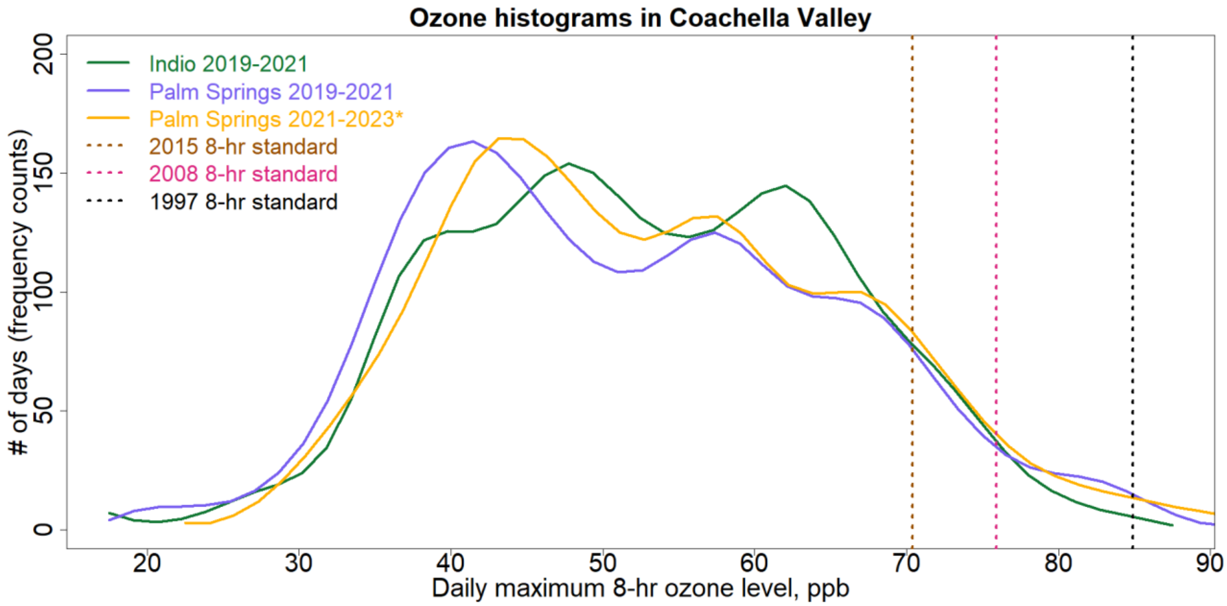

FIGURE 2-4
OZONE HISTOGRAMS FOR THE COACHELLA VALLEY, 2019–2021

* Data likely to be approved as exceptional events by U.S. EPA removed from analysis.

South Coast AQMD's real-time AQI map[19] helps visualize how pollutant levels vary spatially using regulatory measurements at South Coast AQMD monitoring sites, low-cost sensor data (PM2.5 only) and predictions from a chemical transport model (ozone and PM2.5). Hourly AQI map archives from May – October 2021- 2023 were analyzed to determine the number of exceedances, after removing data likely to be approved as exceptional events by U.S. EPA. Figure 2-5 confirms the decreasing northwest-to-south/southeast gradient across the valley, as one moves farther from the main source region. The slight increase in the number of exceedances over the Salton Sea area is likely an artifact of interpolating the modeled concentrations due to the absence of Indio data in 2023: the spatial interpolation is still influenced somewhat by the higher concentrations at Palm Springs. If lower concentrations were measured in Indio as in past years, the interpolated surface would have been "anchored" down lower closer to the Salton Sea.

[19] Schulte, N., Li, X., Ghosh, J. K., Fine, P. M., & Epstein, S. A. (2020). Responsive high-resolution air quality index mapping using model, regulatory monitor, and sensor data in real-time. *Environmental Research Letters*, *15*(10), 1040a7.

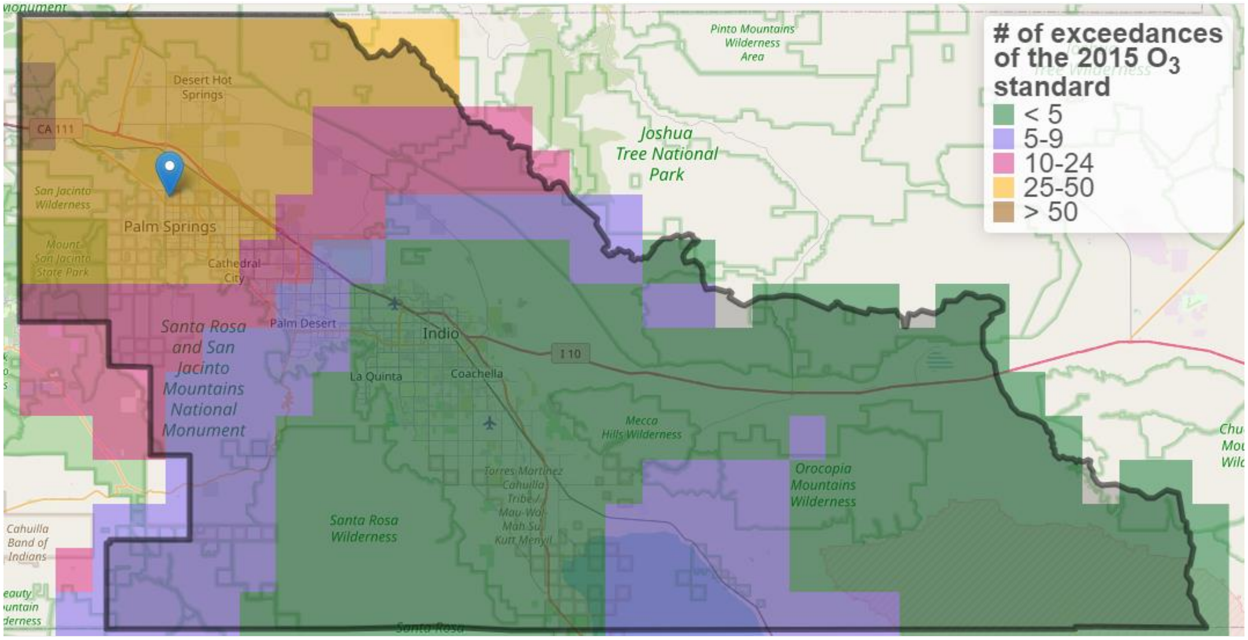

FIGURE 2-5

NUMBER OF TIMES THE MAXIMUM DAILY 8-HR AVERAGE (MDA8) OZONE IN 2023 WITHIN THE COACHELLA VALLEY EXCEEDED 0.07 PPM (2015 8-HR STANDARD).

Note: The location of the Palm Springs monitor and the boundary of South Coast AQMD's Source-Receptor Area #30 are also shown in Figure 2-5.

Ozone Attainment Status

Design values are statistical metrics that are used to compare pollutant concentrations with the NAAQS. Trends in the 8-hour ozone design value and the 1-hour ozone design value are plotted in Figure 2-6. The year plotted is the end year of the 3-year design value. Data likely to be approved as exceptional events by U.S. EPA have been removed.

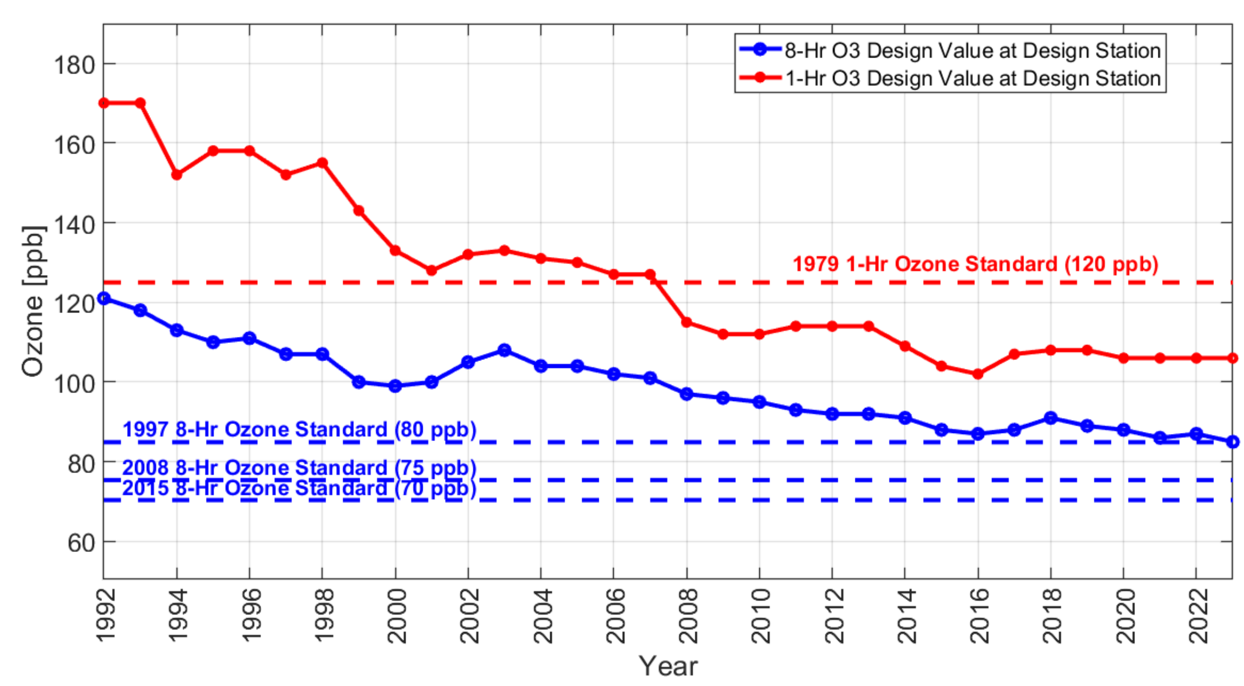

FIGURE 2-6
COACHELLA VALLEY 3-YEAR DESIGN VALUE TRENDS OF OZONE, 1992–2023

While the Coachella Valley attains the former 1-hour federal ozone standard, the area exceeds the 8-hour NAAQS. In each year, the Palm Springs monitoring station had the highest design value in the Coachella Valley, and therefore the Palm Springs measurement data reflects the design site for the Coachella Valley. The least-stringent 1997 8-hour standard is met if the design value is less than or equal to 0.084 ppm (84 ppb), due to rounding conventions associated with the 2008 standard of 0.08 ppm. As of ~~June~~ August 2024, an Exceptional Events Demonstration is under development for Palm Springs ozone data collected on July 14- 15, 2023, as these data were unduly influenced by wildfire smoke. If EPA concurs with this demonstration, the 2023 design value[20] which covers measurements from 2021 to 2023 will be 0.085 ppm, which is just 1 ppb over the standard. The 4th highest 2023 8-hour ozone value will be 0.083~~4~~ ppm which is below the level of the standard. Ozone design values in the Coachella Valley are expected to continue to decrease because of emission reductions in the South Coast Air Basin and Coachella Valley.[21]

In summary, the Coachella Valley has experienced a multi-decadal trend of steady ozone improvements over the years, however, additional improvements are needed to achieve the 8-hour ozone standards. Due to ozone transport patterns and chemistry, this goal is inextricably linked to ozone reductions in the South Coast Air Basin.

[20] The design value is the average of the 4th highest 8-hour ozone values in a three-year period.
[21] South Coast AQMD, 2022 Air Quality Management Plan. https://www.aqmd.gov/home/air-quality/air-quality-management-plans/air-quality-mgt-plan

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

CHAPTER 3 – BASE AND FUTURE YEAR EMISSIONS

~~Base and Future Year Emissions~~

Introduction

This chapter summarizes ozone precursor emissions (VOC and NOx) in the Coachella Valley for the 2018 base year and the 2031 attainment year for the 2008 8-hour ozone NAAQS of 75 ppb. Projected emissions inventories of air pollutants in future milestone and attainment year presented in this chapter are based on seasonally adjusted summer planning inventory emissions which are developed to capture the emission levels during the high ozone season and are used to perform the ozone modeling attainment demonstration and to report emission reduction progress as required by the federal CAA requirements.

Emissions Inventory Methodology

The emissions inventory is divided into two major source classifications: stationary and mobile sources. Stationary sources include point sources and area sources. Mobile sources include off- and on-road sources. Emissions from each category are estimated using source-specific methodologies described briefly in the next sections. The methodologies used in this Plan are identical to those employed in South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard (hereafter PM2.5 Plan)[22] and generally consistent with those employed in the Reclassification of Coachella Valley for the 2008 8-Hour Ozone Standard and Updated Motor Vehicle Emissions Budgets (hereafter RFP Plan)[23] adopted in November 2022, except for the on-road sources which are based on EMFAC2021. The 2022 AQMP and the RFP Plan used EMFAC2017, which was the latest U.S. EPA approved on-road mobile source emissions model during the development of those Plans. While more detailed information regarding the emissions inventory development for the base and future years is available in the 2022 Air Quality Management Plan (AQMP)[24] for sources other than on-road category, and the PM2.5 Plan for on-road sources, a brief description for the four groups of emissions is provided below.

Stationary Sources

Stationary sources are divided into two major subcategories: point sources and area sources. Point sources are permitted facilities with one or more emission sources at an identified location (e.g., power plants, refineries). These facilities generally have annual emissions of 4 tons or more of either VOCs, NOx, SOx, or

[22] South Coast AQMD, South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard, June 2024. https://www.aqmd.gov/home/air-quality/air-quality-management-plans/other-state-implementation-plan-(sip)-revisions/2012-annual-pm2-5-plan

[23] South Coast AQMD, Request to Reclassify Coachella Valley for the 2008 8-Hour Ozone Standard and the Updated Motor Vehicle Emissions Budgets Final Staff Report, November 2022. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/cv-mveb/coachella-valley-reclassification-for-the-2008-8-hour-ozone-standard-and-mveb---final-staff-report.pdf

[24] South Coast AQMD, 2022 Air Quality Management Plan. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf

PM, or annual emissions of over 100 tons of CO. If any of these thresholds are exceeded, facilities are required to report their emissions of criteria pollutants and selected air toxics pursuant to Rule 301 to the South Coast AQMD on an annual basis through the Annual Emissions Reporting (AER) system. Their report is subject to audit. The 2018 annual reported emissions are used for stationary point sources. The point source inventory includes a large facility – the Desert View Power Plant – that is permitted by the South Coast AQMD even though is on tribal land. Per its permit, this facility is subject to rule 301 and AER reporting and was operating in 2018. However, the plant shut down operations in May 2024, and thus, future stationary source emissions may be overestimated.

Area sources consist of many small emission sources (e.g., residential water heaters, architectural coatings, consumer products, and permitted sources that emit pollutants lower than the above thresholds) which are distributed across the region and are not required to individually report their annual emissions. There are about 400 area source categories for which emission estimates are jointly developed by CARB and the South Coast AQMD. The emissions from these sources are estimated using latest specific activity information and emission factors. Activity data are usually obtained from survey data or scientific reports, e.g., Energy Information Administration (EIA) reports for fuel consumption other than natural gas fuel, Southern California Gas Company for natural gas consumption, and solvent, sealant and architectural coatings sales reports required under the South Coast AQMD Rules 314, 1113 and 1168. Emission factors are based on rule compliance factors, source tests, manufacturer's product or technical specification data, default factors (mostly from AP-42, U.S. EPA's published emission factor compilation), or weighted emission factors derived from the point source facilities' annual emissions reports. The overall methodology for area sources is described in Appendix III of the PM2.5 Plan. The area source emissions in this Plan are based on the emissions projections included in the PM2.5 Plan for 2018 and 2031, using growth and control factors derived from regulatory and socio-economic data.

On-Road Sources

On-road sources include motor vehicles such as passenger cars, buses, and trucks that regularly travel on roads. On-road vehicle emissions were calculated with emission rates from CARB's EMFAC2021 model and travel activity data from Southern California Association of Governments (SCAG) 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), the latest federally approved RTP. The U.S. EPA approved the EMFAC2021 emissions model for SIP and conformity purposes in November 2022.[25] The latest two plans – the 2022 AQMP and the RFP Plan relied on EMFAC2017, the predecessor to the EMFAC2021, to estimate on-road mobile source emissions. EMFAC2021 calculates exhaust and evaporative emission rates by vehicle type for different vehicle speeds and environmental conditions. Temperature and humidity profiles are used to produce monthly, annual, and episodic inventories. Emission rate data in EMFAC2021 is collected from various sources, such as individual vehicles in a laboratory setting, tunnel studies, and certification data.

[25] U.S. EPA, Official Release of EMFAC2021 Motor Vehicle Emission Factor Model for Use in the State of California, 87 Fed. Reg. 68483 (November 15, 2022). https://www.federalregister.gov/documents/2022/11/15/2022-24790/official-release-of-emfac2021-motor-vehicle-emission-factor-model-for-use-in-the-state-of-california

The updates in vehicle population, emission factors, and forecasting parameters included in EMFAC2021 affect the on-road emission estimates for both the 2018 base year and future years. The factors that have the greatest effect on emissions changes from EMFAC2017 to EMFAC2021 include ~~the increase in~~higher in-use emission factors for some vehicle classes in EMFAC2021, the updated vehicle age distribution for medium-heavy duty trucks that estimates an older fleet mix compared to EMFAC2017, and the update on brake wear emission factors based on updated measurements. In addition, the EMFAC2021 model incorporates recently adopted regulations, such as Advanced Clean Trucks (ACT),[26] and Heavy-Duty Low NOx Omnibus regulations,[27] not included in EMFAC2017.

Figure 3-1 compares VOC (top) and NOx (bottom) emissions from on-road sources between the RFP Plan and this Plan for 2011 (the RFP base year), 2018 (the base year to project emissions from), interim milestone years of 2023, 2026, and 2029, and the attainment year of 2031. The two main differences in the on-road inventory between the two plans are:

1) On-road emissions in the RFP Plan are estimated using EMFAC2017, whereas on-road emissions in this Plan are estimated using EMFAC2021.

2) The RFP Plan used EMFAC2017 as on-road baseline emissions, which did not reflect the impact of ACT, Heavy-Duty Low NOx Omnibus, or Heavy-Duty Inspection and Maintenance (I/M). This Plan uses EMFAC2021, which incorporates the impact of ACT and Omnibus regulation. In addition, the impact of Heavy-Duty I/M is incorporated as an external adjustment to EMFAC2021 and reflected in the baseline emissions.

For year 2018, the inventory of this Plan estimates higher emissions of NOx and VOC than those in the RFP Plan, because EMFAC2021 includes newer vehicle test data showing that light-duty vehicles have higher exhaust emissions, and updated vehicle registration data from the Department of Motor Vehicles (DMV) for 2018 indicating that medium heavy-duty trucks are older than what was assumed in EMFAC2017. For years after 2023, this Plan's inventory projects significantly lower VOC and NOx emissions than the RFP Plan, largely due to the implementation of recently adopted regulations and programs such as ACT, Heavy-Duty Omnibus low NOx requirements and Heavy-Duty I/M. Despite growth in vehicular activities, emissions from on-road mobile sources are expected to decrease in future years. Vehicle emissions under this Plan are projected to decline from 2018 to 2031 by 44 and 76 percent for VOC and NOx emissions, respectively.

[26] CARB Advanced Clean Trucks Regulation. https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks.
[27] CARB Heavy-Duty Low NOx Omnibus Regulations. https://ww2.arb.ca.gov/rulemaking/2020/hdomnibuslownox.

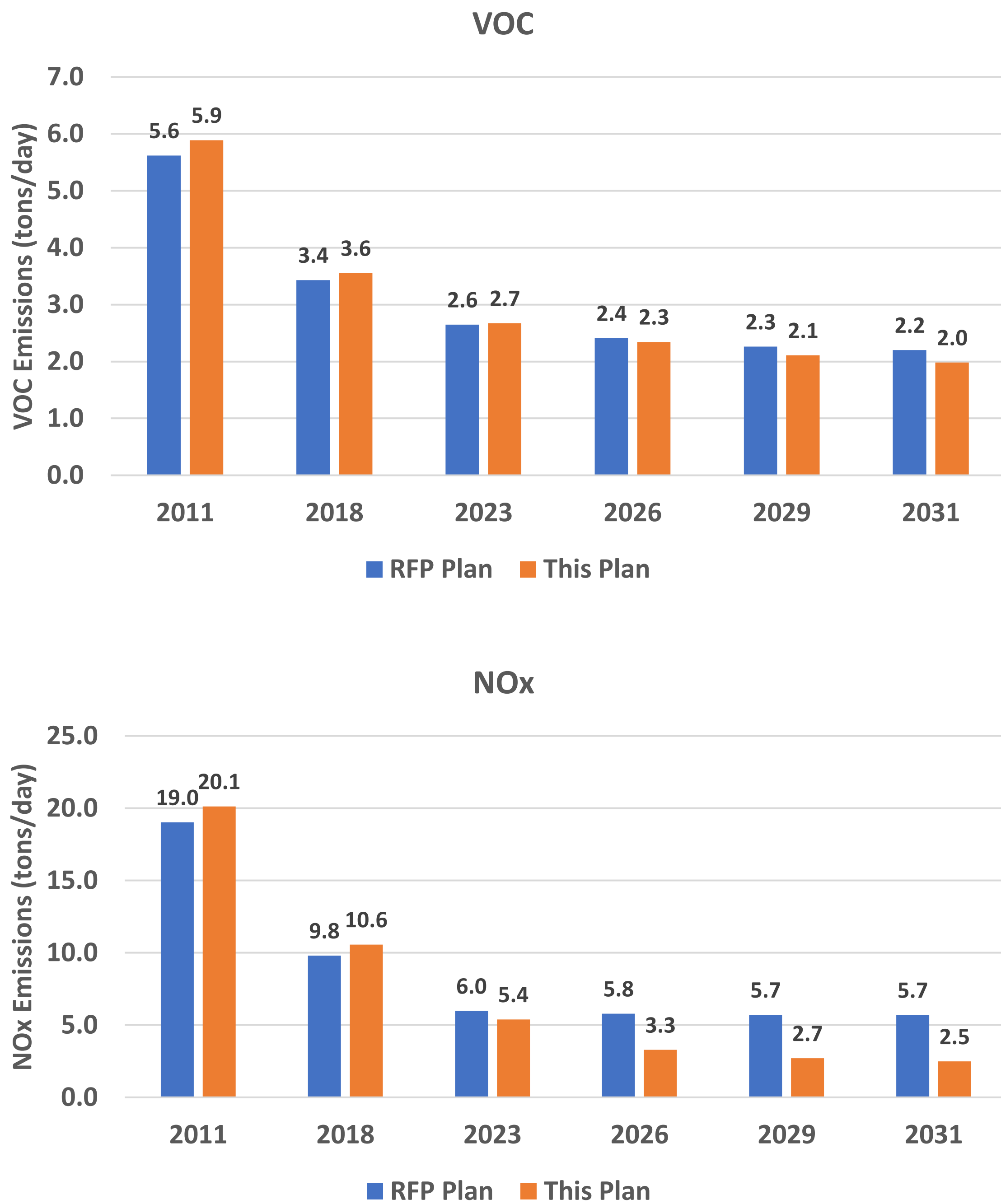

FIGURE 3-1
COMPARISON OF VOC EMISSIONS (TOP) AND NOX EMISSIONS (BOTTOM) FROM ON-ROAD SOURCES INCLUDED IN THE RFP PLAN AND THIS PLAN.

Off-Road Sources

The off-road mobile category includes construction and mining equipment, industrial and commercial equipment, lawn and garden equipment, agricultural equipment, ocean-going vessels, commercial harbor craft, locomotives, aircraft, cargo handling equipment, pleasure craft, and recreational vehicles.

Emissions from off-road vehicle categories are primarily based on estimated activity levels and emission factors using a suite of category-specific models which are integrated under the OFFROAD2021 platform. For some categories for which a new model was not available, emissions are based on the OFFROAD2007 model. Separate models have been developed for estimating emissions from different categories of off-road mobile sources.[28]

There are two updates to this Plan's off-road emissions compared to the RFP Plan. After the development of the RFP Plan, a minor error was discovered in the emission allocations for in-use emissions from off-road construction equipment in Riverside County. This error only affected future year emissions and is now corrected in this Plan. Additionally, this Plan accounts for the impact of the Small Off-Road Engine (SORE) regulation amendments,[29] which was not included in the RFP Plan. Implementation of the SORE regulation results in a reduction of 0.8 tons per day of VOC and 0.1 tons per day of NOx in the Coachella Valley. As a result of these updates, VOC and NOx emissions decrease from 3.1 and 6.8 tons per day in the RFP Plan to 2.1 and 6.1 tons per day in this Plan in 2031, respectively.

Recreational boat emissions are estimated at the county level and allocated to Coachella Valley using spatial surrogates based on water bodies; however, there is no significant boating activity in the Salton Sea, suggesting that the emissions estimates for this area are likely overestimated. A new model for this off-road category is currently under development and estimates of emissions from recreational boats are ~~will~~ likely to decrease in the future update.

Base Year Emission Inventory

The summer planning emissions inventory for 2011, the base year for the RFP Plan, and for 2018, the base year for this Plan, broken down by major source category are provided in Table 3-1. A more detailed emissions is included in Appendix I.

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28 More information on the models for offroad sources can be found in the following link: https://ww2.arb.ca.gov/msei-road-documentation.

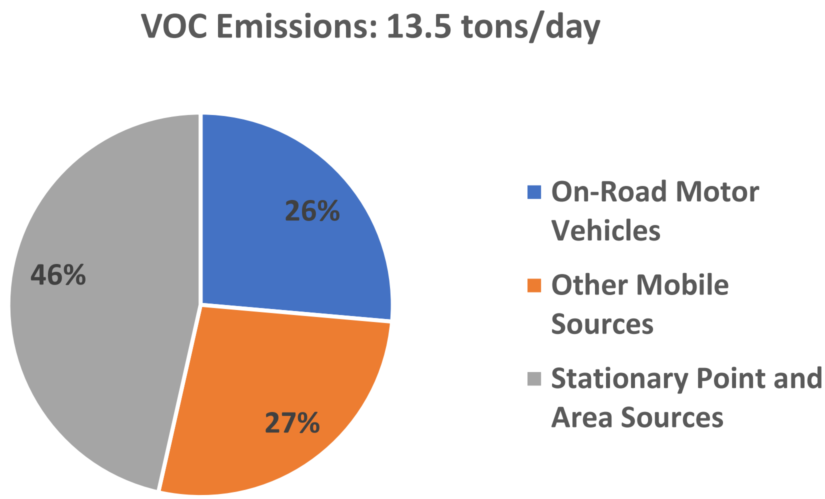
29 CARB 2021 Amendments to the Small Off-Road Engine (SORE) Regulations. https://ww2.arb.ca.gov/our-work/programs/small-off-road-engines-sore

TABLE 3-1
SUMMARY OF VOC AND NOX EMISSIONS BY MAJOR SOURCE CATEGORY: 2018 BASE YEAR

Source Category	Summer Planning 2018 (tons/day)	
	VOC	NOX
STATIONARY SOURCES		
Fuel Combustion	0.09	1.08
Waste Disposal	0.01	0.01
Cleaning and Surface Coatings	1.74	0.00
Petroleum Production and Marketing	0.33	0.00
Industrial Processes	0.24	0.00
Solvent Evaporation		
Consumer Products	3.04	0.00
Architectural Coatings and Related Process Solvents	0.30	0.00
Pesticides/Fertilizers	0.22	0.00
Asphalt Paving / Roofing	0.06	0.00
Miscellaneous Processes	0.21	0.29
Total stationary point and area sources	**6.25**	**1.38**
MOBILE SOURCES		
On-Road Motor Vehicles	3.55	10.54
Other Mobile Sources	3.65	7.74
Total Mobile Sources	**7.21**	**18.28**
TOTAL ANTHROPOGENIC SOURCES		
Grand Total	**13.46**	**19.66**

Figure 3-2 characterizes the relative contributions by stationary and mobile source categories in the base year 2018. On-road and off-road mobile sources are major contributors to NOx and VOC emissions in the Coachella Valley. Overall, total mobile source emissions account for 54 percent of the VOC and 93 percent of the NOx emissions. The on-road mobile source category alone contributes over 26 percent of the VOC and 54 percent of the NOx emissions. Stationary sources contribute to 46 percent of the VOC emissions, with consumer products and cleaning and surface coatings being the major sources.

Figure 3-3 shows the fraction of the 2018 inventory by responsible agency for VOC and NOx. U.S. EPA and CARB have primary authority to regulate emissions from mobile sources. The U.S. EPA's authority primarily applies to aircraft, locomotives, ocean-going vessels, and some categories of off-road mobile equipment. CARB has authority over the remainder of the mobile sources, and consumer products. South Coast AQMD has authority over most area sources and all point sources. As can be seen in Figure 3-3, 92 percent of the NOx emissions in the Coachella Valley are from sources that fall under the primary jurisdiction of CARB and the U.S. EPA. The largest share of VOC emissions is under CARB jurisdiction, 72 percent, with a small contribution of VOC from sources under the U.S. EPA's jurisdiction. This illustrates that continued actions at the local, state, and federal level are all needed to ensure the region attains the federal ambient air quality standards.



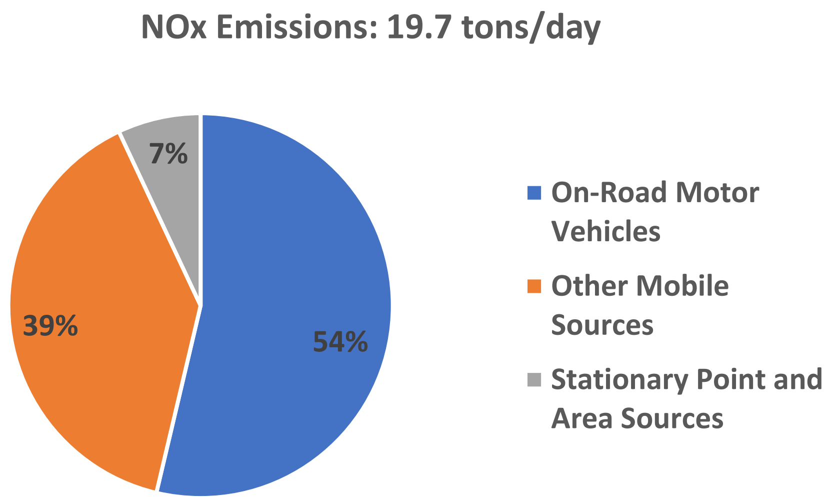
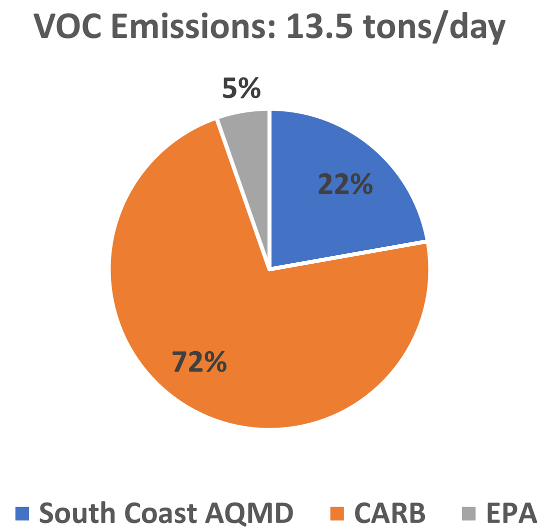


FIGURE 3-2
RELATIVE CONTRIBUTION BY SOURCE CATEGORY TO 2018 PLANNING EMISSION INVENTORY (VALUES ARE ROUNDED TO NEAREST INTEGER AND MAY NOT SUM DUE TO ROUNDING)



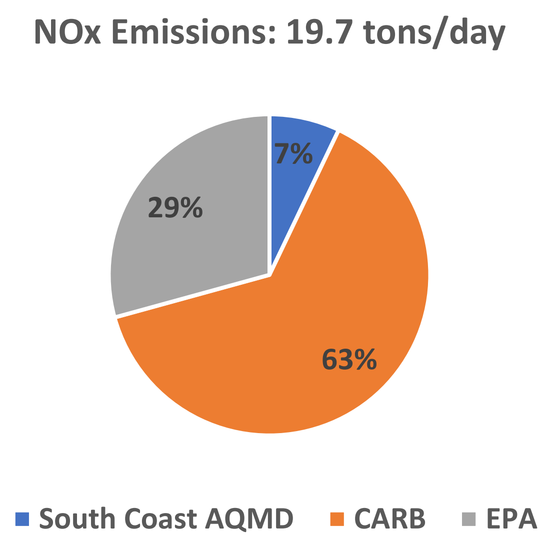


FIGURE 3-3
2018 PLANNING EMISSION INVENTORY AGENCY PRIMARY RESPONSIBILITY (VALUES ARE ROUNDED TO NEAREST INTEGER AND MAY NOT SUM DUE TO ROUNDING)

Future Emissions

Future emissions forecasts are primarily based on demographic and economic growth projections provided by SCAG as well as the energy consumption projections by the Southern California Gas Company (SoCalGas). In addition, projections in this Plan account for the exact same regulations that were included in the 2022 AQMP. The inventory of the 2022 AQMP reflects anticipated reductions from South Coast AQMD's regulations amended or adopted by October 2020, Rule 1109.1 adopted in November 2021, and CARB regulations adopted by December 2021, which include Heavy-Duty I/M and SORE regulations. Since the development of the 2022 AQMP emissions inventory, the South Coast AQMD adopted multiple rules: Rules 1111, 1147, 1147.1, 1147.2, 1150.3, 1153.1, 1168, and 1179.1. While these newly adopted rules have quantified NOx reductions of 0.39 tons per day in the South Coast Air Basin, the impact is less than 0.01 tons per day in the Coachella Valley. Additional discussion on rules adopted after the specified target date is included in the next section.

Table 3-2 presents the summer planning inventory of ozone precursors in 2031, the attainment year of the 2008 8-hour ozone NAAQS of 75 ppb for the Coachella Valley. A more detailed emissions inventory by major source categories is included in Appendix I. NOx emissions continue to decrease due to existing regulations for mobile and stationary sources. However, the total VOC emissions in Coachella Valley are expected to slightly increase due to increase in population and economic and selected industrial activities, such as from degreasing, coatings and related process solvents, chemical industry and food and agriculture. Emissions from on-road and off-road sources are projected to decline for both NOx and VOC from 2018 to 2031 due to continued implementation of adopted regulations which require new, cleaner vehicles and equipment to replace older, higher-emitting vehicles.

TABLE 3-2
SUMMARY OF EMISSIONS OF VOC AND NOX BY MAJOR SOURCE CATEGORY: 2031 BASELINE SUMMER PLANNING (TONS PER DAY)

Source Category	Summer Planning (tons/day)	
	VOC	NOX
STATIONARY SOURCES		
Fuel Combustion	0.10	1.10
Waste Disposal	0.02	0.01
Cleaning and Surface Coatings	2.17	0.00
Petroleum Production and Marketing	0.32	0.00
Industrial Processes	0.29	0.00
Solvent Evaporation		
Consumer Products	3.79	0.00
Architectural Coatings and Related Process Solvents	0.40	0.00
Pesticides/Fertilizers	0.22	0.00
Asphalt Paving / Roofing	0.08	0.00
Miscellaneous Processes	0.21	0.28
Total stationary point and area sources	**7.60**	**1.39**
MOBILE SOURCES		
On-Road Motor Vehicles	1.98	2.47
Other Mobile Sources	2.21	6.74
Total Mobile Sources	**4.19**	**9.22**
TOTAL ANTHROPOGENIC SOURCES		
Grand Total	**11.79**	**10.61**

Figure 3-4 illustrates the relative contribution to the 2031 inventory by source category. The contribution of on-road mobile sources to ozone precursor emissions in 2031 is projected to decline with respect to 2018, indicating the effectiveness of current on-road mobile sources regulations to reduce emissions in the Coachella Valley. Conversely, the relative contribution of stationary sources to the VOC emissions is expected to grow due to increasing use of consumer products. Off-road mobile sources' relative contribution will grow in 2031. Among them, locomotives have the largest amount of NOx emissions.

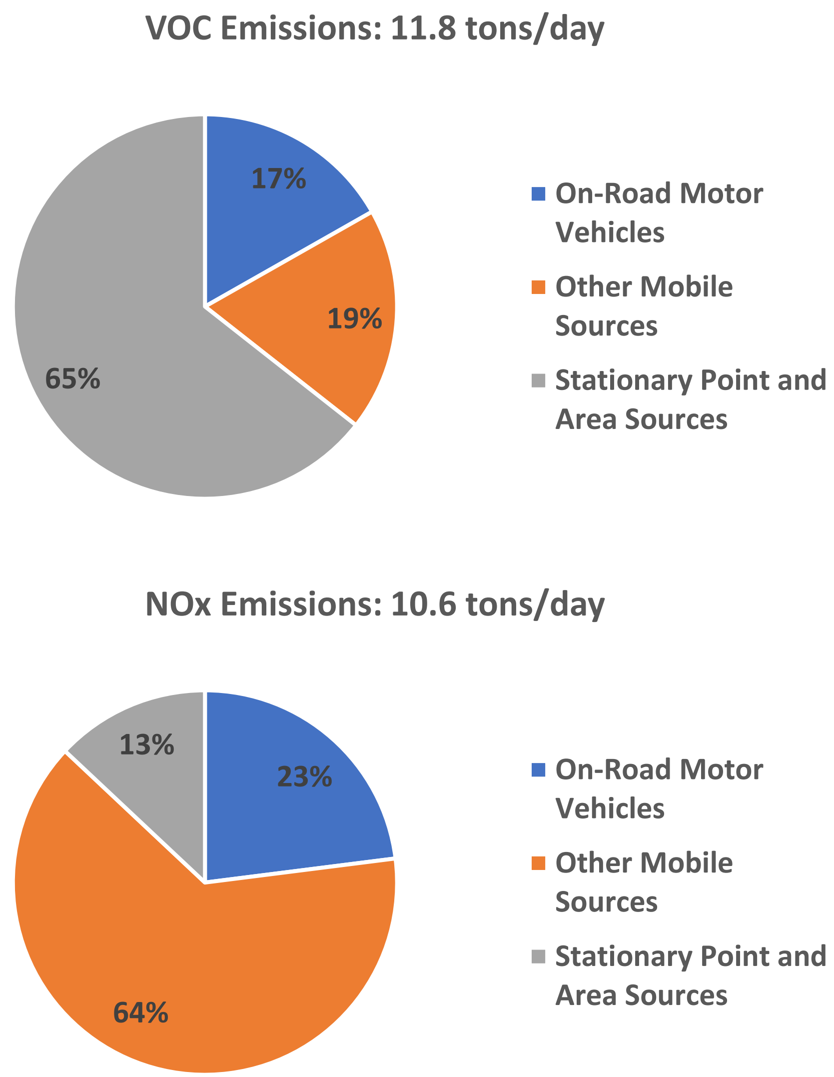
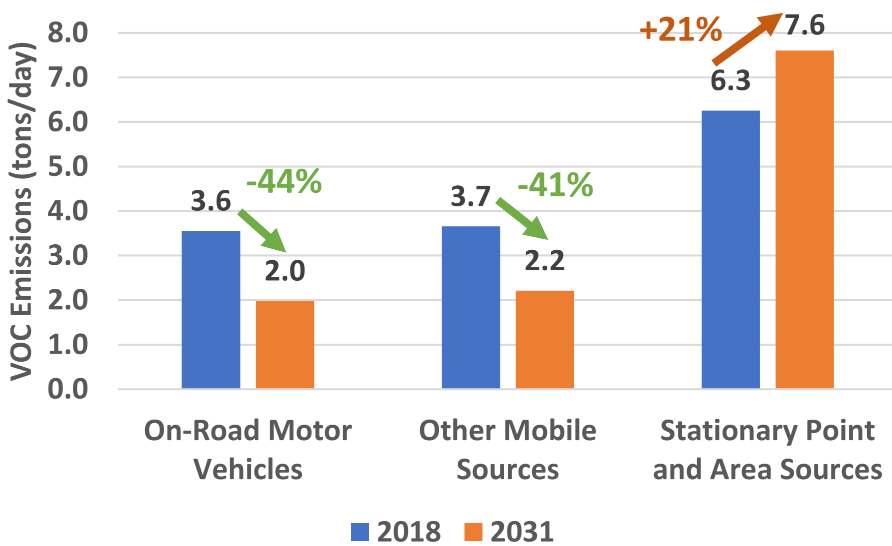


FIGURE 3-4
RELATIVE CONTRIBUTION BY SOURCE CATEGORY TO 2031 PLANNING EMISSION INVENTORY (VALUES ARE ROUNDED TO NEAREST INTEGER AND MAY NOT SUM DUE TO ROUNDING)

Figure 3-5 shows the comparison of the summer planning inventory in 2018 and 2031 by the three major source categories. Emissions from mobile sources are projected to decline from 2018 to 2031 for both VOC and NOx, with the steepest decreases in NOx from on-road sources. Emissions of NOx from stationary sources are projected to remain unchanged through 2031, whereas VOC emissions are projected to grow mostly contributed by the increase in the use of consumer products driven by the growth in population.



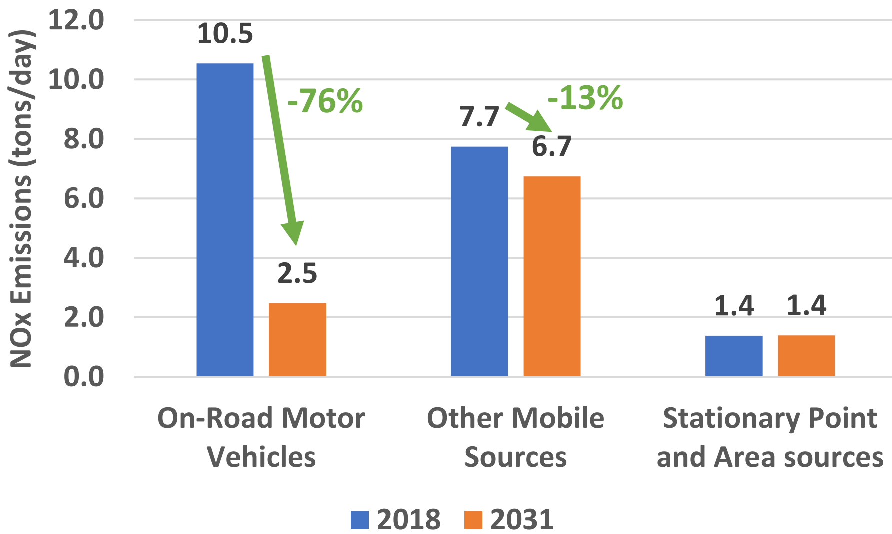


FIGURE 3-5

COMPARISON OF NOX AND VOC PLANNING EMISSION INVENTORY IN YEAR 2018 AND 2031 BY MAJOR SOURCE CATEGORY

Recently Adopted Rules and Regulations

As mentioned above, this Plan incorporates in the baseline projections the same rules that were included in the 2022 AQMP, which include South Coast AQMD rules adopted by October 2020 with the addition of Rule 1109.1 and CARB rules adopted by December 2021. However, by September 2023, South Coast AQMD adopted multiple new rules that ~~target~~ apply to sources in the South Coast Air Basin and the Coachella Valley. The NOx emission reductions from these rules in the Coachella Valley are less than 0.01 tons per day, but the reductions in the South Coast Air Basin are 0.39 tons per day. In addition, South Coast AQMD developed eleven "landing" rules to transition the REgional CLean Air Incentives Market (RECLAIM) program to a traditional command-and-control structure. While these "landing" rules did not apply to RECLAIM sources in the Coachella Valley, they contribute to a reduction of NOx of 2.88 tons per day in the South Coast Air Basin in 2031. All these reductions are included in the attainment scenario for 2031. Additional information on the newly adopted rules and RECLAIM landing rules reductions are described in greater detail in Chapter 3 of the PM2.5 Plan.

Similarly, CARB adopted new regulations after the development of the 2022 AQMP, and while these newly adopted regulations are not included in the baseline 2031, their associated reductions are accounted for in the attainment strategy in this Plan. The overall reductions in ozone precursors from these regulations in the Coachella Valley and the South Coast Air Basin are summarized in Table 3-3.

TABLE 3-3
SUMMARY OF EMISSION REDUCTIONS FROM REGULATIONS ADOPTED SINCE THE DEVELOPMENT OF THE 2022 AQMP

	Coachella Valley Reductions (tons per day)		South Coast Air Basin Reductions (tons per day)	
Measures	NOx Reduction	VOC Reduction	NOx Reduction	VOC Reduction
Rules adopted after the development of the 2022 AQMP	0.01	-	0.39	-0.14
RECLAIM landing rules	-	-	2.88	-
Total South Coast AQMD adjustments	**0.01**	**-**	**3.27**	**-0.14**
Advanced Clean Cars II	0.06	0.06	1.79	1.59
Clean Miles Standard	0.00	0.00	0.03	0.07
EPA Clean Trucks Plan	0.14	-	0.76	-
Advanced Clean Fleets Regulation	0.34	0.02	4.37	0.2
Total CARB/EPA on-road measures	**0.55**	**0.08**	**6.96**	**1.86**
Commercial Harbor Craft Amendments	-	-	2.34	0.17
In-Use Locomotive Regulation	2.73	0.11	10.71	0.33
Transport Refrigeration Unit Regulation Part 1	0.00	0.02	0.39	0.05
Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation	0.13	0.01	1.72	0.19
Total CARB off-road measures	**2.86**	**0.15**	**15.15**	**0.74**
Grand Total Reductions	**3.42**	**0.22**	**25.39**	**2.47**

Top Five Source Categories (2018 and 2031)

The top five sources of ozone precursor emissions are presented in this section based on the summer planning inventory for the base year 2018 and the future attainment year 2031.

Figure 3-6 and Figure 3-7 provide the top five categories for VOCs for the years 2018 and 2031, respectively. Consumer products, off-road equipment, passenger cars, and coating and related processes are the largest contributors to VOC emissions. Consumer products, and coating and related processes are expected to continue to grow through 2031, due to the projected growth in population and economic activity. In contrast, on-road emissions from mobile sources including passenger cars decline from 2018 to 2031 as a result of regulations. The top five categories account for 64 percent of the total VOC inventory in 2018 and 66 percent in 2031.

Figure 3-8 and Figure 3-9 show the top five categories for NOx emissions for 2018 and 2031, respectively. Mobile source categories remain the predominant contributor to NOx emissions. Heavy heavy-duty diesel trucks, trains, and off-road equipment are on the list of top five emitters in 2018 and 2031. Emissions of NOx from heavy-duty trucks and off-road equipment are projected to decline from 2018 to 2031. NOx emissions from trains in the baseline inventory are projected to grow through 2031. Similarly, emissions from aircraft – which is also a primarily federally regulated source like trains – is projected to grow through 2031, and appears in the top 5 emitters in 2031. Because medium-heavy duty and light duty trucks become cleaner in future years, NOx emissions from electricity generation emerge among the top five emitters in 2031 in Coachella Valley. Notably, a third of the NOx emissions from electric utilities are part of the ex-RECLAIM universe. Together, these top five categories account for 76 percent of the total NOx inventory in 2018 and 77 percent in 2031.

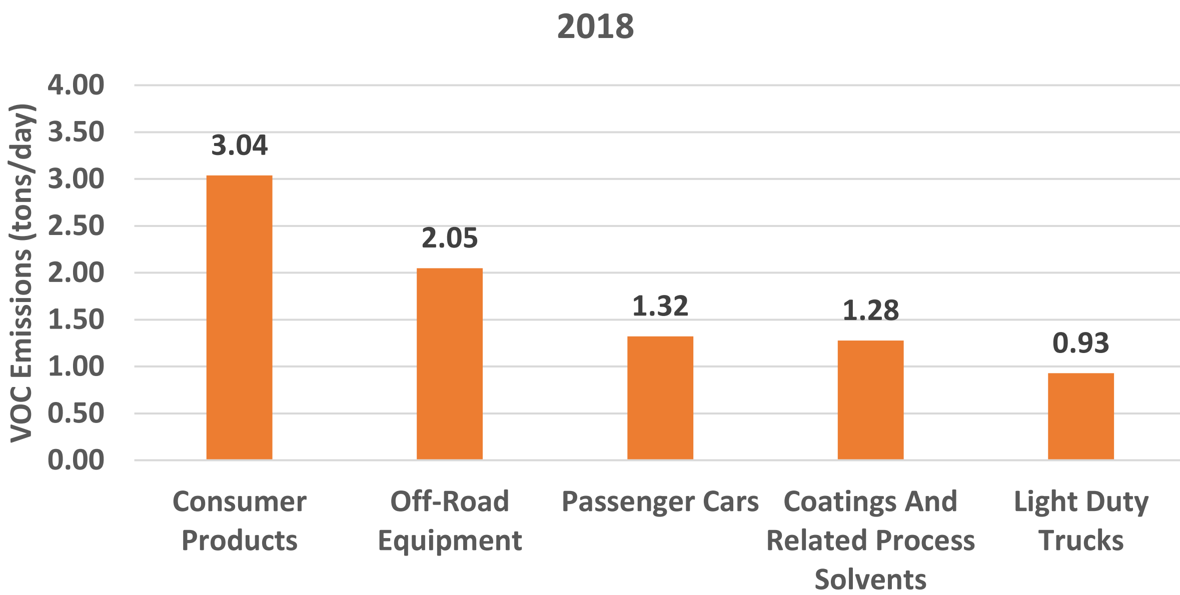


FIGURE 3-6
TOP FIVE EMITTER CATEGORIES FOR VOC IN 2018

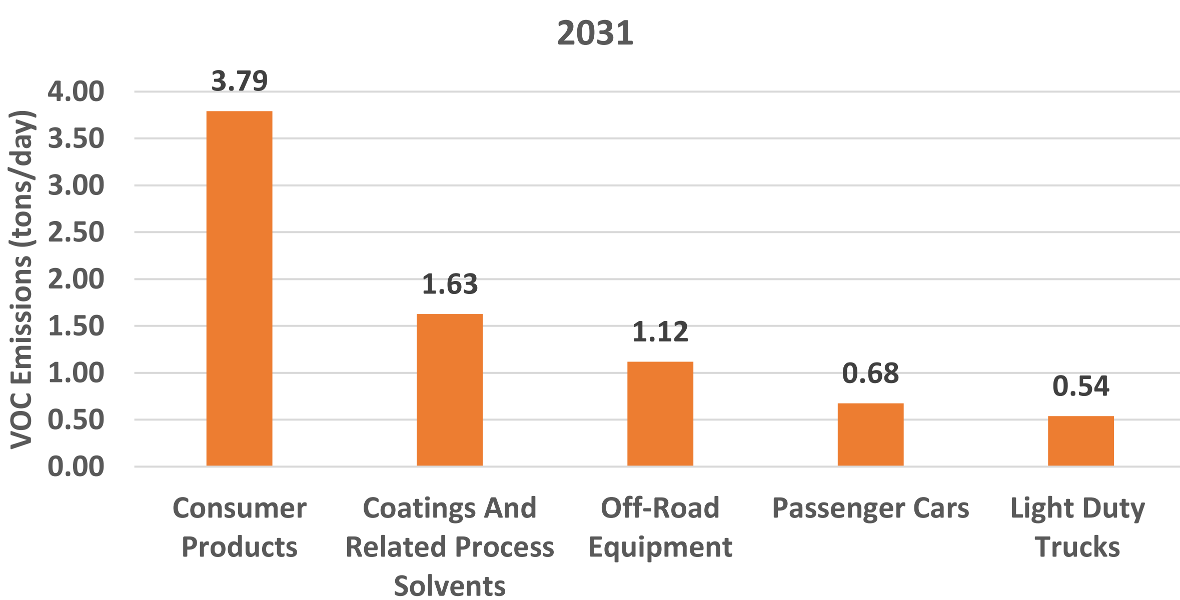


FIGURE 3-7
TOP FIVE EMITTER CATEGORIES FOR VOC IN 2031

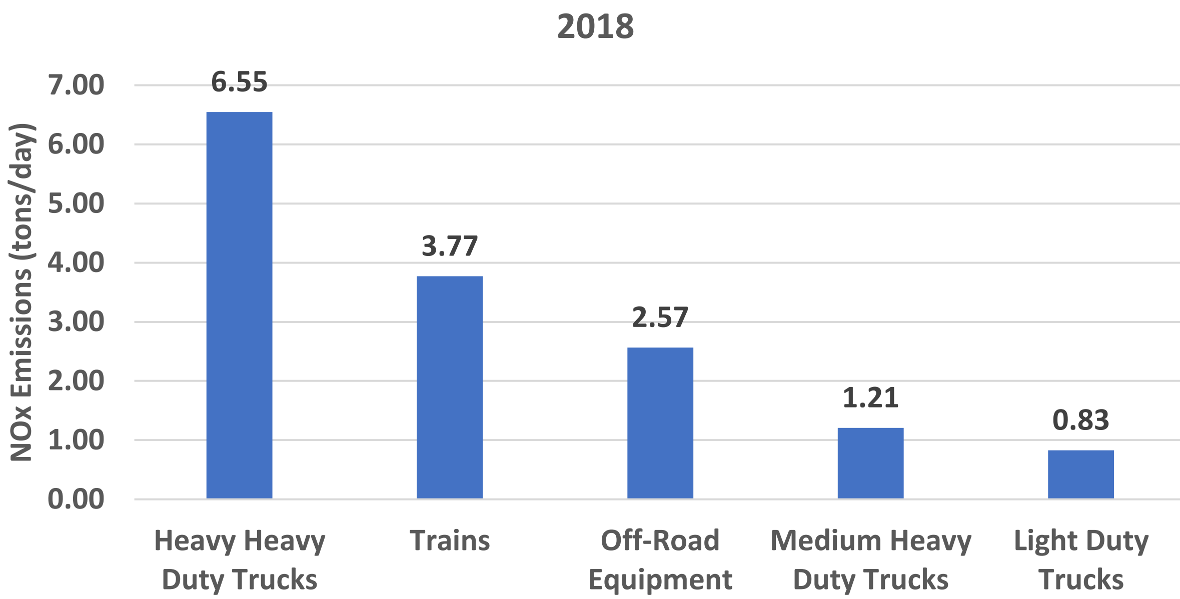


FIGURE 3-8
TOP FIVE EMITTER CATEGORIES FOR NOX IN 2018

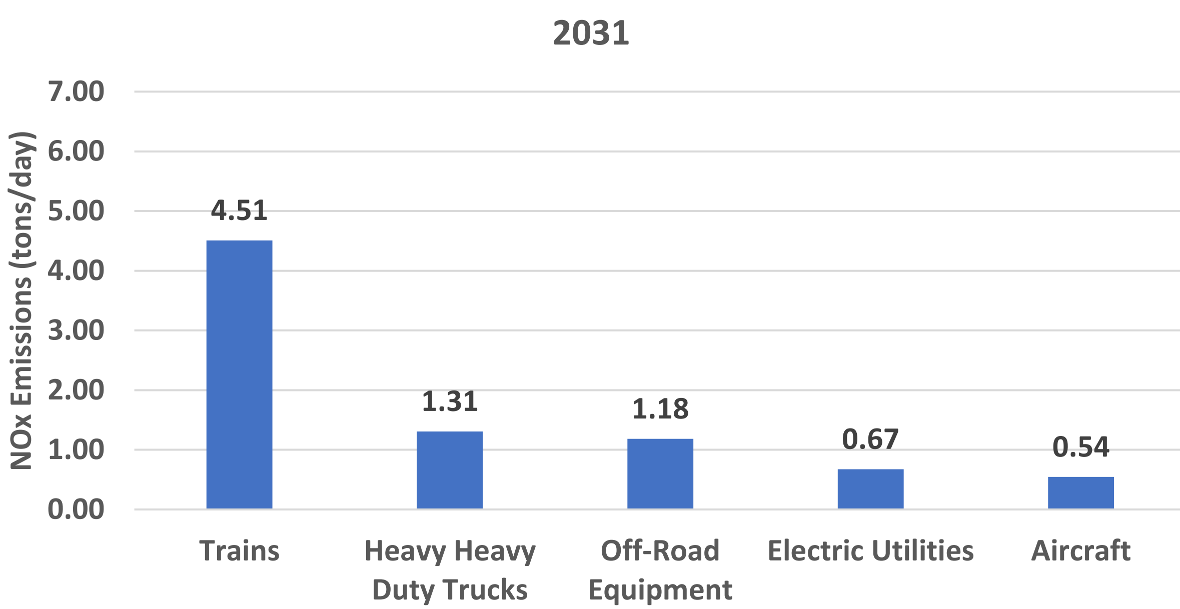


FIGURE 3-9
TOP FIVE EMITTER CATEGORIES FOR NOX IN 2031

Emissions of the South Coast Air Basin

While a full inventory of Coachella Valley emissions is a required element of this Plan, the ozone air quality in the Coachella Valley is primarily due to the transport of ozone and its precursor pollutants from the South Coast Air Basin. Table 3-4 presents the total VOC and NOx emissions in the South Coast Air Basin compared to the emissions in the Coachella Valley for 2018. Table 3-5 presents the emissions in the baseline emissions inventory for 2031, and Table 3-6 presents the emissions in 2031 resulting from applying the line item adjustments presented in Table 3-3. The Basin emissions are estimated based on the same methodology presented above. As shown, in both years, the total VOC emissions emitted locally within the Coachella Valley are about 3 percent of the total VOC emissions in the South Coast Air Basin. The emissions of NOx emitted in the Coachella Valley represent 5 percent of the emissions in the South Coast Air Basin in 2018 and in the baseline 2031, and 4 percent in the year 2031 with the line item adjustments.

TABLE 3-4
2018 SUMMER PLANNING VOC AND NOX EMISSIONS FOR SOUTH COAST AIR BASIN AND COACHELLA VALLEY (TONS PER DAY)

	South Coast Air Basin		Coachella Valley	
	VOC	NOx	VOC	NOx
Stationary Point and Area Sources	217.83	51.61	6.25	1.38
On-Road Motor Vehicles	95.87	171.28	3.55	10.54
Other Mobile Sources	107.16	143.35	3.65	7.74
Total Anthropogenic Sources	**420.87**	**366.23**	**13.46**	**19.66**

TABLE 3-5
2031 SUMMER PLANNING VOC AND NOX EMISSIONS FOR SOUTH COAST AIR BASIN AND COACHELLA VALLEY (TONS PER DAY) IN THE BASELINE

	South Coast Air Basin		Coachella Valley	
	VOC	NOx	VOC	NOx
Stationary Point and Area Sources	238.83	42.32	7.60	1.39
On-Road Motor Vehicles	47.31	43.38	1.98	2.47
Other Mobile Sources	66.53	115.51	2.21	6.74
Total Anthropogenic Sources	**352.67**	**201.21**	**11.79**	**10.61**

TABLE 3-6
2031 SUMMER PLANNING VOC AND NOX EMISSIONS FOR SOUTH COAST AIR BASIN AND COACHELLA VALLEY (TONS PER DAY) WITH LINE ITEM ADJUSTMENTS

	South Coast Air Basin		Coachella Valley	
	VOC	NOx	VOC	NOx
Stationary Point and Area Sources	238.97	39.05	7.60	1.38
On-Road Motor Vehicles	45.45	36.42	1.90	1.92
Other Mobile Sources	65.79	100.36	2.06	3.88
Total Anthropogenic Sources	**350.21**	**175.83**	**11.56**	**7.19**

Uncertainties in the Emissions Inventory

An effective AQMP/State Implementation Plan relies on a complete and accurate emissions inventory. Over the years, significant improvements have been made to quantify emission sources for which control measures are developed. Increased use of continuous monitoring and source testing has contributed to the improvements in point source inventories. Technical assistance provided to facilities and auditing of reported emissions by the South Coast AQMD have also improved the accuracy of the emissions inventory. Area source inventories that rely on average emission factors and regional activity data have inherent uncertainties. Industry-specific surveys and source-specific studies during rule development have also provided a certain degree of refinement to these emissions estimates. Mobile source inventories are also continuously updated and improved. For example, many improvements are included in the on-road mobile source model EMFAC 2021, which estimates emissions from trucks, automobiles, and buses. Improvements and updates are also included in the methodologies for off-road mobile sources. Overall, the emissions inventory in this Plan is based on the most current data and methodologies, resulting in the most accurate inventory available.

Relative to future growth, there are many challenges inherent in making accurate projections, such as where vehicle trips will occur, distribution between various modes of transportation (such as trucks and trains) as well as estimates for population growth and the number and type of jobs. Forecasts are made with the best information available; nevertheless, there is uncertainty in emissions projections. AQMP updates are generally developed every three to four years, thereby allowing for frequent updates and improvements to the inventories. In sum, the future emission projections in this Plan are a reasonable forecast with the latest updates to on-road sectors accounting for the majority of emissions.

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

CHAPTER 4 – CONTROL STRATEGY

Control Strategy

The overall control strategy for meeting the 2008 8-hour ozone standard in Coachella Valley is based on the continued implementation of adopted rules and regulations by South Coast AQMD and CARB. As demonstrated by the air quality modeling presented in Chapter 5, NOx is the key pollutant that must be controlled to reduce ozone levels in Coachella Valley. Attainment of the 2008 8-hour ozone NAAQS in the Coachella Valley requires NOx emissions to be reduced to 7.19 tons per day by 2031.

There are four categories of reductions accounted for to attain the 2008 8-hour ozone NAAQS in the Coachella Valley - baseline reductions, Regional Clean Air Incentives Market (RECLAIM) landing rules, recently adopted rules affecting non-RECLAIM sources, and recently adopted mobile source regulations.

Baseline reductions are reductions anticipated under a business-as-usual scenario, which accounts for continued implementation of adopted rules and regulations already reflected in the baseline. The baseline emissions for this Plan incorporate rules adopted by October 2020 by South Coast AQMD. This includes Rules 1111, 1113, 1118.1, 1134, 1135, 1146, 1146.1, 1168, and the Facility-Based Mobile Source Measure for Commercial Airports. Additionally, Rule 1109.1, adopted in November 2021, is included in the baseline due to its significant impact.

RECLAIM landing rules in this Plan refer to a group of rules adopted generally between 2018 and 2023 to implement Best Available Retrofit Control Technology (BARCT) and facilitate the RECLAIM program's potential transition to a command-and-control regulatory structure, including Rules 1110.2, 1118.1, 1134, 1135, 1146 series, 1147 series, and 1153.1. Some of these rules affect both RECLAIM and non-RECLAIM sources. While the non-RECLAIM reductions are reflected in the baseline emissions, these rules achieve additional reductions from RECLAIM sources that are not accounted for in the baseline. This Plan's attainment strategy accounts for the reductions from the landing rules.

Except for Rule 1109.1, rules adopted since November 2020 are not reflected in the baseline; however, the reductions anticipated from those rules are quantified and relied on to attain the 2008 8-hour ozone NAAQS in the Coachella Valley. They are Rules 1111, 1147, 1147.1, 1147.2, 1150.3, 1153.1, 1168, and 1179.1. Some of these rules apply to both RECLAIM and non-RECLAIM facilities. The RECLAIM portion is quantified under the "RECLAIM landing rules" and the remainder is quantified as "reductions from recently adopted rules affecting non-RECLAIM sources."

Finally, reductions from CARB's mobile source regulations adopted in 2022 and beyond are also accounted for in this Plan. The reductions from recently adopted stationary and mobile source rules are referred to as line item adjustments. U.S. EPA's Clean Trucks Rule is accounted for in this category, as well. With the reductions from these four categories, the Coachella Valley is expected to attain the 2008 8-hour ozone standard by 2031. This chapter provides further details regarding the rules and regulations included in baseline and line item adjustments.

South Coast AQMD Existing Regulations and Programs Providing Emission Reductions in Future Baseline Emissions

South Coast AQMD has implemented aggressive NOx and VOC emission reduction strategies in the past several decades to attain federal ozone standards in the South Coast Air Basin and Coachella Valley. The emissions benefits of these regulations and programs are reflected in the future baseline emissions which are used for air quality modeling and attainment demonstration purposes. These emissions reflect the specific control requirements in existing rules and regulations as well as the natural turnover of engines, equipment, and appliances. The baseline emissions decrease by 9.05 and 1.67 tons per day of NOx and VOC emissions, respectively between the 2018 base year and 2031 attainment year. Existing South Coast AQMD rules which account for reductions in the baseline emissions between 2018 and 2031 are summarized in Table 4-1 and are briefly described below.

TABLE 4-1
SUMMARY OF SOUTH COAST AQMD RULES INCLUDED IN BASELINE EMISSIONS

District Rule	Adoption/Amendment Date
Rule 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations	11/5/2021
Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces	3/2/2018
Rule 1113 – Architectural Coatings	2/5/2016
Rule 1118.1 – Control of Emissions from Non-Refinery Flares*	1/4/2019
Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines*	4/5/2019
Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities*	11/2/2018
Rule 1146 and 1146.1 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters*	12/7/2018
Rule 1168 – Adhesive and Sealant Applications	10/6/2017
Facility-Based Mobile Source Measure for Commercial Airports	12/6/2019

* Only the non-RECLAIM portion of these rules is reflected in the baseline

- Rule 1109.1 (Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations)
  Rule 1109.1 was adopted on November 5, 2021, to establish NOx limits for petroleum refineries and facilities with operations related to petroleum refineries, which includes asphalt plants, biofuel plants, hydrogen production plants, facilities that operate petroleum coke calciners, sulfuric acid plants, and sulfur recovery plants at petroleum refineries. A robust Best Available Retrofit Control Technology (BARCT) analysis was conducted to establish the NOx limits for each class and category of equipment that included a technology assessment, cost-effectiveness, and incremental cost-effectiveness analysis. Emission reductions from Rule 1109.1 will continue through 2035 when the rule is fully implemented.

- Rule 1111 (Reduction of NOx Emissions from Natural Gas- Fired, Fan-Type Central Furnaces)
  Rule 1111 was originally adopted in 1978 to reduce NOx emissions from natural-gas-fired, fan-type central furnaces used for residential and commercial space heating. The rule establishes NOx limits while, in some instances, allowing manufacturers to pay a mitigation fee in lieu of complying with the limits. Rule 1111 was amended on March 2, 2018 to increase the mitigation fee and extend that compliance option until 2021, provide an exemption from the mitigation fee increase for units already committed in a contractual agreement, and prevent the installation of propane furnaces that are capable of being operated on natural gas without proper certification. Emission reductions from implementation of the 2018 amendment will continue until 2050, with the resulting reductions accounted for in the baseline. Rule 1111 was last amended in September 2023 to extend the compliance date for mobile home furnaces until 2025, resulting in a two-year delay in NOx reductions.

- Rule 1113 (Architectural Coatings)
  Rule 1113 was first adopted in 1977 and most recently amended on February 5, 2016, to limit the VOC content of architectural coatings used in the South Coast AQMD jurisdiction. Rule 1113 applies to any person who supplies, sells, markets, offers for sale, or manufactures any architectural coating. These coatings are used to enhance the appearance of and to protect stationary structures and their appurtenances, including homes, office buildings, factories, pavements, curbs, roadways, racetracks, bridges, other structures, on a variety of substrates. Coating-specific emission limits range from 50 to 730 g/L, depending on coating category. Rule 1113 has a small container exemption for architectural coatings in containers of less than one liter, unless otherwise specified. Emission reductions from Rule 1113 continued until 2021 when the rule was fully implemented.

- Rule 1118.1 (Control of Emissions from Non-Refinery Flares)
  Rule 1118.1 was adopted on January 4, 2019, to reduce NOx and VOC emissions from flaring produced gas, digester gas, landfill gas, and other combustible gases or vapors at non-refinery facilities and to encourage alternatives to flaring. Non-refinery facilities include oil and gas production facilities, wastewater treatment facilities, landfills, organic liquid handling facilities, and others. Rule 1118.1 establishes NOx and VOC emission limits, provisions for source testing,

monitoring, reporting, recordkeeping, and provides exemptions for low-use and low-emitting flares. Rule 1118.1 also encourages alternatives to flaring, such as energy generation, transportation fuels, or pipeline injection. Emission reductions from implementation of Rule 1118.1 began in 2022 and will continue until 2025.

- Rule 1134 (Emissions of Oxides of Nitrogen from Stationary Gas Turbines)
  Rule 1134 was adopted in 1989 to reduce NOx emissions from stationary gas turbines 0.3 megawatt (MW) and larger. In April 2019, Rule 1134 was amended to expand the applicability to include gas turbines installed after 1989 and those at Regional Clean Air Incentives Market (RECLAIM) facilities, lower NOx concentration limits for gas turbines based on a BARCT assessment, establish new ammonia slip limits and exemptions for low NOx gas turbines, clarify monitoring, recordkeeping, and reporting requirements, and exclude gas turbines located at electricity generating facilities, petroleum refineries, publicly-owned treatment works, landfills, and turbines utilizing landfill gas. Implementation of the 2019 amendment began in 2024 and will continue until 2027.

- Rule 1135 (Emissions of Oxides of Nitrogen from Electricity Generating Facilities)
  Rule 1135 was adopted in 1989 to reduce NOx emissions from electric generating facilities including electric power generating steam boiler systems, repowered units, and alternative electricity generating sources. Rule 1135 was amended in 2018 to establish BARCT limits for electricity generating facilities that are investor-owned electric utilities, publicly owned electric utilities, or have a generation capacity of at least 50 megawatts of electrical power. Implementation of the 2018 amendment began in 2020 and will continue until 2025.

- Rule 1146 and 1146.1 (Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters)
  Rule 1146 was adopted in 1988 and applies to boilers, steam generators, and process heaters of equal to or greater than 5 million Btu per hour used in all industrial, institutional, and commercial operations. Rule 1146.1 was adopted in 1990 and applies to boilers, steam generators, and process heaters that are greater than 2 million Btu per hour and less than 5 million Btu per hour. Rule 1146 establishes three groups of units based on the size or type of fuel used. Rules 1146 and 1146.1 were amended on December 7, 2018 to revise NOx limits to reflect BARCT. Emission reductions from implementation of Rule 1146 and Rule 1146.1 will continue until 2033.

- Rule 1168 (Adhesive and Sealant Applications)
  Rule 1168 was originally adopted in 1989 to reduce VOC emissions from adhesive and sealant applications. This rule establishes VOC limits for 59 categories of adhesives, adhesive primers, sealants, and sealant primers. Rule 1168 applies to products that are used during manufacturing at stationary sources and to products used by consumers that are not regulated by the CARB Consumer Product Regulation. In September 2017, Rule 1168 was amended to implement the 2016 AQMP Control Measure CTS-01: Further Emission Reductions from Coatings, Solvents,

Adhesives, and Sealants. The amendment includes revision of VOC content limits for various categories, reporting and labeling requirements, and clarification of rule language that distinguishes when products are regulated by the CARB Consumer Products Regulation. Rule 1168 was last amended in November 2022 to relax the stringency of certain limits due to a technology assessment, which demonstrated that previous limits were not feasible. In addition, the amendment prohibited the use of para-Chlorobenzotrifluoride (pCBtF) and tertiary-Butyl Acetate (t-BAc), which are significantly more toxic than previously thought, resulting in some VOC limits being increased to accommodate less toxic substitutes with marginally higher VOC content while reformulated products with less toxic material are under development. Emission reductions from implementation of Rule 1168 will continue until 2028.

- Facility-Based Mobile Source Measure for Commercial Airports
  The Facility-Based Mobile Source Measure (FBMSM) for Commercial Airports, in the form of Memoranda of Understandings (MOUs) with five commercial airports, controls non-aircraft mobile sources at commercial airports and was adopted by South Coast AQMD on December 6, 2019. MOUs were executed with Los Angeles International Airport, John Wayne Airport, Hollywood Burbank Airport, Ontario International Airport, and Long Beach Airport. All five airports developed their own measures to reduce non-aircraft emissions. The measures cover ground support equipment, heavy-duty trucks, and shuttle buses. Implementation of the MOUs will continue through 2031.

Recently Adopted South Coast AQMD Stationary Source Rules

As outlined in the introduction of this chapter, some South Coast AQMD rules are not reflected in the baseline emissions. Instead, their reductions are reflected as line item adjustments. There are two types of such additional reductions from stationary sources considered in this Plan:

1) RECLAIM landing rules; and
2) Rules for non-RECLAIM sources adopted since the development of the 2022 AQMP.

An explanation of these additional reductions as well as summaries of the applicable rules are provided in the following sections.

RECLAIM Landing Rules

RECLAIM is a market-based, cap-and-trade program for facilities that emit greater than or equal to 4 tons per year of NOx or SOx. South Coast AQMD has focused extensive rulemaking efforts to transition the RECLAIM universe to a conventional command-and-control regulatory framework by 2026 for NOx, although the final structure of RECLAIM is still under evaluation. In addition, these rules require RECLAIM facilities ~~are subject to an expedited schedule~~ to implement BARCT no later than December 31, 2023, pursuant to AB 617.

RECLAIM sources are subject to NOx and SOx emission allocation caps specified in Rule 2002 - Allocations for Oxides of Nitrogen and Oxides of Sulfur. Rule 2002 was amended in December 2015 to implement a NOx allocation cap "shave" of 12 tons per day by 2022. The NOx shave is reflected in the baseline. However, the reductions from most landing rules associated with RECLAIM sources were not accounted for in the baseline. This is because, at the time of the 2022 AQMP development, it was uncertain whether those reductions would be considered part of the RECLAIM NOx shave. To avoid double counting, those reductions from landing rules were assumed to be included in the RECLAIM NOx shave in the 2022 AQMP. However, subsequent analysis revealed that the landing rules achieve reductions that exceed the requirements of the RECLAIM NOx shave over a longer timeframe. Given the maturity of the RECLAIM NOx shave in 2022, any reductions in excess of the 2022 reductions are considered new reductions and are presented as a line item adjustment.

In total, RECLAIM landing rules account for 2.88 tons per day of further NOx emission reductions beyond the 2031 baseline for the South Coast Air Basin. There are no reductions associated with RECLAIM landing rules in Coachella Valley. Table 4-2 summarizes the RECLAIM landing rules included in the line item adjustment and an overview of rules not discussed in the previous section is provided below.

TABLE 4-2
SUMMARY OF SOUTH COAST AQMD RECLAIM LANDING RULES INCLUDED IN THE LINE ITEM ADJUSTMENT

District Rule	Adoption/Amendment Date
Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines	11/1/2019
Rule 1118.1 – Control of Emissions from Non-Refinery Flares	1/4/2019
Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines	4/5/2019
Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities	11/2/2018
Rule 1146 and 1146.1 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters	12/7/2018
Rule 1146.2 - Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters	12/7/2018
Rule 1147 – NOx Reductions from Miscellaneous Sources	5/6/2022
Rule 1147.1 – NOx Reductions from Aggregate Dryers	8/6/2021
Rule 1147.2 – NOx Reductions from Metal Melting and Heating Furnaces	4/1/2022
Rule 1153.1 – Emissions of Oxides of Nitrogen from Commercial Food Ovens	8/4/2023

- Rule 1110.2 (Emissions from Gaseous- and Liquid-Fueled Engines)
  Rule 1110.2 was adopted in 1990 to regulate NOx and VOCs from stationary and portable engines over 50 rated brake horsepower. Rule 1110.2 was amended on November 1, 2019 to remove exemptions for RECLAIM facilities and require engines at all facilities to comply with NOx and VOC emissions limits. The implementation schedule for RECLAIM facilities established in Rule 1100 - Implementation Schedules for NOx Facilities requires that most stationary engines comply with the NOx limits in Rule 1110.2 by December 31, 2023. The tier phase-out schedule for portable diesel engines is specified by CARB's Airborne Toxic Control Measure, with implementation dates beyond 2027 depending on the engine certification. Emission reductions from implementation of Rule 1110.2 began in 2020 and will continue through 2029.

- Rule 1146.2 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters)
  Rule 1146.2 was adopted in 1998 to reduce NOx emissions from natural gas-fired water heaters, boilers, and process heaters that have a rated heat input capacity less than or equal to 2,000,000 BTU per hour. Rule 1146.2 classifies Type 1 Units as large water heaters and small boilers or process heaters with a rated heat input capacity less than or equal to 400,000 BTU per hour, and Type 2 Units are defined as units with a rated heat input capacity greater than 400,000 BTU per hour to 2,000,000 BTU per hour. Rule 1146.2 does not regulate residential gas-fired tank type water heaters which are regulated under South Coast AQMD Rule 1121. Rule 1146.2 was amended on December 7, 2018 to update NOx emission limits to reflect BARCT for RECLAIM and non-RECLAIM facilities. Emission reductions from implementation of Rule 1146.2 began in 2022 and continued through 2023.

- Rule 1147 (NOx Reductions from Miscellaneous Sources)
  Rule 1147 was adopted in 2008 to reduce NOx emissions from gaseous and liquid fuel fired combustion equipment. Under Rule 1147, equipment requiring South Coast AQMD permits that are not regulated by other NOx rules must meet a NOx emission limit depending upon equipment type and process temperature. Rule 1147 was amended in May 2022 to update NOx emission limits and include new CO limits to reflect BARCT. The amendment established additional combustion equipment categories and compliance schedules. Compliance dates for emission limits are based on the date of equipment manufacture and emission limits are applicable to older equipment first. Owners or operators of units that are not in compliance with the Rule 1147 NOx limits must submit applications to meet the emission limits by July 1, 2023, or July 1 of the year after the burner becomes 12 years old, whichever is later. Emission reductions from implementation of Rule 1147 began in 2024 and will continue through 2059.

- Rule 1147.1 (NOx Reductions from Aggregate Dryers)
  Rule 1147.1 was adopted on July 2, 2021, to reduce NOx emissions from gaseous fuel-fired aggregate dryers. This rule applies to owners and operators of aggregate dryers with NOx emissions greater than or equal to one pound per day with a rated heat input greater than 2,000,000 BTU per hour. Rule 1147.1 updated NOx emission limits for aggregate dryers previously regulated under Rule 1147 to represent BARCT. Compared to Rule 1147, Rule 1147.1 maintains a similar compliance schedule structure and requirements for monitoring and recordkeeping. Emission reductions from implementation of Rule 1147.1 begin in 2025 and will continue through 2057.

- Rule 1147.2 (NOx Reductions from Metal Melting and Heating Furnaces)
  Rule 1147.2 was adopted on April 1, 2022, to reduce NOx emissions from Metal Melting Furnaces, Metal Heat Treating Furnaces, Metal Heating Furnaces, and Metal Forging Furnaces. Rule 1147.2

established NOx limits for facilities previously subject to Rule 1147. Emission reductions from implementation of Rule 1147.2 begin in 2026 and will continue through 2057.

- Rule 1153.1 (Emissions of Oxides of Nitrogen from Commercial Food Ovens)
  Rule 1153.1 was adopted on November 7, 2014, to reduce NOx emissions from gaseous and liquid fuel-fired Commercial Food Ovens. Rule 1153.1 applies to facilities that operate commercial food ovens with a rated heat input capacity equal to or greater than 325,000 British thermal units (Btu) per hour which are used to prepare food or products for making beverages for human consumption. Rule 1153.1 was amended on August 4, 2023 to update the NOx emission limits to reflect BARCT and to establish future effective dates for zero emission limits for certain categories of commercial food ovens. Rule 1153.1 establishes NOx emission limits in two phases. Phase I establishes a NOx limit of 15 parts per million by volume (ppmv) for tortilla ovens heated solely by infrared burners and a NOx limit of 30 ppmv for all other commercial food oven categories. Phase II establishes zero emission limits for bakery ovens and cooking ovens rated less than or equal to three million Btu per hour, indirect-fired bakery ovens, and smokehouses. Emission reductions from implementation of Rule 1153.1 began in 2024 and will continue to 2036.

Recently Adopted Rules Affecting Non-RECLAIM Sources

Stationary source rules affecting non-RECLAIM sources, amended from October 2020 through 2023, are not reflected in the baseline emissions. These include Rules 1111, 1147, 1147.1, 1147.2, 1150.3, 1153.1, 1168, and 1179.1. The emission reductions associated with these recently adopted rules are presented as a line item adjustment in this Plan and accounted for to demonstrate attainment. Because the Rule 1147 series and Rule 1153.1 are RECLAIM landing rules that affect both RECLAIM and non-RECLAIM sources, only the reductions affecting non-RECLAIM sources are included in this line item adjustment.

While most rule amendments resulted in additional emission reductions, amendments to Rules 1111 and 1168 resulted in emission increases. The emission increases associated with Rule 1111 are due to extending the compliance date for mobile home furnaces until 2025, while the increases associated with Rule 1168 are to accommodate reformulation of adhesive and sealants without pCBtF and t-Bac, which have been identified as potential carcinogens. In total, recently adopted rules for non-RECLAIM sources contribute 0.34 tons per day and 0.01 tons per day of further NOx emission reductions beyond the 2031 baseline for the South Coast Air Basin and Coachella Valley, respectively. Rules that were not discussed in previous sections are summarized below.

TABLE 4-3
SUMMARY OF SOUTH COAST AQMD STATIONARY SOURCE RULES FOR NON-RECLAIM SOURCES INCLUDED IN THE LINE ITEM ADJUSTMENT

District Rule	Adoption/Amendment Date
Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces	9/1/2023
Rule 1147 – NOx Reductions from Miscellaneous Sources*	5/6/2022
Rule 1147.1 – NOx Reductions from Aggregate Dryers*	8/6/2021
Rule 1147.2 – NOx Reductions from Metal Melting and Heating Furnaces*	4/1/2022
Rule 1150.3 – Emissions of Oxides of Nitrogen from Combustion Equipment at Landfills	2/5/2021
Rule 1153.1 – Emissions of Oxides of Nitrogen from Commercial Food Ovens*	8/4/2023
Rule 1168 – Adhesive and Sealant Applications	11/4/2022
Rule 1179.1 – Emission Reductions from Combustion Equipment at Publicly Owned Treatment Works Facilities	10/2/2020

* These rules apply to both RECLAIM and non-RECLAIM sources. For a discussion of these rules, refer to the previous section.

- Rule 1150.3 (Emissions of Oxides of Nitrogen from Combustion Equipment at Landfills)
  Rule 1150.3 was adopted on February 5, 2021, to reduce NOx emissions from boilers, process heaters, and turbines located at Municipal Solid Waste (MSW) landfills and landfill gas to energy (LFGTE) facilities. Rule 1150.3 established BARCT requirements for boilers and process heaters with a rated heat input capacity greater than 2 MMBtu/hr and turbines rated less than 0.3 MW, located at a MSW landfill or LFGTE facility, which are permitted to fire landfill gas, including dual fuel units that are permitted to fire landfill gas and another fuel. Rule 1150.3 also applies to turbines rated greater than or equal to 0.3 MW located at an MSW landfill or LFGTE facility. Rule 1150.3 includes other gaseous or liquid fuel turbines since Rule 1134 requirements (which regulate turbines) specifically exclude turbines rated greater than or equal to 0.3 MW located at landfills or fueled by landfill gas. Emission reductions from implementation of Rule 1150.3 began in 2021 and will continue through 2057.

- Rule 1179.1 (Emission Reductions from Combustion Equipment at Publicly Owned Treatment Works Facilities)
  Rule 1179.1 was adopted in October 2020 to establish NOx and VOC emission limits for boilers, process heaters, engines, and turbines at Publicly Owned Treatment Works (POTW) facilities burning digester gas or those units capable of burning digester and natural gas. Rule 1179.1 was developed to establish BARCT requirements for combustion equipment located at POTWs using

digester gas and contains provisions applicable to POTWs, excluding start-up and shutdown periods. Emission limits for these units are the same as those in Rules 1146 and 1146.1 for boilers and heaters and Rule 1110.2 for engines. Emission reductions from implementation of R1179.1 were achieved in 2020.

CARB's Adopted Rules and Programs

Key Mobile Source Regulations and Programs Providing Emission Reductions

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

- Stringent emissions standards that minimize emissions from new vehicles and equipment;
- In-use programs that target the existing fleet and require the use of the cleanest vehicles and emissions control technologies;
- Cleaner fuels that minimize emissions during combustion; and,
- Incentive programs that remove older, dirtier vehicles and equipment and replace those vehicles with the cleanest technologies.

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

In 1998, CARB identified diesel particulate matter as a toxic air contaminant. Since then, CARB adopted numerous regulations aimed at reducing exposure to diesel particulate matter while concurrently providing reductions in oxides of nitrogen (NOx) from freight transport sources like heavy-duty diesel trucks, transportation sources like passenger cars and buses, and off-road sources like large construction equipment. Phased implementation of these regulations will continue to produce emission reduction benefits through 2037 and beyond, as the regulated fleets are retrofitted, and as older and dirtier portions of the fleets are replaced with newer and cleaner models at an accelerated pace.

Further, CARB and District staff work closely on identifying and distributing incentive funds to accelerate cleanup of vehicles and engines. Key incentive programs include: Low Carbon Transportation, Air Quality Improvement Program, VW Mitigation Trust, Community Air Protection, Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program), Goods Movement Program, Clean Off-Road Equipment (CORE) and Funding Agricultural Replacement Measures for Emission Reductions (FARMER). These incentive-based programs work in tandem with regulations to accelerate deployment of cleaner technology.

Light-Duty Vehicles

Figure 4-1 illustrates the trend in CARB smog forming emission standards for light-duty vehicles. Cars are 99% cleaner than they were in 1975 due to CARB's longstanding light-duty mobile source program. Since setting the nation's first motor vehicle exhaust emission standards in 1966 that led to the first pollution controls, California has dramatically tightened emission standards for light-duty vehicles. In 1970, CARB required auto manufacturers to meet the first standards to control NOx emissions along with hydrocarbon emissions. The simultaneous control of emissions from motor vehicles and fuels led to the use of cleaner-burning reformulated gasoline (RFG) that has removed the emissions equivalent of 3.5 million vehicles from California's roads. Since CARB first adopted it in 1990, the Low Emission Vehicle Program (LEV and LEV II) and Zero-Emission Vehicle (ZEV) Program have resulted in the production and sales of hundreds of thousands of zero emission vehicles (ZEVs) in California.

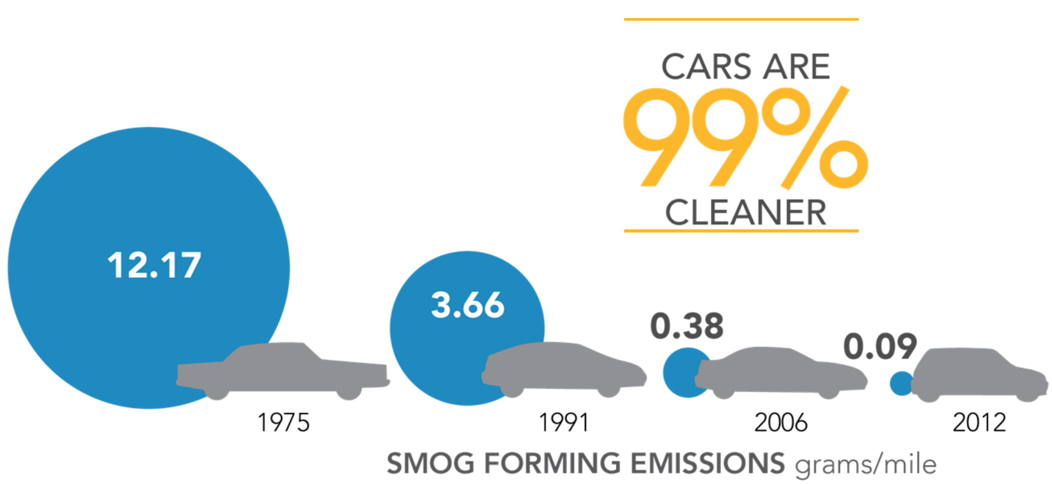


FIGURE 4-1
LIGHT-DUTY EMISSION STANDARDS

As a result of these efforts, light-duty vehicle emissions in the Coachella Valley ozone nonattainment areas have been reduced significantly since 1990 and will continue to go down through 2031. From the 2018 baseline, light-duty vehicle NOx emissions are projected to decrease by 60% in 2031. Key light-duty programs include Advanced Clean Cars (ACC), Advanced Clean Cars II (ACC II), On-Board Diagnostics, Reformulated Gasoline, Incentive Programs, and the Enhanced Smog Check Program.

1. Advanced Clean Cars

Light- and medium-duty vehicles are currently regulated under California's Advanced Clean Cars (ACC) program, which includes the Low Emission Vehicle III (LEV III) and ZEV programs. CARB's ACC Program, first adopted in January 2012, is a pioneering approach of a 'package' of regulations that - although separate in construction - are related in terms of the synergy developed to address both ambient air quality needs and climate change. The ACC program combines the control of smog, soot causing pollutants and greenhouse gas (GHG) emissions into a single coordinated package of requirements, originally adopted for model years 2015 through 2025.

CARB's groundbreaking ACC program is now providing the next generation of emission reductions in California, and ushering in a new zero emission passenger transportation system. ACC II, which was adopted by the CARB Board in August 2022, imposes the next level of low-emission and zero emission vehicle standards for model years 2026-2035 that will contribute to meeting federal ambient air quality ozone standards and California's carbon neutrality targets. The ACC II regulations will rapidly scale down emissions of light-duty passenger cars, pickup trucks and SUVs starting with the 2026 model year. The ACC II regulations also take the State's already growing zero emission vehicle market and robust motor vehicle emission control rules and augments them to meet more aggressive tailpipe emissions standards and ramp up to 100% zero emission vehicles by 2035 for all new passenger cars, trucks and SUVs sold in California. ACC II is two pronged: it will drive the sales of ZEVs and the cleanest-possible plug-in hybrid-electric vehicles (PHEV) to 100% through the ZEV Regulation, while also reducing smog-forming emissions from new internal combustion engine vehicles through the Low Emission Vehicle (LEV) IV Regulation.

The success of the ACC program is evident: California is the world's largest market for ZEVs, with a wide variety now available at lower price points, attracting new consumers. In April 2023, California's target of 1.5 million ZEVs on the road by 2025 was met two years early, facilitated in part by $2 billion in ZEV incentive funding and rebates that have been distributed to Californians through programs like the Clean Vehicle Rebate Project and Clean Cars 4 All. Zero emission vehicle commercialization in the light-duty sector is well underway. Longer-range battery electric vehicles are coming to market that are cost-competitive with gasoline fueled vehicles and hydrogen fuel cell vehicles are now also seeing significant sales. Autonomous and connected vehicle technologies are being installed on an increasing number of new car models. A growing network of retail hydrogen stations is now available, along with a rapidly growing battery charger network.

In support of California's transition to ZEVs, in 2020, Governor Newsom signed Executive Order N-79-20, which established a goal that 100% of California sales of new passenger cars and trucks be zero emission by 2035. With this order and many other recent actions, Governor Newsom acknowledged that clean air and climate action remain priorities for California and require bold action, thereby helping to drive CARB regulations and the State of California's many efforts towards zero emissions.

2. On Board Diagnostics (OBD)

OBD systems serve an important role in helping to ensure that engines and vehicles maintain low emissions throughout their full life. OBD systems are designed to identify when a vehicle's emission control systems or other emission-related computer-controlled components are malfunctioning, causing emissions to be elevated above the vehicle manufacturer's specifications. Many states currently use the OBD system as the basis for passing and failing vehicles in their inspection and maintenance programs, as is exemplified by California's Smog Check program.

California's first OBD regulation required manufacturers to monitor some of the emission control components on vehicles starting with the 1988 model year. In 1989, CARB adopted OBD II, which required 1996 and subsequent model year passenger cars, light duty trucks, and medium duty vehicles and engines to be equipped with second generation OBD systems. The Board has modified the OBD II regulation in regular updates since initial adoption to address manufacturers' implementation concerns and, where needed, to strengthen specific monitoring requirements. Most recently, the Board amended the regulation in 2021 to require manufacturers to implement Unified Diagnostic Services (UDS) for OBD communications, which will provide more information related to emissions-related malfunctions that are detected by OBD systems, improve the usefulness of the generic scan tool to repair vehicles, and provide needed information on in-use monitoring performance. UDS implementation would be required for all 2027 and subsequent model year light- and medium-duty vehicles and engines, as well as some heavy-duty vehicles and engines.

3. California Enhanced Smog Check Program

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

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

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

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

4. Reformulated Gasoline (CaRFG)

Since 1992, CARB has been regulating the formulation of gasoline through the California Reformulated Gasoline program (CaRFG). The CaRFG program has been implemented in three phases resulting in California gasoline being the cleanest in the world. California's cleaner-burning gasoline regulation is one of the cornerstones of the State's efforts to reduce air pollution and cancer risk. Reformulated gasoline is fuel that meets specifications and requirements established by CARB, which reduced motor vehicle toxics by about 40% and reactive organic gases by about 15%. The results from cleaning up fuel can have an immediate impact as soon as it is sold in the State. Vehicle manufacturers design low-emission emission vehicles to take full advantage of cleaner-burning gasoline properties.

5. Clean Miles Standard

The Clean Miles Standard (CMS) program, which was adopted by CARB in 2021 and will be implemented by the California Public Utilities Commission (CPUC), is a regulation to reduce GHG emissions from ride-hailing services offered by transportation network companies (TNCs), on a per-passenger mile basis, and promote electrification of the fleet by setting an electric vehicle miles travelled (eVMT) target. TNCs provide on-demand rides through a technology-based platform that connects passengers with drivers using personal or rented vehicles.

CMS includes two annual targets – an eVMT target as well as a GHG target in the metric of g CO2/PMT. The eVMT target would require TNCs to achieve 90% eVMT by 2030. The GHG target would require TNCs to achieve 0 g CO2/PMT by 2030 through electrification as well as other strategies, including increasing shared rides on their platform, improving operational efficiency (route planning and reduced mileage without passengers), and obtaining optional GHG credits. Optional GHG credits may be requested by the TNCs and approved by the CPUC for ride-hailing trips that are connected to mass transit through a verified booking process, and for investing in bicycle and sidewalk infrastructure projects that support active transportation.

6. Incentive Programs

There are many different incentive programs focusing on light-duty vehicles that produce extra emission reductions beyond CARB's regulations. Incentive programs encourage both the early retirement of dirty, older cars and the purchase of newer, lower-emitting vehicle engines and technologies. The State, in partnership with the local air districts, has a well-established history of using incentive programs to advance technology development and deployment, and to achieve early emission reductions. Since 1998, CARB and California's local air districts have been administering incentive funding to accelerate the deployment and turnover to cleaner vehicles, starting with the Moyer Program. In recognition of the key role that incentives play in complementing State and local air quality regulations to reduce emissions, the scope and scale of California's air quality incentive programs has since greatly expanded. Each of CARB's incentive programs has its own requirements, goals, and categories of eligible projects that collectively provide for a diverse and complex incentives portfolio. CARB uses this portfolio approach to incentives to accelerate development and early commercial deployment of the cleanest mobile source technologies and to improve access to clean transportation.

A. Low Carbon Transportation Investments and Air Quality Improvement Program (Clean Transportation Incentives)

California's Low Carbon Transportation Investments and the Air Quality Improvement Program form CARB's major incentive funding program, which works in concert with the State's larger portfolio of clean transportation investments. Together, the Low Carbon Transportation Investments and Air Quality Improvement Program are known as the Clean Transportation Incentives program; they provide mobile source incentives to reduce greenhouse gas, criteria pollutant, and toxic air contaminant emissions through the deployment of advanced technology and clean transportation in the light-duty and heavy-duty sectors.

The Clean Transportation Incentives Program is part of California Climate Investments, and is designed to accelerate the transition to advanced technology low carbon freight and passenger transportation, with a priority on providing health and economic benefits to California's most disadvantaged communities, and with a focus on increasing deployment of zero emission vehicles and equipment wherever possible. Low Carbon Transportation Investments are supported by California's Cap-and-Trade auction proceeds. The Air Quality Improvement Program (AQIP) is a mobile source incentive program that focuses on reducing criteria pollutant and diesel particulate emissions with concurrent GHG reductions. AQIP is appropriated from the Air Quality Improvement Fund.

Each year, the legislature appropriates funding to CARB for the Low Carbon Transportation Investments and Air Quality Improvement Programs, and allocations are used to fund multiple programs in the passenger vehicle, on-road heavy-duty, and off-road vehicle sectors, including: the Clean Vehicle Rebate Project (CVRP); Enhanced Fleet Modernization Program and Plus-Up Pilot Project (Clean Cars 4 All); and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP). For the FY 2023-24 budget, the Clean Transportation Incentive Program was allocated $623.6 million across all mobile source categories, with $80 million allocated for light-duty vehicle investments. CARB's Clean Transportation Equity and Light-Duty Vehicle Investments include the following projects:

i. Clean Vehicle Rebate Project (CVRP)

As one of the programs funded through the Clean Transportation Incentives program, CVRP was a vehicle purchasing incentives program that provided consumer rebates to reduce the price for new ZEV purchases, and was designed to offer vehicle rebates on a first-come, first-serve basis for light-duty ZEVs, plug-in hybrid electric vehicles, and zero emission motorcycles. CVRP was recently phased out, but was in place from 2009 through November 2023 and provided consumers up to $7,500 to purchase or lease a new PHEV, battery electric vehicle (BEV), or a fuel cell electric vehicle (FCEV).

ii. Clean Cars 4 All (CC4A)

Clean Cars 4 All (formerly known as the Enhanced Fleet Modernization Program Plus-Up Pilot Project) is another one of the Clean Transportation Incentives programs for passenger vehicles. CC4A provides incentives for lower-income consumers living in and near disadvantaged communities who scrap their old vehicles and purchase new or used hybrid, plug-in hybrid, or zero emission vehicle replacement vehicles. Additionally, buyers of PHEVs and BEVs are also eligible for home charger incentives or prepaid charge cards if home charger installation is not an option. The budget for FY 2023-24 included $28 million Statewide, for CARB and District CC4A programs.

iii. -Financing Assistance for Lower Income Consumers

Financing Assistance for Lower Income Consumers provides financial resources to help lower-income Californians purchase advanced clean vehicles. The project offers vehicle price buy-downs (grants) at the point of sale, guarantees fair financing through lower-interest loans, and provides home charger incentives or portable chargers and prepaid charge cards where there are home charger installation barriers. The budget for FY 2023-24 included $28 million for this program.

iv. -California E-Bike Incentive Project

The California E-Bike Incentive Project provides voucher incentives to low-income California residents for the purchase of electric bikes (e-bikes) including cargo e-bikes and adaptive e-bikes. The project also commits a portion of the project funding to e-bike safety, education, and training. The budget for FY 2023-24 included $18 million for the California E-Bike Incentive Project.

v. -Access Clean California

Access Clean California helps streamline access to California Climate Investments' consumer-facing, equity-focused clean transportation and clean energy incentive programs for low-income and disadvantaged communities. The project also provides resources to nonprofits, community-based organizations, and similar grassroots organizations to help families in low-income and disadvantaged communities learn about, apply for, and participate in clean transportation and clean energy incentive programs. The budget for FY 2023-24 included $5 million for the Access Clean California program.

vi. -Sustainable Community-Based Transportation Equity Mobility Projects

Sustainable Community-Based Transportation Equity Mobility Projects: Supports the transportation needs (other than vehicle ownership) of low-income residents and those living in low-income, disadvantaged, and tribal communities. Currently, CARB's Sustainable Community-Based Transportation Equity Mobility Projects includes Clean Mobility Options (CMO), Clean Mobility in Schools (CMIS), and the Sustainable Transportation Equity Project (STEP). Clean Mobility in Schools Projects are located within disadvantaged communities, and are intended to encourage and accelerate the deployment of new zero emission school buses, school fleet vehicles, passenger cars, lawn and garden equipment, and can incorporate alternative modes of transportation like transit vouchers, active transportation elements, and bicycle share programs. Some of the Clean Mobility Options programs that CARB funds include the Clean Mobility Options Voucher Pilot Program (CMO). CMO provides voucher-based funding for low-income, tribal, and disadvantaged communities to fund zero emission shared and on-demand services such as carsharing, ridesharing, bike sharing, and innovative transit services. STEP is a new transportation equity pilot program that funds zero emission carsharing, bike sharing, public transit, and shared mobility subsidies, among other projects. The budget for FY 2023-24 included $50 million for Sustainable Community-Based Transportation Equity Mobility Projects.

vii. -Sustainable Community-Based Transportation Equity Planning and Capacity Building Project

The Sustainable Community-Based Transportation Equity Planning and Capacity Building Project increases transportation equity in disadvantaged and low-income communities by improving the local understanding of residents' transportation needs, helping develop organizational and community capacity building so communities are ready to plan for clean transportation solutions, and preparing communities to implement community-identified projects that fill transportation gaps and improve clean transportation access. The budget for FY 2023-24 included $10 million for Sustainable Community-Based Transportation Equity Planning and Capacity Building Projects.

B. Moyer Program

The Moyer Program, funded by dedicated revenue from the Department of Motor Vehicle's (DMV) smog abatement fee and a fee on the purchase of new tires, provides approximately $60 million in grant funding annually through local air districts for cleaner-than-required engines and equipment. Since 1998, approximately $1.6 billion has been allocated to date. In the light-duty sector, the Moyer Program encourages voluntarily retirement of older, more polluting passenger vehicles through a Voluntary Accelerated Vehicle Retirement Program (VAVR), which is a car scrappage or old vehicle buy-back program that encourages the accelerated removal of higher-polluting vehicles that have passed their biennial Smog Check Test inspection, to be replaced with newer, cleaner vehicles or alternative transportation options.

C. Consumer Assistance Program

California's voluntary vehicle retirement program, the Consumer Assistance Program (CAP), is administered by BAR and provides low-income consumers repair assistance including up to $1,200 in emissions-related repairs if their vehicle fails its biennial Smog Check Test inspection, and/or up to $1,500 per vehicle for retiring operational vehicles at BAR-contracted dismantler sites.

D. Other Incentive Programs

Senate Bill (SB) 1275, signed into law in 2014, established the Charge Ahead California Initiative with the goals of placing one million zero emission and near-zero emission vehicles in California by 2023 to establish a self-sustaining market and increase access to these vehicles for all Californians, including priority populations. CARB's clean mobility and light-duty vehicle investments are designed to support the long-term transformation of California's fleet to meet the State's ZEV deployment goals, and to ensure that this transformation occurs in an equitable manner. The investments include vehicle purchase incentives and clean mobility investments, both of which incorporate and are supported by outreach, technical assistance, and workforce training and development. CARB also funds a suite of transportation equity pilot projects aimed at increasing access to clean transportation and mobility options for priority populations in disadvantaged and low-income communities, and for lower-income households. This includes clean vehicle ownership projects, clean mobility options, streamlining access to funding and financing opportunities, and increasing community outreach, education and exposure to clean technologies. These projects exemplify the importance of understanding the unique needs across communities and provide lessons for how we most directly address barriers to collectively achieve our equity, air quality, and climate goals.

Medium- and Heavy-Duty On-Road Vehicles

Due to the benefits of CARB's longstanding heavy-duty mobile source program, heavy-duty on-road vehicle emissions in the Coachella nonattainment area have been reduced significantly since 1990 and will continue to decrease through 2031. From the 2018 baseline, medium- and heavy-duty NOx emissions are projected to decrease by over 79% in 2031. Key programs contributing to those reductions include new heavy-duty engine standards including those in the Heavy-Duty Omnibus Regulation, the Truck and Bus Regulation, the Clean Truck Check (Heavy-Duty Inspection and Maintenance Program), the Advanced Clean Trucks and Advanced Clean Fleets regulations, cleaner diesel fuel requirements, and incentive programs.

1. Heavy-Duty Engine Standards

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

2. Heavy-Duty Engine and Vehicle Omnibus Regulation

In 2021, CARB comprehensively overhauled how NOx emissions from new heavy-duty engines are regulated in California through the adoption of the Heavy-Duty Engine and Vehicle Omnibus Regulation (Omnibus Regulation) which reduces NOx emissions from the engines in medium- and heavy-duty vehicle classes. The Omnibus Regulation includes NOx certification emission standards as low as 0.02 g/bhp-hr in future years, new optional NOx emissions standards, and in-use standards that significantly reduce tailpipe NOx emissions during most vehicle operating modes such as high-speed steady-state, transient, low load urban driving, and idling modes of operation. Additionally, revisions to the emissions warranty, useful life, emissions warranty and reporting information and corrective action procedures, and durability demonstration procedures provide additional emission benefits by encouraging more timely repairs to emission-related malfunctions and encouraging manufacturers to produce more durable emission control components, thereby reducing the rate at which engine emission controls fail and emissions increase.

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

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

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

In 2017, California passed legislation ensuring compliance with the Truck and Bus Regulation through the California DMV vehicle registration program. Starting January 1, 2020, DMV verifies compliance to ensure that vehicles subject to the Truck and Bus Regulation meet the requirements prior to obtaining DMV vehicle registration. The law requires the DMV to deny registration for any vehicle that is non-compliant or has not reported to CARB as compliant or exempt from the Truck and Bus Regulation.

4. Clean Truck Check (Heavy-Duty Inspection and Maintenance Program)

To ensure heavy-duty trucks remain clean in-use, CARB adopted in 2021 the Heavy-Duty Inspection and Maintenance Regulation, now known as the Clean Truck Check, which requires periodic demonstrations that vehicles' emissions control systems are properly functioning in order to legally operate within the State. The program was developed in accordance with Senate Bill 210 which directed CARB to develop and implement a comprehensive heavy-duty vehicle inspection and maintenance regulation to ensure that vehicles' emissions control systems are properly functioning when traveling on California's roadways. This regulation is designed to achieve criteria emissions reductions by ensuring that malfunctioning emissions control systems are repaired in a timely fashion.

The program began implementation in 2023 with roadside emissions monitoring using CARB's Portable Emissions Acquisition System (PEAQS), with additional requirement phasing in in 2024 and into the future. Through an integrated strategy combining roadside emissions monitoring to screen for potential high-emitting vehicles, improved emissions testing procedures using on-board diagnostics data, emissions checks and data reporting at required intervals, and compliance verification requirements for freight contractors, seaports, and railyards, the regulation is one of the most impactful regulations approved in recent CARB history.

5. Advanced Clean Truck Regulation (ACT)

In June 2020, CARB adopted the Advanced Clean Trucks regulation, a first of its kind regulation requiring medium- and heavy-duty manufacturers to produce ZEVs as an increasing portion of their sales beginning in 2024. The Advanced Clean Trucks regulation is a manufacturers ZEV sales requirement and a one-time reporting requirement for large entities and fleets. This regulation is expected to result in roughly 100,000 heavy-duty ZEVs operating on California's roads by 2030 and nearly 300,000 heavy-duty ZEVs by 2035. With the adoption of the Advanced Clean Trucks regulation, CARB Resolution 20-19 set the following targets for transitioning California's heavy-duty vehicle sectors to ZEVs:

- 100 percent zero emission drayage, last mile delivery, and government fleets by 2035;
- 100 percent zero emission refuse trucks and local buses by 2040;
- 100 percent zero emission-capable vehicles in utility fleets by 2040; and
- 100 percent zero emission everywhere else, where feasible, by 2045.

As mentioned earlier, the Governor signed Executive Order N-79-20 in September 2020, which directs CARB to adopt regulations to transition the State's transportation fleet to ZEVs. This includes transitioning the State's drayage fleet to ZEVs by 2035 and transitioning the State's truck and bus fleet to ZEVs by 2045 where feasible.

6. Advanced Clean Fleets (ACF)

The Advanced Clean Fleets (ACF) Regulation was adopted in 2023, and was developed to works in conjunction with the Advanced Clean Trucks regulation. ACT helps ensure that ZEVs are available for sale while ACF accelerates ZEV adoption in the medium- to heavy-duty sectors and for light-duty package delivery trucks by setting zero emission requirements for fleets. The ACF regulation targets drayage trucks, public fleets, and other high priority fleets with 50 or more trucks or entities with trucks and $50 million in annual revenues. This effort is part of a comprehensive strategy to achieve a ZEV truck and bus fleet by 2045 everywhere feasible, and significantly earlier for certain well-suited market segments such as last mile delivery, drayage, and government fleets.

7. Innovative Clean Transit (ICT) and Zero Emission Airport Shuttle Regulation

CARB has also adopted fleet rules to drive the adoption and use of zero emission technologies. In addition to the ACF Regulation that was described above, there are a suite of regulations driving zero emission technologies in certain well-suited market segments. The Innovative Clean Transit regulation was the first of these programs.[30] It was adopted in December 2018 and requires all public transit agencies to gradually transition to a 100 percent zero emission bus fleet and encourages them to provide innovative first- and last-mile connectivity and improved mobility for transit riders. Beginning in 2029, 100 percent of new purchases by transit agencies must be Zero Emission Buses, with a goal for full transition by 2040. It applies to all transit agencies that own, operate, or lease buses in California with a GVWR greater than 14,000 lbs. It includes standard, articulated, over-the-road, double-decker, and cutaway buses.

The Zero-Emission Airport Shuttle Regulation, adopted in June 2019, requires airport shuttle operators in California to transition to 100 percent ZEV technologies. Airport shuttle operators must begin adding zero emission shuttles to their fleets in 2027, and complete the transition to ZEVs by the end of 2035. The regulation applies to airport shuttle operators who own, operate, or lease vehicles at any of the 13 California airports regulated under this rule, including Palm Springs International Airport (PSP), Los Angeles International Airport (LAX), John Wayne Orange County Airport (SNA), Hollywood Burbank Airport (BUR), Ontario International Airport (ONT), and Long Beach Airport (LGB).

8. Heavy-Duty On-Board Diagnostics (HD OBD)

OBD systems serve an important role in helping to ensure that engines and vehicles maintain low emissions throughout their full life. OBD systems monitor virtually all emission controls on gasoline and diesel engines, including catalysts, particulate matter (PM) filters, exhaust gas recirculation systems, oxygen sensors, evaporative systems, fuel systems, and electronic powertrain components as well as other components and systems that can affect emissions when malfunctioning. The systems also provide specific diagnostic information in a standardized format through a standardized serial data link on-board the vehicles. The use and operation of OBD systems ensure reductions of in-use motor vehicle and motor vehicle engine emissions through improvements in emission system durability and performance.

The Board originally adopted comprehensive Heavy-Duty OBD regulations in 2005 for model year 2010 and subsequent heavy-duty engines and vehicles, referred to as HD OBD. In 2009, the Board updated the HD OBD regulation, adopted specific enforcement requirements, and aligned the HD OBD with OBD requirements for medium-duty vehicles. In 2021, the Board again amended the HD OBD regulation; the

[30] CARB, Innovative Clean Transit. https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit

2021 amendments require manufacturers to implement Unified Diagnostic Services for OBD communications, which will provide more information related to emissions-related malfunctions that are detected by OBD systems, improve the usefulness of the generic scan tool to repair vehicles, and provide needed information on in-use monitoring performance.

9. Clean Diesel Fuel

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

10. Incentive Programs

There are many different incentive programs focusing on heavy-duty vehicles that accelerate turnover to cleaner technologies, and thereby produce extra emission reductions beyond traditional regulations. Several State and local incentive funding pools have been used historically -- and remain available -- to fund the accelerated turnover of on-road heavy-duty vehicles. As the zero emission market grows and recently adopted regulations push for the widespread adoption of zero emission technologies, CARB is shifting the role of incentives in the heavy-duty market to increasingly focus on supporting small businesses and fleets.

For FY 2023-2024, the Legislature appropriated $483.6 million for heavy-duty vehicle and off-road equipment investments. This appropriation consists of $80 million for drayage trucks, $375 million for public school buses, and $28.6 million to be split equally between the Innovative Small e-Fleet Pilot Program (ISEF) and Clean Off-Road Equipment (CORE) programs. The appropriated funds will help to pay for zero emission drayage trucks and will assist in the replacement of older public school buses with zero emission public school buses. AQIP funds prioritize zero emission technology, heavy-duty projects, and achieving emission reduction benefits in nonattainment areas such. These investments would continue to support the transition of the California drayage fleet to zero emission and help to turn over the State's public school bus fleet, which will provide cleaner public school buses for children, who are more susceptible to the health impacts from air pollution. ISEF funding focuses on equitable investments that address challenges to zero emission technology adoption for owner operators and small fleets, which will help to support California's small businesses.

A. Low Carbon Transportation Investments and Air Quality Improvement Program (Clean Transportation Incentives)

In addition to funding passenger vehicle incentive programs, the Low Carbon Transportation Investments and the Air Quality Improvement Program (Clean Transportation Incentives) also provides incentive funding for heavy-duty vehicles. This program both funds projects to accelerate fleet and engine turnover to cleaner existing technologies through the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP), as well as funding demonstration and pilot projects.

CARB provides these incentive funds following the principles of the portfolio approach, meaning that funding is provided across multiple sectors and applications – as well as across multiple technologies to support both the technologies that are providing emission reductions today, as well as those that are needed to meet future goals as the technology matures. Heavy-duty investments support the commercialization and market development of zero emission trucks and buses. This includes funding for demonstration and pilot projects, vouchers for advanced clean technologies, and financing and support for small fleets transitioning to cleaner technologies.

i. Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)

CARB's HVIP serves as the cornerstone program in CARB's advanced technology heavy-duty incentive portfolio. HVIP has provided funding since 2010 to support the long-term transition to cleaner combustion and zero emission vehicles in the heavy-duty market. The program helps offset the higher costs of clean vehicles, and responds to a key market challenge by making clean vehicles more affordable for fleets through point-of-purchase price reductions. With an HVIP voucher, technology-leading vehicles can be as affordable as their traditional fossil-fueled counterparts, enabling fleets of all sizes to deploy advanced technologies that are cleaner and quieter. HVIP is the earliest model in the United States to demonstrate the function, flexibility, and effectiveness of first-come first-served incentives that reduce the incremental cost of commercial vehicles. HVIP is fleet-focused, providing a streamlined and user-friendly option to encourage purchases and leases of advanced clean trucks and buses throughout California. Approved dealers are a key part of HVIP success and are trained to facilitate the application process. In FY 2023-24, the HVIP allocations are $375 million for public school buses and $80 million for drayage trucks.

Innovative Small e-Fleets (ISEF) is a pilot program administered through HVIP that focuses on supporting small fleets by offering higher voucher amounts and supporting innovative solutions such as all-inclusive leasing, rentals, and "truck as a service" models. In the FY 2023-24 budget, $14.3 million was allocated for the ISEF program.

ii. Zero-Emission Truck Loan Pilot Project

The *Zero-Emission Truck Loan Pilot Project* is a new project that received $5 million in the FY 2022-23 funding plan, and is designed to provide smaller fleets transitioning to ZEVs financing opportunities for heavy-duty ZEVs and charging or fueling infrastructure. This project replaces the original Truck Loan Assistance Program which helped small-business fleet owners who were affected by CARB's Truck and Bus Regulation secure financing for upgrading their fleets to new trucks of any fuel type. CARB has partnered with the California Energy Commission (CEC) to build on the existing successful relationship in implementing the Truck Loan Assistance Program through CPCFA's California Capital Access Program. The CEC has matched CARB for charging or fueling infrastructure support. The pilot will allow CARB, CPCFA, CEC, and lenders, to learn from borrowers of small business fleets what is needed to make a successful transition to zero emission and what additional areas of support are needed. In FY 2023-24, $28.6 million was allocated for the Truck Loan Assistance Program.

iii. Advanced Technology Demonstration and Pilot Projects

Advanced Technology Demonstration and Pilot Projects are uniquely designed to take advantage of emerging opportunities. These projects are intended to accelerate the introduction of advanced emission reducing technologies that are on the cusp of commercialization into the California marketplace. Projects can utilize technologies in the demonstration phase or those already commercialized in larger scale deployments that align with the state's goals to reduce emissions. Over the course of the program, $436 million has been allocated to support 34 separate projects. The FY 2021-22 and FY 2022-23 Solicitation for $175 million collaborating with the CEC for an additional $50 million has closed and is expected to provide an additional 12 projects.

In heavy-duty applications, the goods movement sector is a focus for incentive funding, with CARB funding multiple demonstration and pilot programs to drive zero emission technologies in last mile delivery trucks, drayage trucks, and heavy-duty trucks and tractors.

The $9.2 million *Fuel Cell Hybrid Electric Delivery Van Deployment Project* built and demonstrated 15 additional fuel cell hybrid electric delivery vans at UPS's Ontario facility. This project was designed to promote future commercialization of fuel cell system retrofit kits that will significantly transform the parcel delivery market while achieving greenhouse gas, criteria pollutant, and toxic emission reductions. To accelerate the deployment of zero emission technologies in heavier freight applications, the $66.5 *million Joint Electric Truck Scaling Initiative (JETSI)* project is funding 100 commercial, CARB-certified Class 8 battery electric trucks and infrastructure deployed at freight handling facilities in Ontario and South El Monte. The infrastructure funding covers DC fast chargers, solar, energy storage, and second life batteries to mitigate grid impacts and energy costs. This project includes innovations that provide for multiple truck configurations to meet drayage/regional haul applications and range.

The *Rural School Bus Pilot Project* provides grants for the purchase of commercially available cleaner school bus technologies such as zero emission (fuel cell or battery electric) and low carbon fuel options (renewable fuels). Schools in rural communities with the oldest and worst polluting fleets who traditionally have had fewer opportunities for grant funding are given funding priority, although all school districts within California are eligible to participate.

The Clean Transportation Incentives have also funded demonstration and pilot projects for zero emission urban transit buses. The $22.3 million *Fuel Cell Electric Bus Commercialization Consortium* in the Bay Area and Southern California funded battery and fuel cell urban transit buses, which better serve communities' transit needs, substantially reduce greenhouse gas emissions, eliminate criteria pollutants, and provide economic benefits. In the Coachella Valley, the SunLine Transit Agency program was an $18.7 million project that added 5 new fuel cell electric buses (FCEB) to the existing fleet of alternative fuel buses, which also included battery electric buses. The project upgraded SunLine's existing hydrogen fueling station in

Thousand Palms, California, with a new electrolyzer hydrogen production plant, supporting compression and storage equipment, and two new hydrogen fuel dispensers.

iv. Clean Transportation Equity Investments

As mentioned earlier, Clean Mobility in Schools Projects are also encouraging and accelerating the deployment of new zero emission heavy-duty engines and vehicles, including battery electric school buses and clean school fleet vehicles.

B. Moyer Program

In addition to funding passenger vehicle incentive programs, the Moyer Program's key purpose is providing monetary grants to private companies and public agencies to clean up their heavy-duty engines beyond that required by law through retrofitting, repowering or replacing their engines with newer and cleaner ones. These grants are issued locally by air districts. Projects that reduce emissions from heavy-duty on-road engines qualify, including heavy-duty trucks, drayage trucks, emergency vehicles, public agency and utility vehicles, school buses, solid waste collection vehicles, and transit fleet vehicles.

As the regulatory, technological and incentives landscape has changed significantly since the creation of the Moyer Program and to address evolving needs, the Legislature has periodically modified the program to better serve California. Most recently, Senate Bill (SB) 513 (Beall, 2015) has provided new opportunities for the Moyer Program to contribute significant emission reductions alongside implemented regulations, advance zero and near-zero technologies, and combine program funds with those of other incentive programs.

The Moyer Program also funds CARB's On-Road Heavy-Duty Voucher Incentive Program (VIP), which provides funding opportunities for small fleet owners with 10 or fewer vehicles to quickly replace their older heavy-duty diesel or alternative fuel vehicles. Under this program, fleet owners may be eligible for funding of up to $410,000 for replacing their existing vehicle(s) to be scrapped and replaced by new trucks (zero emission or certified to the optional 0.02 g/bhp-hr NOx standard), or up to $50,000 for replacing their existing fleet with used vehicles with 2013 model year or later engines. Air districts have the discretion to set certain local eligibility requirements based upon local priorities.

C. Goods Movement Emission Reduction Program (Prop 1B)

The Prop 1B Goods Movement Emission Reduction Program was created to reduce exposure for populations living near freight corridors and facilities that were being adversely impacted by emissions from goods movement. This program provided incentives to owners of equipment used in freight movement to upgrade to cleaner technologies sooner than required by law or regulation. Voters approved $1 billion in total funding for the air quality element of the Prop 1B Program to complement $2 billion in freight infrastructure funding under the same ballot initiative.

Beginning in 2008, the Goods Movement Emission Reduction Program funded by Prop 1B has funded cleaner trucks for the region's transportation corridors; the final increment of funds implemented projects through 2020. The $1 billion program was a partnership between CARB and local agencies, air districts, and seaports to quickly reduce air pollution emissions and health risk from freight movement along California's trade corridors. While all Prop 1B Program funds have been awarded to the local air districts for implementation, the program framework exists to serve as a mechanism to award clean truck funds through newer funding programs.

D. Volkswagen (VW) Mitigation Trust

In 2015, after a CARB-led investigation, in concert with the United States Environmental Protection Agency (U.S. EPA), VW admitted to deliberately installing emission defeat devices on nearly 600,000 VW, Audi, and Porsche diesel vehicles sold in the United States, approximately 85,000 of which were sold in California. The VW California settlement agreement includes both a Mitigation Trust to mitigate the excess NOx emissions caused by the company's use of illegal defeat devices in their vehicles, as well as a ZEV Investment Commitment to help grow the State's expanding ZEV program. The Mitigation Trust includes approximately $423 million for California to be used as specified in the settlement agreement. Per the Beneficiary Mitigation Plan approved by CARB in 2018, this funding will be used to replace older heavy-duty trucks, buses, and freight vehicles and equipment with cleaner models, with a focus on zero emission technologies where available and cleaner combustion everywhere else, as well as to fund light-duty ZEV infrastructure. In addition, there have been mitigation funds established as the result of other settlements from which funding is used to support clean technologies.

E. Community Air Protection Incentives (AB 617 Community Air Protection Program)

Since the 2016 State SIP Strategy elucidated the need for additional legislative assistance in funding turnover programs to accelerate the deployment and adoption of cleaner technologies, the Legislature has since 2017 established a number of new incentive programs that are implemented through CARB through various budget bills, including the AB 617 Community Air Protection Program and Incentives. The State Legislature has provided substantial funding to achieve early emissions reductions in the communities most impacted by air pollution. In its 2018 funding allocation, the Legislature expanded the possible uses of AB 617 funds to include Moyer and Proposition 1B eligible projects with a priority on zero emission projects, zero emission charging infrastructure, stationary source projects, and additional projects consistent with the Community Emission Reduction Plans.

CARB and air districts partner to run the programs, with CARB developing guidelines and the districts administering funds for their regions. In most cases throughout the State, selected communities have identified mobile source emissions as a target for reductions. It is likely that a significant portion of the AB 617-allocated funding will incentivize the accelerated turnover to cleaner vehicles and equipment in and around low-income and disadvantaged communities.

Off-Road Sources

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

Figure 4-2 illustrates the comprehensive suite of emission control measures applicable to the broad variety of engines and vehicle that fall under the Off-Road category. As a result of these emission control efforts, off-road emissions in the Coachella nonattainment area have been reduced significantly since 1990 and will continue to decrease through 2031. From the 2018 baseline, off-road NOx emissions are projected to decrease by approximately 13 percent by 2031. More specifically, NOx emissions from the off-road sources that are primarily under CARB's regulatory authority are projected to decrease by over 53 percent by 2031. Key programs in this sector include the off-Road engine standards, the In-Use Off-Road Diesel-Fueled Fleets Regulation, Clean Diesel Fuel, Locomotive engine standards and CARB in-use requirements, and In-Use Large Spark Ignition (LSI) Fleet Regulation. Because attainment of the standard in the Coachella Valley is dependent on emission reductions achieved in the upwind South Coast Air Basin, this document describes the emission control measures for marine sources that may not be present within the Coachella Valley ozone nonattainment area.

1. Off-Road Engine Standards

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

CARB has had in place PM and NOx emissions standards for off-road compression-ignition engines since 1985. To further control emissions from off-road equipment, in 2004 CARB adopted the fourth tier and most recent iteration of increasingly stringent PM and NOx standards based on the use of advanced aftertreatment emission controls. These "Tier 4" standards apply to new off-road compression-ignition engines, and were phased-in across product lines from 2008 through 2015 and reduced exhaust emission levels by up to 95 percent compared to previous control strategies. New engine standard requirements vary according to the power rating of engines. Beginning in 2014, new Tier 4 construction equipment must emit about 96 percent less NOx and PM than new Tier 1 equipment sold in the year 2000.

CARB first approved regulations to control exhaust emissions from small off-road engines (SORE) such as lawn and garden equipment in December 1990 with amendments in 1998, 2003, 2010, 2011, 2016, and 2021. The 1990 - 2016 regulations were implemented through three tiers of progressively more stringent exhaust emission standards that were phased in between 1995 and 2008. The most recent suite of amendments (December 2021) requires most newly manufactured SORE engines be zero emission starting in 2024.

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

To control emissions from Transport Refrigeration Units (TRUs), CARB adopted in 2004 the Airborne Toxic Control Measure (ATCM) for In-Use Diesel-Fueled TRUs, TRU Generator Sets, and Facilities where TRUs Operate, which set increasingly stringent engine standards to reduce diesel particulate matter emissions from TRUs and TRU generator sets. The ATCM for TRUs was subsequently amended in 2010 and 2011, and most recently in February 2022, as the first phase of CARB's current push to develop new requirements to transition diesel-powered TRUs to zero emission technology in two phases. The February 2022 adoption, Part 1 amendments to the existing TRU Airborne Toxic Control Measure (ATCM), requires the transition of diesel-powered truck TRUs to zero emission. CARB plans to develop a subsequent Part 2 regulation to require zero emission trailer TRUs, domestic shipping container TRUs, railcar TRUs, and TRU generator sets, for future Board consideration.

2. In-Use Off-Road Diesel-Fueled Fleets (Off-Road Regulation)

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

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

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

Fleets are subject to increasingly stringent restrictions on adding older vehicles. The regulation also sets performance requirements. While the regulation has many specific provisions, in general by each compliance deadline, a fleet must demonstrate that it has either met the fleet average target for that year, or has completed the Best Available Control Technology requirements. The performance requirements of the 2010 Amendments were phased in from January 1, 2014 through January 1, 2019.

Most recently, the Off-Road Regulation was amended in November 2022. These 2022 Amendments will require fleets to phase-out use of the oldest and highest polluting off-road diesel vehicles in California; prohibit the addition of high-emitting vehicles to a fleet; and require the use of R99 or R100 renewable diesel in off-road diesel vehicles. Off-road vehicles and equipment subject to the amendments are used in construction, mining, industrial operations, and other industries. The amendments phase-in starting in 2024 through the end of 2036 and include changes to enhance enforceability and encourage the adoption of zero emission technologies.

3. Clean Diesel Fuel

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

4. Locomotives

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

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

In April 2017, CARB petitioned U.S. EPA for rulemaking, seeking the amendment of emission standards for newly built locomotives and locomotive engines and lower emission standards for remanufactured locomotives and locomotive engines. The petition asks U.S. EPA to update its standards to take effect for remanufactured locomotives in 2023 and for newly built locomotives in 2025. The new emission standards would provide critical criteria pollutant reductions, particularly in the disadvantaged communities that surround railyards. U.S. EPA has not yet promulgated or formally began development of new standards.

In November 2022, CARB adopted the In-Use Locomotive Regulation, which is designed to accelerate the adoption of advanced, cleaner technologies for locomotive operations, including zero emission technologies. The regulatory elements include a spending account and idling limits (both beginning in 2024), and in-use operational requirements that begin in 2030. Spending account funds will be used to fund turnover to cleaner locomotives, rail equipment, and/or related infrastructure, with a structure that requires locomotive operators to fund their own trust account based on the emissions created by their locomotive operations in California so that the dirtier the locomotive, the more funds must be set aside. All locomotives with automatic shutoff devices (AESS) are subject to idling requirements of less than 30 minutes, unless for an exempted for reasons like maintaining air brake pressure or to perform maintenance. Starting in 2030, only locomotives less than 23 years old would be able to be used in California. Switchers, industrial, and passenger locomotives with original engine build dates of 2030 or newer would be required to operate in a zero emission configuration in California. Freight line haul locomotives with original engine build dates of 2035 and newer would be required to operate in a zero emission configuration in California.

5. Marine Sources and Ocean-Going Vessels (OGVs)

To reduce emissions from Ocean Going Vessels (OGV), CARB has adopted the Ocean-Going Vessel Fuel Regulation, "Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels within California Waters and 24 Nautical Miles of the California Baseline" (2008) and the Ocean-Going Vessels At Berth Regulation (2007).

The At-Berth Regulation requires container ships, passenger ships, and refrigerated-cargo ships at six California ports to meet compliance requirements for auxiliary engines while they are docked, including emission or power reduction requirements. Reduced vessel speeds also provide emission reduction benefits, and programs are operated by local air districts along the California coast to incentivize lower speeds. In the 2022 State SIP Strategy, the CARB measure for 'Future Emissions Reductions from Ocean-Going Vessels' considers options available under CARB authority to achieve further emissions reductions including developing a regulation to control emissions from vessels transiting in California regulated waters.

In 2007, CARB adopted the Commercial Harbor Craft Regulation (CHC Regulation), which reduces toxic and criteria emissions. Commercial harbor craft include any private, commercial, government, or military marine vessels including, but not limited to ferries, excursion vessels, tugboats (including ocean-going tugboats), barges, and commercial and commercial passenger fishing boats. This regulation was subsequently amended in 2010, and again in March 2022, to establish expanded and more stringent in-use requirements to cover more vessel categories and mandate accelerated deployment of zero emission and advanced technologies in vessel categories where technology feasibility has been demonstrated.

To control emissions from personal watercraft, CARB also has had in place exhaust emission standards for new outboard and personal watercraft engines since 1998. On July 26, 2001, the Board amended the SI marine regulations to include HC+NOx emission standards for new sterndrive and inboard marine engines. These standards initially capped HC+NOx emissions at 16.0 g/kW-hr from 2003 to 2006, but beginning in 2007, sterndrive and inboard engines had to meet a catalyst-based 5.0 g/kW-hr HC+NOx standard. Staff is also exploring development of more stringent Spark-Ignition Marine Engine Standards, as described in the 2022 State SIP Strategy.

6. Large Spark-Ignition (LSI) Engines and Forklifts

Forklift fleets are subject to in-use fleet requirements either under the LSI fleet regulation, if fueled by gasoline or propane, or under the Off-Road Regulation, if fueled by diesel. Both regulations require fleets to retire, repower, or replace higher-emitting equipment in order to maintain fleet average standards.

Large spark-ignition engines, which are defined as spark-ignition (i.e., Otto-cycle) engines greater than 25 horsepower, are used in a variety of equipment, including, but not limited to, forklifts, airport ground support equipment (GSE), sweeper/scrubbers, industrial tow tractors, generator sets, and irrigation pumps. LSI equipment is found in approximately 2,000 fleets throughout the state operating at warehouses and distribution centers, seaports, airports, railyards, manufacturing plants, and many other commercial and industrial facilities.

CARB first adopted emission standards for off-road LSI engines in 1998. The original LSI regulation required engine manufacturers to certify new LSI engines to a 3.0 gram per brake horsepower-hour (g/bhp-hr) standard that, by 2004, represented a 75 percent reduction in emissions compared with uncontrolled LSI. Building on this success, in 2002, U.S. EPA subsequently harmonized the national standard with California’s standard, starting with the 2004 model year and adopted a more stringent 2.0 g/bhp-hr standard for 2007 and subsequent model year engines. The federal program demonstrated that additional reductions from new engines were technically feasible and cost-effective. In the 2003 State Implementation Plan for Ozone (2003 SIP), California committed to two additional LSI measures—one for the development of more stringent new engine standards and another for the development of in-use fleet requirements.

CARB adopted these two LSI measures in a 2006 rulemaking, which harmonized California’s standard with U.S. EPA’s 2.0 g/bhp-hr standard starting with the 2007 model year, set forth a more stringent 0.6 g/bhp-hr California standard starting with the 2010 model year, and established in-use LSI fleet requirements. The 0.6 g/bhp-hr standard represents a 95% emission reduction versus uncontrolled LSI engines and is still in effect today.

The in-use element of the 2006 rulemaking, adopted as the Large Spark-Ignition Engine Fleet Requirements Regulation (LSI Fleet Regulation), which was eventually amended in 2010 and 2016, requires fleet operators with four or more LSI forklifts to meet fleet average emission standards. The 2006 LSI rulemaking and 2010 amendments required specific hydrocarbon + NOx fleet average emission level standards that became increasingly more stringent over time. The focus of the 2016 amendments was to collect data from fleet operators in order to inform the development of requirements that would support the broad-scale deployment of zero emission equipment in LSI applications. The 2016 amendments also required fleet operators to report key compliance information to CARB, and extended to 2023 requirements from the prior LSI Fleet Regulations that were otherwise due to sunset in 2016.

7. Zero-Emission Forklift

Forklifts are widely used in freight, materials handling, manufacturing, and construction operations. In the freight industry, zero emission forklifts have already achieved substantial market acceptance and deployment volumes. However, in other industries, forklifts with spark-ignited engines are still widely used. The Zero-Emission Forklift Regulation, which the Board adopted in June 2024, is designed to phase out LSI forklifts by 2038 by accelerating the transition of LSI engine powered forklifts to zero emission technology (i.e., battery-electric, fuel cell-electric, or other zero emission technology as the only source of power for propulsion and work). The regulation requires forklift fleets to transition spark-ignited forklifts (e.g., propane and gasoline forklifts) to zero emission technology starting in 2026 with the oldest, highest-emitting forklifts being phased out first. The Zero-Emission Forklift Regulation targets most existing LSI forklifts in California, approximately 89,000 units, for use of zero emission technology. Because this regulation was very recently adopted, it has not yet been incorporated into emissions inventories and is not included in the Coachella Valley attainment demonstration for the 75 ppb ozone standard.

8. Cargo Handling Equipment (CHE)

Cargo handling equipment (CHE) include yard trucks (hostlers), rubber-tired gantry cranes, container handlers, forklifts, dozers, and other types. The Cargo Handling Equipment (CHE) Regulation established requirements for in-use and newly purchased diesel-powered equipment at ports and intermodal rail yards. CARB adopted the CHE in 2005, which established best available control technology (BACT) for new and in-use mobile CHE that operate at California's ports and intermodal rail yards through accelerated turnover of older equipment through retrofits and/or replacement to cleaner on- or off-road engines. Since 2006, the CHE Regulation has resulted in reductions of diesel PM and NOx at ports and intermodal rail yards throughout California.

9. Incentive Programs

There are many different incentive programs focusing on off-road mobile sources that increase the penetration of cleaner technologies into the market. The incentive programs encourage the purchase of cleaner off-road combustion engines and equipment, and zero emission technologies. CARB is expanding incentives for zero emission off-road equipment through targeted demonstration and pilot project categories in the off-road sector, and increased funding. As the off-road zero emission market grows and recently adopted regulations push for the widespread adoption of zero emission technologies, CARB is shifting the role of incentives to increasingly focus on supporting small businesses and fleets.

A. Low Carbon Transportation Investments and Air Quality Improvement Program (Clean Transportation Incentives)

As mentioned earlier, $483.6 million was allocated in the FY 2023-2024 budget for off-road equipment and on-road heavy-duty trucks under the Clean Transportation Incentives programs. In the off-road sector, major programs include CORE, and Demonstration and Pilot Programs. Off-road equipment categories that are prioritized for funding include agricultural and construction equipment, SORE such as lawn and garden equipment, heavier cargo handling equipment (CHE), and zero emission applications at railyards, marine ports, freight facilities, and along freight corridors.

i. Clean Off-Road Equipment (CORE) Voucher Incentive Project

CORE is a voucher project similar to HVIP, but for zero emission off-road equipment. CORE is intended to accelerate deployment of zero emission technologies in the off-road sector such as transport refrigeration units, construction and agricultural equipment, and commercial harbor craft by providing a streamlined way for fleets to access funding that helps offset the incremental cost of such technology. CORE targets commercial-ready products that have not yet achieved a significant market foothold. By promoting the purchase of zero emission over internal combustion options, the project is expected to reduce emissions, particularly in areas that are most impacted, help build confidence in zero emission technology in support of CARB strategies and subsequent regulatory efforts where possible, and provide other sector-wide benefits, such as technology transferability, reductions in advanced-technology component costs, and larger infrastructure investments. CORE provides vouchers to California purchasers and lessees of zero emission off-road equipment on a first-come, first-served basis, with increased incentives for equipment located in disadvantaged communities.

CARB launched CORE at the end of 2019 through a one-time $40 million allocation in the fiscal year 2017-18 Funding Plan to support zero emission freight equipment through CORE. Since that time, CORE has been allocated significant additional funds, including $194.95 million from the FY 2021-22 budget. This allocation includes $30 million of dedicated funds appropriated by the Legislature in SB 170 to provide incentives for professional landscaping services in California operated by small businesses or sole proprietors to purchase zero emission small off-road equipment. The FY 2023-24 budget appropriated $14.3 million for CORE.

ii. Advanced Technology Demonstration and Pilot Projects

Advanced Technology Demonstration and Pilot Projects: Demonstration and Pilot Projects help accelerate the introduction of advanced technology vehicles, equipment, or emission controls into the California marketplace. CARB is focusing funding on off-road demonstration and pilot projects that include heavier cargo handling equipment (CHE), clean equipment in rail, marine, and ports applications, and zero emission equipment along freight facilities/corridors.

For the *Port of LA Multi-Source Facility Demonstration Project*, the Los Angeles Harbor Department (Port of LA) was awarded $14.5 million to operate multiple near-zero or zero emission technologies to move goods from ships through the Green Omni Terminal. This project is demonstrating the viability of electrified CHE, forklifts, and a ships at-berth vessel emissions control system. The *Zero-Emission Freight "Shore to Store"* Project is an $82 million project to fund electric yard tractors, hydrogen fuel cell Class 8 on-road trucks, and a large capacity hydrogen fueling station in Ontario, CA. Additional zero- and near zero emission freight facility projects include a $13.3 million *Capture and Control System for Oil Tankers*

Project, which has been developed to design, develop, safely demonstrate the capture and control system that reduces NOx, PM2.5, ROG, TACs, and DPM from both the auxiliary engines and boilers of oil tankers at the Port of Long Beach. The project includes an innovative barge-based capture and control system design, including a self-propelled spud-barge platform, an exhaust capture system, purification units, carbon-capture, solar, fuel cell, battery, and hydrogen storage. The fuel used to power the barge and the capture and control system will be either renewable or zero-carbon fuel, which mitigates greenhouse gas emissions from this operation.

B. Funding Agricultural Replacement Measures for Emission Reductions (FARMER)

California's agricultural industry consists of approximately 77,500 farms and ranches, providing over 400 different commodities, making agriculture one of the State's most diverse industries. In recognition of the strong need and this industry's dedication to reducing their emissions, the Legislature has allocated over $760 million Statewide towards the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program since 2017. For FY 2023-24, $75 million has been appropriated to fund the FARMER program. The program provides funding through local air districts for incentivizing the introduction of lower-emissions agricultural harvesting equipment, heavy-duty trucks, agricultural pump engines, tractors, and other equipment used in agricultural operations. The FARMER Program also includes a project category for demonstration projects and modifications to the zero emission agricultural utility terrain vehicle (UTV), heavy-duty agricultural truck, and off-road mobile agricultural equipment trade-up pilot project categories. Since April 2022, the program also funds zero emission agricultural equipment which are becoming more readily available in the agricultural industry. As of September 2023, the FARMER Program has spent $461.3 million on over 9,649 pieces of agricultural equipment and will reduce 1,580 tons of PM2.5 and 26,600 tons of NOx over the lifetime of the projects, Statewide.

C. Moyer Program

In addition to funding on-road incentives, the Moyer Program provides monetary grants to reduce emissions from off-road equipment such as construction and agricultural equipment, marine vessels and locomotives, forklifts, TRUs, SORE, and airport ground support equipment.

D. Goods Movement Emission Reduction Program (Prop 1B)

As discussed earlier, Proposition 1B was a $1 billion partnership between CARB and local agencies, air districts, and seaports to quickly reduce air pollution emissions and health risk from freight movement along California's trade corridors. Over the course of six years, the program has upgraded ships at-berth, cargo handling equipment, locomotives, TRUs, and harbor craft.

Conclusion

In conclusion, CARB has implemented the most comprehensive mobile source emissions control program in the nation. CARB's mobile source control program, including the recently adopted CARB State SIP

Strategy Measures listed in Table 4-4, below, is robust and targets all sources of emissions through a four-pronged approach.

TABLE 4-4
RECENTLY ADOPTED CARB STATE SIP STRATEGY MEASURES

Recently Adopted State SIP Strategy Measures
On-Road Heavy-Duty
Advanced Clean Fleets Regulation
On-Road Light-Duty
Advanced Clean Cars II
Clean Miles Standard
Off-Road Equipment
Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation
Commercial Harbor Craft Amendments
Transport Refrigeration Unit Part I
Zero-Emission Forklift Regulation
Primarily-Federally and Internationally Regulated Sources – CARB Measures
In-Use Locomotive Regulation

First, increasingly stringent emissions standards drive the use of the cleanest available engines and equipment, and minimize emissions from new vehicles and equipment. Second, to speed the turnover of older, dirtier engines and equipment to cleaner new equipment, in-use programs target emissions from the existing fleet by requiring vehicle and fleet owners to transition legacy fleets and vehicles to the cleanest vehicles and emissions control technologies. Third, incentive programs help fleet owners to replace older, dirtier vehicles and equipment with the cleanest technologies, while also facilitating the development of the next generation of clean technologies that are needed to meet future air quality targets. Finally, cleaner fuels minimize emissions from all combustion engines being used across the State. This multi-faceted approach has not only spurred the development and use of increasingly cleaner technologies and fuels, it has also provided significant emission reductions across all mobile source sectors that go far beyond national programs or programs in other states.

U.S. EPA's Adopted Clean Trucks Rule

Effective March 27, 2023, the U.S. EPA adopted a final rule titled "Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards."[31] This rule is part of the U.S. EPA's Clean Trucks Plan (CTP) that aims to reduce ozone and PM2.5 air pollution from heavy-duty trucks and buses. The rule applies to manufacturers of heavy-duty engines and vehicles. It will result in lower NOx emissions from new heavy-duty vehicles beginning in model year (MY) 2027 by setting more stringent emission standards that cover a wider range of heavy-duty engine operating conditions and require those standards to be met for a longer period of time of when these engines operate on the road. The rule also changes key provisions of the existing heavy-duty vehicle emission control program, such as the test procedures, regulatory useful life, emission-related warranty, and other requirements. U.S. EPA's CTP will result in emission benefits by 2031 and South Coast AQMD includes those benefits as a line item adjustment to the baseline emissions (see Table 4-5).

Overall Emission Reductions

Table 4-5 identifies projected reductions for the Coachella Valley based on the summer planning inventory for VOC and NOx in 2031. These reductions reflect additional reductions from recently adopted rules and regulations by South Coast AQMD, CARB and U.S. EPA. The corresponding reductions in the South Coast Air Basin are provided in Chapter 3, Table 3-3.

TABLE 4-5
EMISSION REDUCTIONS IN COACHELLA VALLEY FOR 2031
(TONS PER DAY)

	NOx	VOC
Year 2031 Baseline	**10.61**	**11.79**
Emission Reductions:		
~~Recently Adopted Stationary Source Rules~~		
~~Rules Affecting Non-RECLAIM Sources~~	~~0.01~~	-
~~RECLAIM Landing Rules~~	-	-
Recently Adopted Stationary Source Rules	0.01	-
Recently Adopted CARB's Mobile Source Regulations	3.27	0.22
U.S. EPA's Clean Trucks Rule	0.14	-
Total Reductions	**3.42**	**0.22**
~~2031~~ Remaining Emissions in the 2031 Attainment Scenario	**7.19**	**11.57**

[31] U.S. EPA, Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards, 88 Fed. Reg. 4296 (January 24, 2023). https://www.federalregister.gov/documents/2023/01/24/2022-27957/control-of-air-pollution-from-new-motor-vehicles-heavy-duty-engine-and-vehicle-standards

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

CHAPTER 5 – FUTURE AIR QUALITY

~~Future Air Quality~~

Ozone Modeling Approach

The Coachella Valley Planning Area is defined, for the purposes of this Plan, as the desert portion of Riverside County in the Salton Sea Air Basin (SSAB), and is part of the South Coast AQMD, which also includes the South Coast Air Basin. The Coachella Valley is the most populated area in this desert region, which encompasses several communities, including Palm Springs, Desert Hot Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, Indio, Coachella, Thermal, and Mecca. For modeling purposes, the modeling domain outlined in green in Figure 5-1 includes the southern half of California that extends past the border with Mexico in the south, to Kern County in the north, and to the border with Nevada and Arizona to the east. After the reclassification of the Coachella Valley to extreme nonattainment for the 2008 8-hour ozone NAAQS, the new attainment date is July 20, 2032, which effectively requires demonstrating attainment in year 2031. Thus, ozone concentrations were simulated for the 2018 base year and the future attainment year of 2031 to demonstrate that the Coachella Valley will attain the 2008 8-hour ozone standard in 2031 and presented in this Chapter.

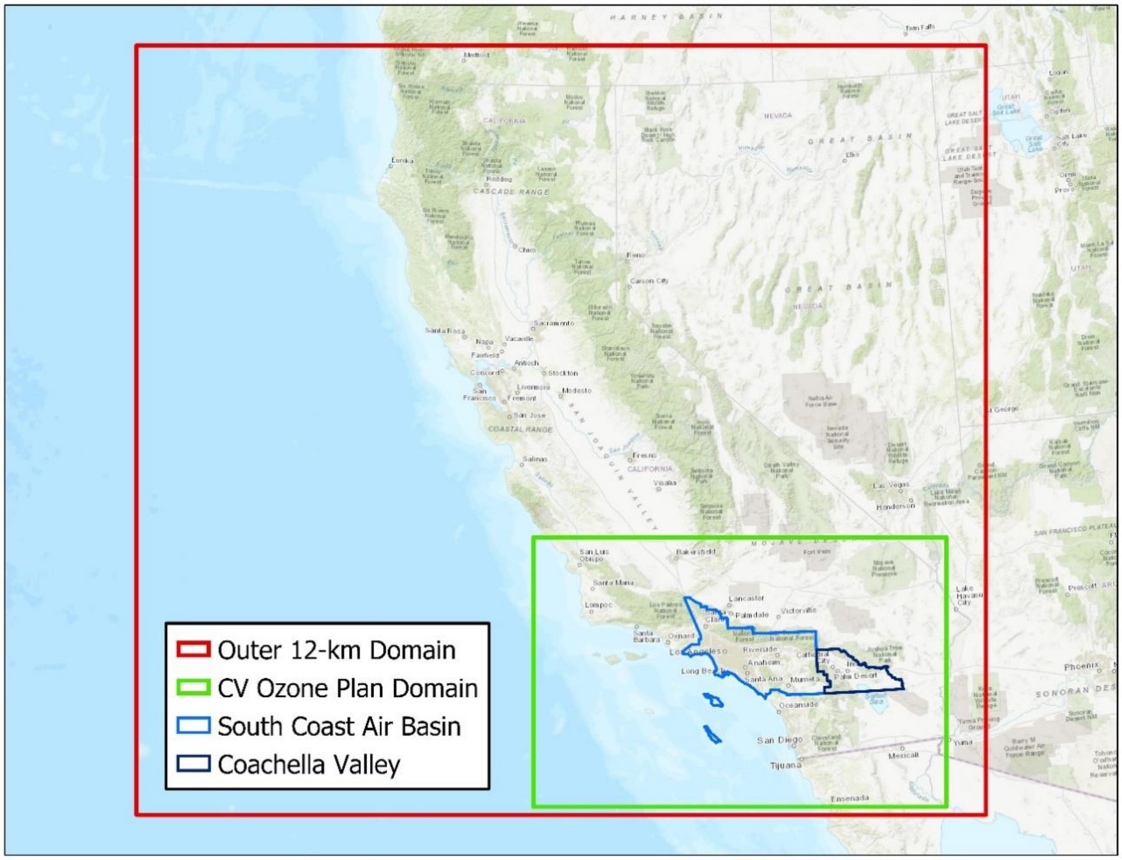


FIGURE 5-1
MODELING DOMAINS FOR THE MODELING OF OZONE IN THE COACHELLA VALLEY

Design Values

A design value is a statistic that describes the air quality status of a given location relative to the level of NAAQS. Design values are defined to be consistent with the individual NAAQS as described in 40 CFR Part 50.[32] For the 2008 8-hour ozone standard, the design value for a given year is defined as the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations from that year and the two preceding years. Daily maximum 8-hour average ozone is referred to as MDA8 in this document. If a design value is 75.9 ppb or lower, an area is in attainment for the 2008 8-hour ozone standard. While a design value uses a three-year period, the 5-year weighted design values are used in the modeled attainment demonstration per the U.S. EPA's guidance.[33] This is calculated based on the average of three 3-year design

[32] Title 40 Code of Federal Regulations Part 50. http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr50_main_02.tpl
[33] U.S. EPA, Modeling guidance for demonstrating air quality goals for ozone, PM2.5, and regional haze, 2018. https://www.epa.gov/sites/default/files/2020-10/documents/o3-pm-rh-modeling_guidance-2018.pdf

values. The U.S. EPA guidance recommends the use of multiple year averages of design values, where appropriate, to dampen the effects of single year anomalies in the air quality trend due to factors such as adverse or favorable meteorology or radical changes in the local emissions profile. In the current attainment demonstration, the same base year design values as in the 2022 AQMP are used. These design values are based on a 5-year weighted average centered on 2017, whereas the base year for emissions and meteorology selected for this attainment demonstration is 2018. During 2018, the Multiple Air Toxics Exposure Study (MATES V) was conducted and involved a comprehensive campaign of monitoring and modeling that allowed for the development of a robust and extensively validated modeling framework. However, the period for the 5-year weighted average design value (2015-2019) was centered on 2017 to avoid the anomalies caused by the effects of COVID-19, widespread wildfire events on emissions and resulting air quality in 2020. Table 5-1 presents the 5-year weighted design values used in this Plan for the Coachella Valley stations, which are the same values shown in Table 7-13 in Chapter 7 of the 2022 AQMP.

TABLE 5-1
FIVE-YEAR WEIGHTED DESIGN VALUES FOR THE PERIOD 2015-2019 FOR THE MONITORING STATIONS IN THE COACHELLA VALLEY

Station	2018 5-Year Weighted Design Value (ppb)
Palm Springs	89.3
Indio	84.3

Ozone Modeling

The ozone modeling employs the same modeling platform as in the recently approved PM2.5 Plan attainment demonstrations, with updates in the modeling platform, input databases, and emissions inventory. This is an upgrade from the modeling platform used in the 2022 AQMP. The year 2018 was used as base year to develop meteorological conditions and an emissions inventory that are used as an anchor year to project future emissions and design values. While the U.S. EPA's guidance recommends using the center year of the five years (2015 to 2019) for the weighted design value as the base year for the modeling and emissions inventory, the guidance states that any one of the five years can be used as the base year. Year 2018 was chosen to avoid unusual meteorological conditions, which occurred with the high frequency of stagnant dispersion conditions observed during the ozone season in 2017. In addition, choosing 2018 as baseline modeling year provides an advantage of the rich measurement dataset collected during the MATES V, which was conducted from May 2018 to April 2019.

The Community Multiscale Air Quality (CMAQ) model, version 5.3.1, was employed to simulate the ozone season that spanned from May 1 through September 30, 2018. Meteorological inputs were generated using the Weather Research Forecast (WRF) model version 4.4.2, and biogenic VOC emissions were estimated using MEGANv3. The simulations included 3672 consecutive hours from which daily maximum 8-hour average ozone concentrations were calculated.

Boundary conditions for ozone modeling were developed for the PM2.5 Plan[34] and details of the methodology are included in its Appendix II. In short, modeled air pollutant concentrations obtained from the Community Atmosphere Model with Chemistry (CAM-chem; Emmons et al., 2020),[35] with a 1.25^o x 0.9^o resolution, are used to provide the boundary conditions for a CMAQ modeling domain that encompasses the whole state of California and neighboring states at 12 km resolution, depicted in red in Figure 5-1. The 4-km CMAQ modeling domain for this plan is then nested within the outer 12-km statewide domain, and the results from the 12-km modeling domain serve as boundary conditions for the 4-km domain depicted in Figure 5-1. The boundary conditions for the 2031 attainment simulations are generated by running the 12-km domain with domain-wide emissions scaled down to 2031 levels. The 4-km resolution inner domain is placed close to the southern boundary of the outer domain, which is not the most desirable to avoid potential artifacts from the boundary; however, the placement was determined by available model-ready emissions data in Mexico.

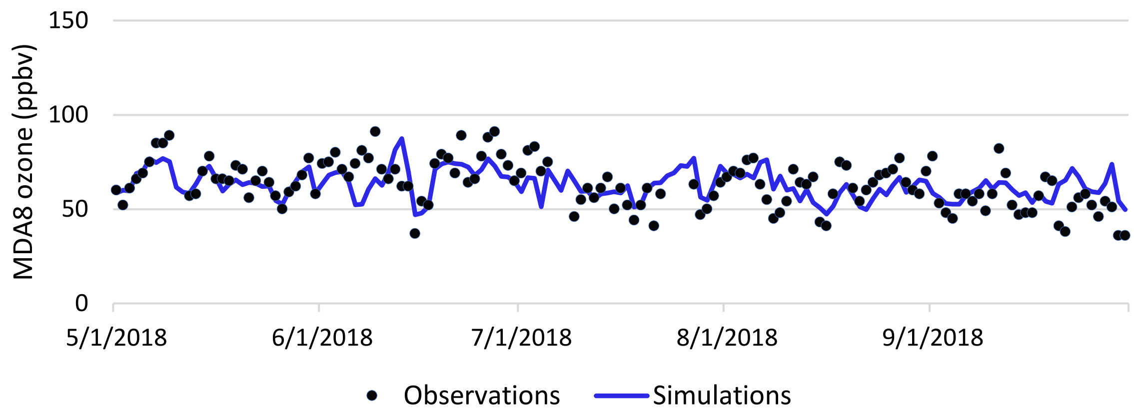
Model Performance Evaluation

Model performance was evaluated against the measured ozone concentrations. Figure 5-2 depicts the comparison of daily MDA8 for Palm Springs and Indio stations. In general, the model prediction shows good agreement with measurements, with a slight tendency to underestimate the peak ozone days. Overall, the model shows a slight positive bias during the May to September ozone season for Palm Springs and a slight negative bias for Indio. Statistics for both sites are presented in Table 5-2. Model performance for those sites is comparable to performance presented in Appendix V of the 2022 AQMP for all the monitors in the South Coast Air Basin, and within the error margins reported in peer-reviewed journals.[36] The U.S. EPA guidance requires that the model predictions be applied in a relative rather than absolute sense using Relative Reduction Factor (RRF). With this approach, potential biases present in model prediction are less likely transferred to future design values.

[34] South Coast AQMD, South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard, June 2024. https://www.aqmd.gov/home/air-quality/air-quality-management-plans/other-state-implementation-plan-(sip)-revisions/2012-annual-pm2-5-plan

[35] Emmons, L. K., Schwantes, R. H., Orlando, J. J., Tyndall, G., Kinnison, D., Lamarque, J.-F., et al., (2020). The Chemistry Mechanism in the Community Earth System Model version 2 (CESM2). Journal of Advances in Modeling Earth Systems, 12, e2019MS001882, https://doi.org/10.1029/2019MS001882

[36] Appel K.W. et al., 2021. The Community Multiscale Air Quality (CMAQ) model versions 5.3 and 5.3.1: system updates and evaluation, Geosci. Model Dev., 14, 2867–2897, https://doi.org/10.5194/gmd-14-2867-2021



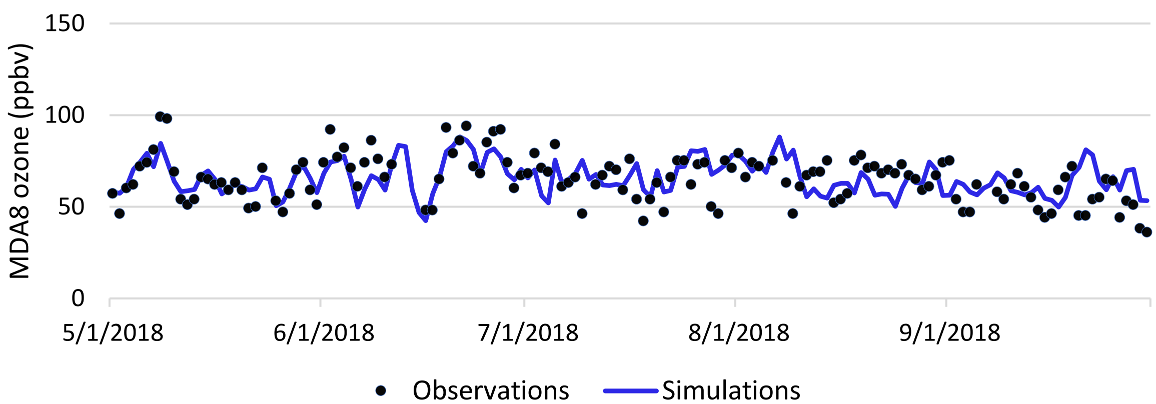


FIGURE 5-2
MODELED AND OBSERVED MDA8 OZONE AT INDIO (TOP) AND PALM SPRINGS (BOTTOM) FROM MAY 1 THROUGH SEPT 30, 2018

TABLE 5-2
MODEL PERFORMANCE FOR MDA8 OZONE FOR THE BASE YEAR 2018

Station	Mean Observation (ppbv)	Mean Modeled (ppbv)	Mean Bias (ppbv)	Mean Error (ppbv)	Normalized Mean Bias (%)	Normalized Mean Error (%)	R
Indio	63.06	62.82	-0.25	8.30	-0.39	13.16	0.52
Palm Springs	64.78	65.61	0.83	9.00	1.28	13.89	0.50

Future Ozone Air Quality

The CMAQ-WRF modeling system was used to predict future design values in the 2031 attainment year. Two simulations for the attainment year of 2031 were conducted: 1) 2031 baseline, and 2) 2031 attainment. The emissions for the 2031 baseline are identical to those included in the 2022 AQMP, reflecting reductions anticipated from the rules and regulations adopted by the time when the 2022 AQMP was developed. Chapter 3 of this Plan provides more details on the rules reflected in the baseline and those adopted after the development of the 2022 AQMP. The emissions for the 2031 attainment scenario include regulations recently adopted by CARB, U.S. EPA and the South Coast AQMD. Chapter 3 and Table 3-3 of this Plan provide more details.

Future year design values are determined using site-specific RRFs applied to the 5-year weighted ozone design values shown in Table 5-1, per the U.S. EPA guidance. The RRFs are calculated using the average of the top 10 high ozone days in the modeled base year, taking corresponding modeled future year concentrations of the same 10 days, and calculating the ratio of the future top 10-day concentration average to the base year top 10-day concentration average at each specific monitor. The resulting monitor-specific RRFs are applied to the base year 5-year weighted ozone design values to calculate future design values at each monitor. Results presented in Table 5-3 show that the Coachella Valley is projected to have 8-hour ozone design values exceeding 75 ppb under the 2031 baseline, i.e., business-as-usual scenario. However, the Coachella Valley is projected to attain the 2008 federal 8-hour ozone standard in 2031 with additional reductions from the recently adopted regulations.

TABLE 5-3
DESIGN VALUES IN THE COACHELLA VALLEY FOR IN THE ATTAINMENT DEMONSTRATION SCENARIO

Station	Future Design Value (ppb)	
	Baseline 2031	Attainment 2031
Palm Springs	76.5	74.4
Indio	76.7	74.2

Unmonitored Area Analysis

The U.S. EPA modeling guidance recommends that the attainment demonstration include a formal analysis to confirm that all modeling grid cells within a nonattainment area meet the federal standard. This analysis uses both measured design values and modeled ozone concentrations throughout the modeling domain to estimate design values at unmonitored locations. Five-year weighted design values are calculated for all monitoring stations within the modeling domain for the 2015 to 2019 period, including monitoring stations outside of the Coachella Valley. Only stations that meet the U.S. EPA's data completeness requirement for each of the 5 years are included in the analysis. The ozone concentrations at unmonitored areas are calculated using the equation shown below. The equation uses inverse distance weighting and model gradient adjustment so that monitors nearest to the unmonitored location carried the greatest weight, while using the model predictions to inform the gradient between monitors. This method is consistent with U.S. EPA's guidance. Figure 5-3 illustrates the spatial distribution of 8-hour ozone 5-year weighted design values calculated using the model gradient adjustment method for 2018.

$$Gridcell_E = \sum_{i=1}^{n} Weight_i \cdot Monitor_i \cdot \frac{Model_E}{Model_i}$$

Where:

$Gridcell_E$ is the ozone concentration at unmonitored site E;

$Weight_i$ is the inverse distance weight for monitor *i*;

$Monitor_i$ is the 5-year weighted design value at monitor *i*;

$Model_E$ is the average of the 10 highest daily 8-hour values at site *E*;

$Model_i$ is the average of the 10 highest daily 8-hour values at monitor *i*.

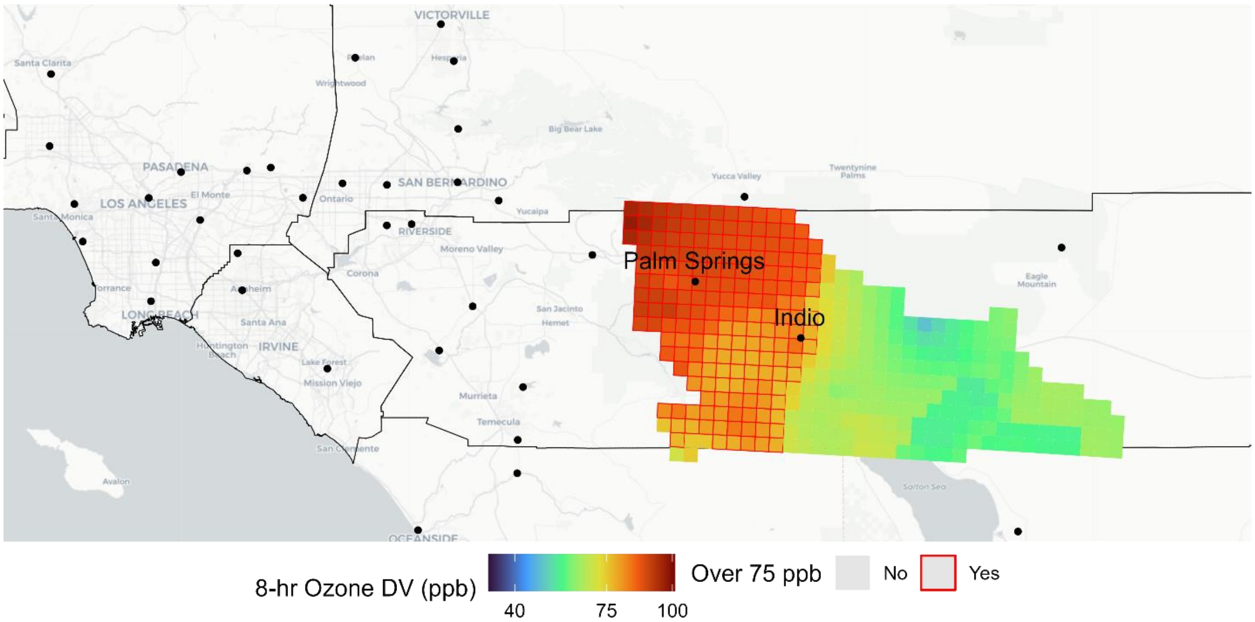


FIGURE 5-3
BASE YEAR 2018 OZONE DESIGN VALUES IN COACHELLA VALLEY. CELLS EXCEEDING 75 PPB ARE OUTLINED IN RED. MONITORING STATIONS ARE SHOWN AS BLACK CIRCLES

Future concentrations in unmonitored areas are also calculated using modeled RRFs. The top 10 days of which MDA8 is greater than or equal to 60 ppb are used in the RRF. Following U.S. EPA's modeling guidance, RRFs are still calculated if at least 5 out of top 10 days have its MDA8 ozone greater than or equal to 60 ppb. The RRFs are then applied to the interpolated measurement field for 2018 to calculate future year design values in all areas of the Coachella Valley. For the attainment year 2031, RRFs are shown in Figure 5-4, along with the design values for same attainment scenario in Figure 5-5.

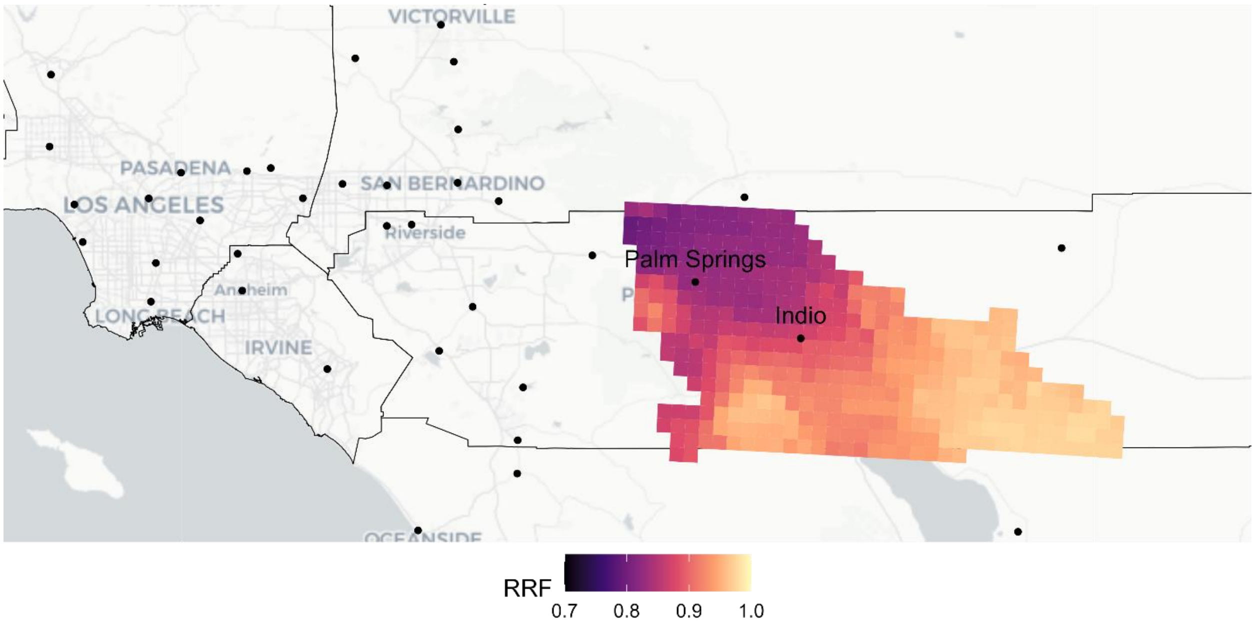


FIGURE 5-4

ATTAINMENT YEAR 2031 RELATIVE REDUCTION FACTORS IN COACHELLA VALLEY

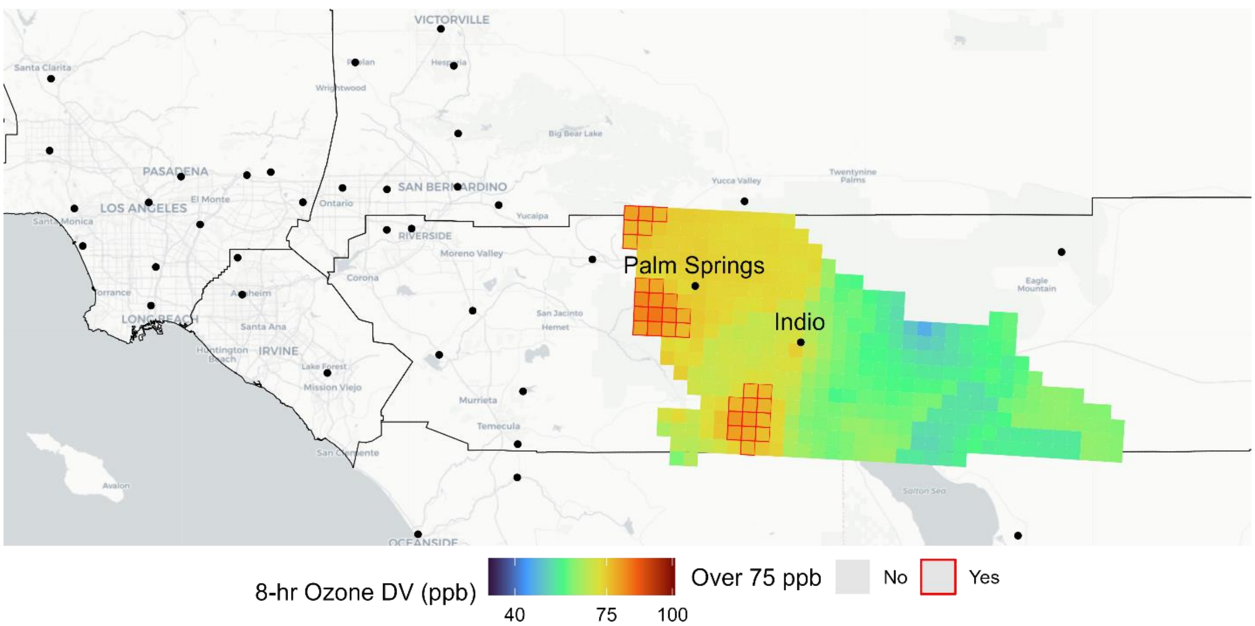


FIGURE 5-5

OZONE DESIGN VALUES IN THE 2031 ATTAINMENT SCENARIO IN COACHELLA VALLEY. CELLS EXCEEDING 75 PPB ARE OUTLINED IN RED. MONITORING STATIONS ARE SHOWN AS BLACK CIRCLES

While ozone concentrations are projected to meet the 2008 ozone NAAQS at the two monitoring stations and in most areas in the Coachella Valley, high ozone levels are evident in the western part. As shown in Figure 5-6A, most unmonitored areas that exceed 75 ppb are in high-elevation areas, with a median altitude of over 1,500 meters, compared to approximately 500 meters for the other areas with 75 ppb or lower. Those areas are characterized by steep terrain, where meteorology and air quality predictions exhibit the highest uncertainties. Furthermore, the areas with future ozone design values higher than 75 ppb within the Coachella Valley are heavily affected by boundary values, as shown in Figure 5-6B. Sensitivity runs indicate that nearly 90 percent of the ozone in high ozone areas originates from the modeling boundaries or further beyond. Although boundary contributions are somewhat high throughout the Coachella Valley, mean contributions among cells exceeding the 75 ppb standard are 6 percentage points greater than the cells below 75 ppb ($p < .00005$). In combination, a large proportion of unmonitored areas exceeding 75 ppb are located at high elevations and are heavily affected by boundary values. This might be attributed to stronger winds at higher altitudes, which quickly transport boundary values to the modeling domain before they get adjusted to the emissions and meteorological conditions within the domain.

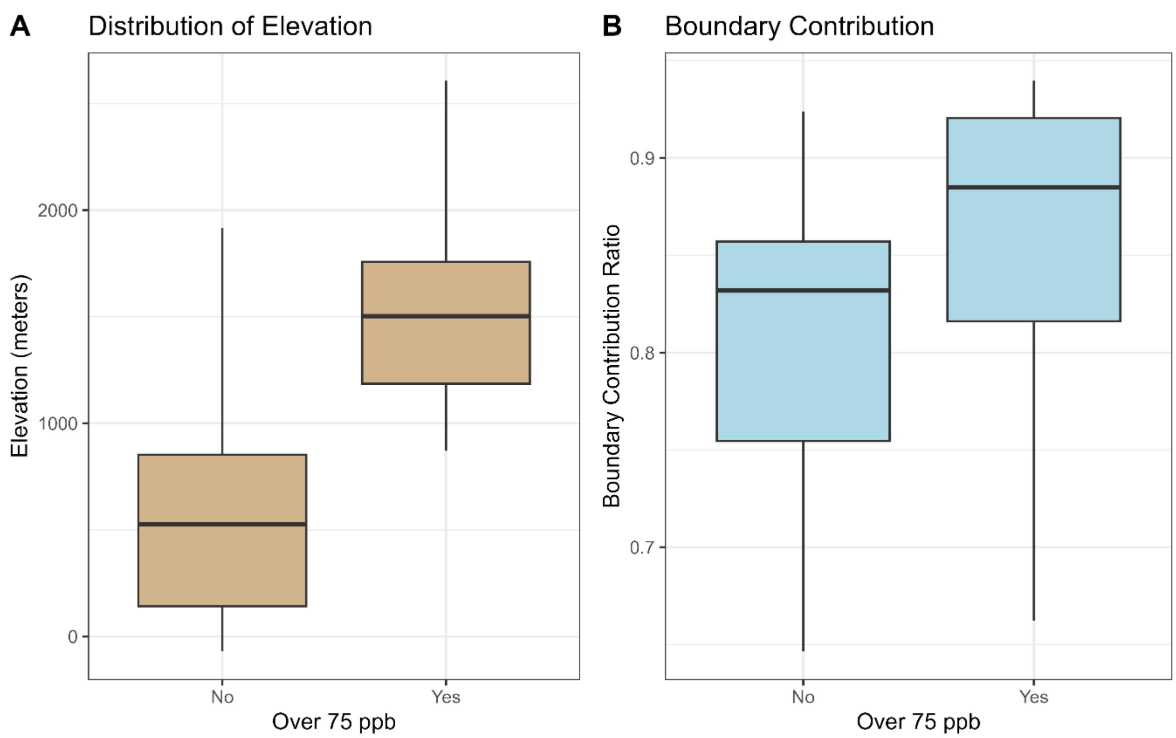


FIGURE 5-6
(A) COMPARISON OF ELEVATION DISTRIBUTION AMONG GRID CELLS ABOVE VS. BELOW THE 75 PPB, AND (B) CORRESPONDING BOUNDARY VALUES

The lateral boundary conditions are derived from its outer domain with 12-km grid resolution. The boundaries for the outer domain were derived from the CAM-chem model, with a 1.25° x 0.9° resolution. This coarse resolution of the global model contributes to the uncertainty in the boundary values. In particular, the inner domain's southern boundary is placed close to the outer domain's southern boundary, which impacts the performance of the model around those regions. While model performances with respect to observations in the South Coast Air Basin and the Coachella Valley are generally great, the performance declines substantially for locations close to the southern boundary as evident at Calexico and El Centro presented in Appendix III.

The following sensitivity air quality simulations were conducted to further analyze the contributions of local and external sources of pollution to the overall air quality in the region:

1) Attainment scenario for 2031 with zero emissions from the Coachella Valley: this simulation is designed to estimate the contribution of local emissions to the local air quality. As shown in Figure 5-7A, removing all anthropogenic emissions from Coachella Valley does not significantly affect the concentrations in the western part of the valley, and many unmonitored areas remain above the standard.

2) Attainment scenario for 2031 with zero emissions from the South Coast Air Basin: this simulation is designed to estimate the contribution of emissions from the South Coast Air Basin, which is upwind of the Coachella Valley. As shown in Figure 5-7B, removing all anthropogenic emissions from the South Coast Air Basin reduces the areas exceeding 75 ppb, but does not eliminate them all. This simulation also shows that air quality in the Coachella Valley is substantially more affected by emissions from the South Coast Air Basin than from local emissions, and that progress in curbing ozone precursors in the South Coast Air Basin will contribute to improve ozone in the Coachella Valley.

3) Future scenario for 2031 with no anthropogenic or biogenic emissions: this simulation is designed to determine the contribution of sources outside of the modeling domain, which include emissions from Mexico. As shown in Figure 5-7C, even with no direct air pollutant emissions in the modeling domain, concentrations in the western part of Coachella Valley are projected to remain high and even exceed 75 ppb at one modeling grid cell. As discussed above, those are mountainous areas where ozone concentrations remain insensitive to reduced NOx emissions. Instead, high ozone over these high-elevation areas is attributed to lateral boundary values and transport from aloft. An example of transport from the boundary is presented in Figure 5-8. Elevated concentrations of ozone are transported from the southeastern corner of the domain, and ozone laden airmass aloft as marked by the cross-sections.

4) Attainment scenario with clean background conditions: this simulation is designed to demonstrate that all areas in the Coachella Valley would attain the 2008 ozone NAAQS, if background conditions were clean. For this experiment, the 12-km outer domain was simulated with zero anthropogenic emissions to create boundary values files (BCON) for the inner domain. And then, the cleanest concentration column in BCON was assigned to the entire 4-km domain perimeter. Figure 5-9 presents

a comparison of the ozone vertical profiles, averaged over the May-September period, between the boundary values used in the attainment demonstration and the clean background conditions. As shown in Figure 5-7D, the attainment scenario leads to ozone concentrations well below the 2008 ozone NAAQS if no significant transport of ozone and its precursors through lateral boundaries. These results further illustrate the influence of the boundary conditions used in this modeling framework, and that, emission reductions are effective at improving local ozone. The current lateral boundary values, especially along the southern boundary exhibit a large degree of uncertainty as shown in the ground level ozone levels near the boundary. This is partly due to the disparity of grid sizes between CAM-Chem and CMAQ.

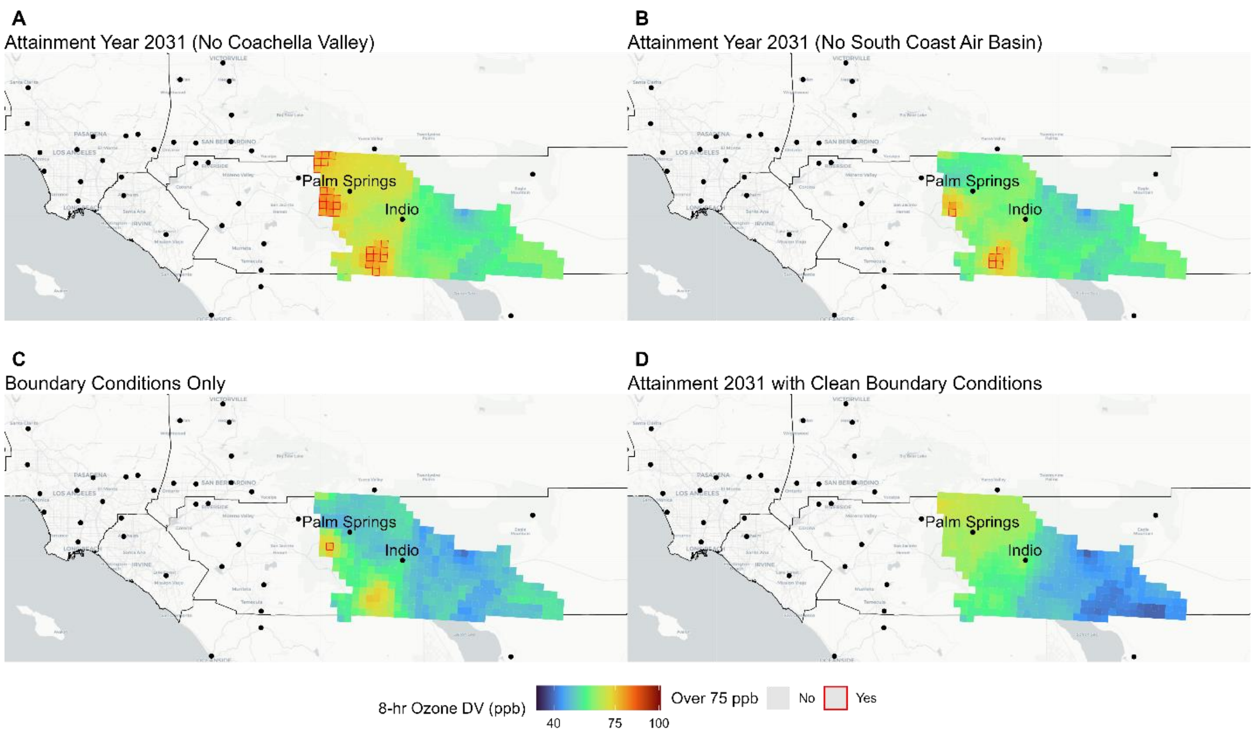


FIGURE 5-7

SENSITIVITY RUNS, (A) NO EMISSIONS IN COACHELLA VALLEY, (B) NO EMISSIONS FROM THE SOUTH COAST AIR BASIN, (C) NO ANTHROPOGENIC EMISSIONS WITHIN THIS DOMAIN, AND (D) CLEAN BOUNDARY CONDITIONS

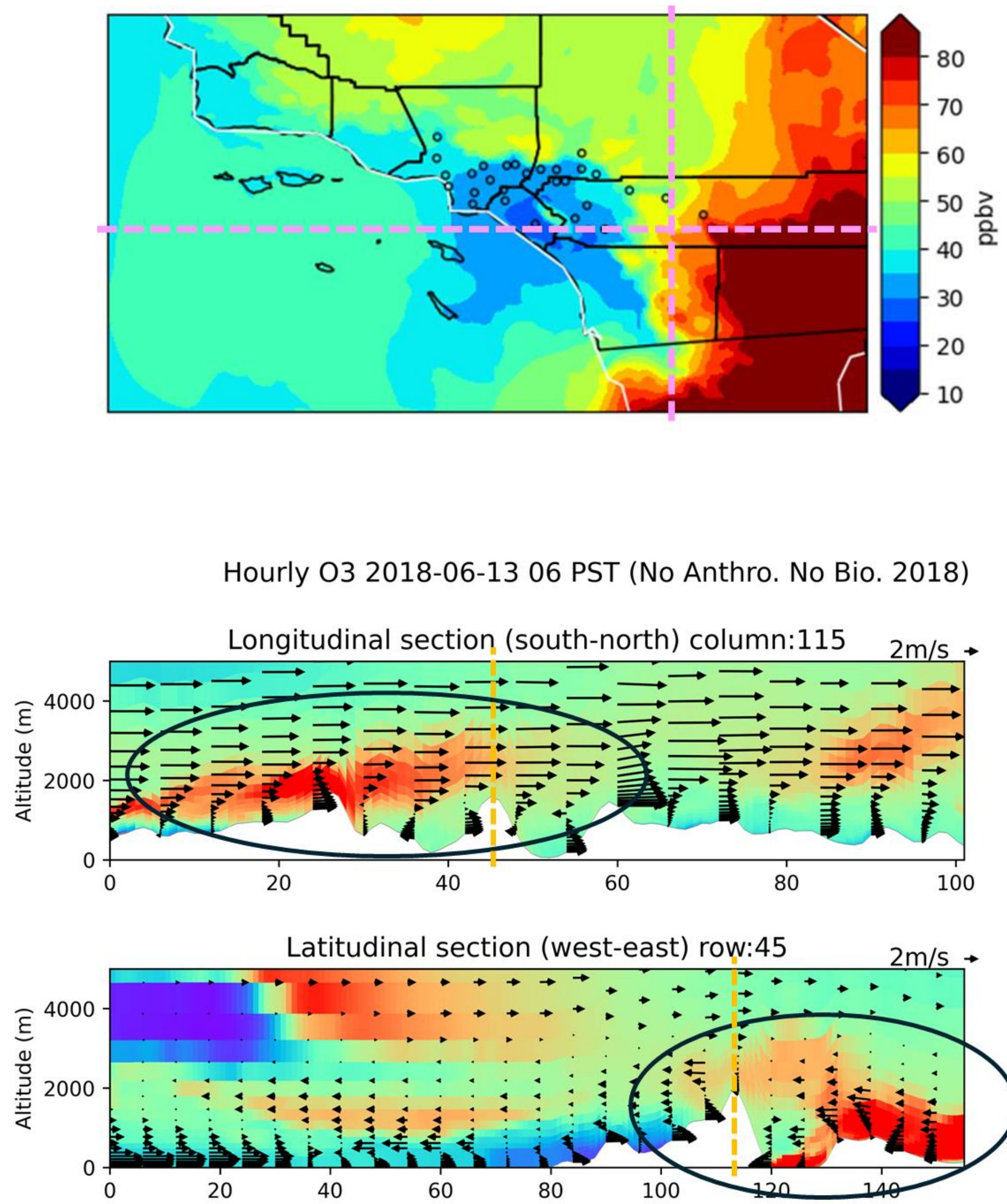


FIGURE 5-8

EXAMPLE OF OZONE TRANSPORT EVENT FROM THE SOUTHERN BOUNDARY (TOP) AND CROSS SECTION OF OZONE CONCENTRATION ALONG THE CROSS-SECTIONS HIGHLIGHTED (BOTTOM)

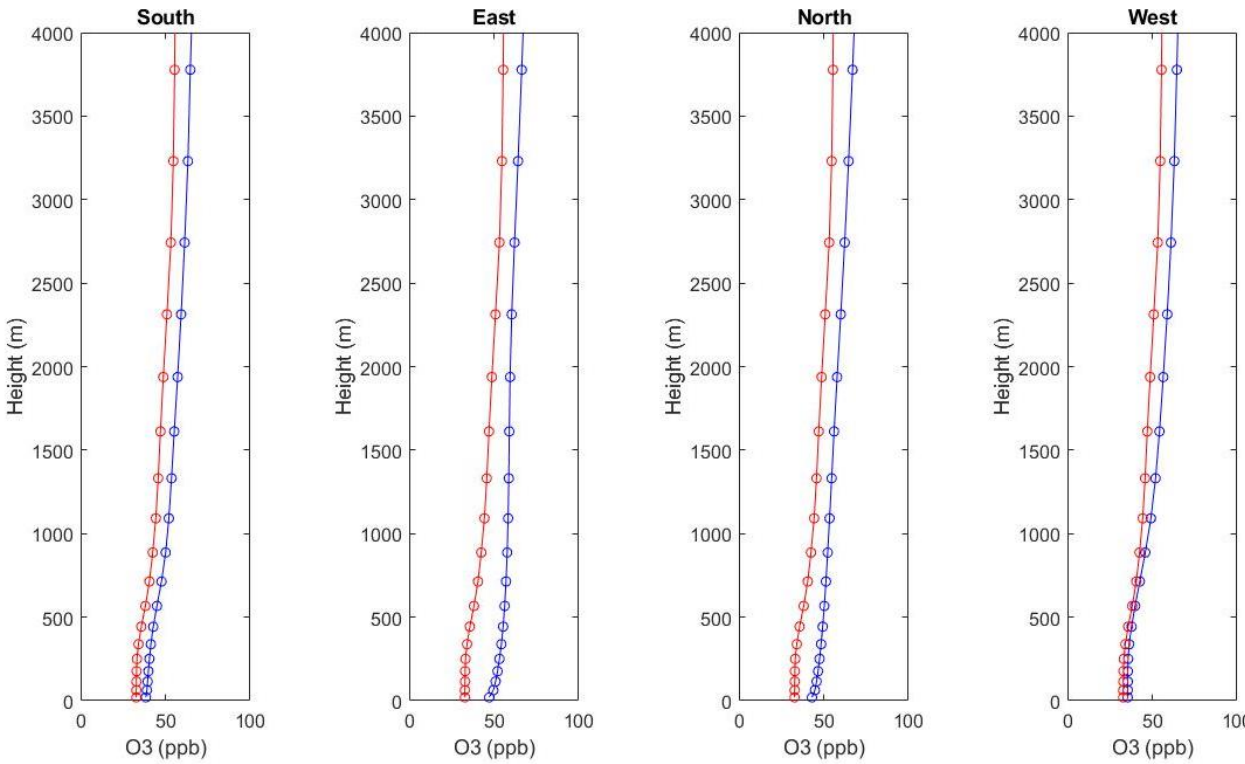


FIGURE 5-9
COMPARISON OF VERTICAL PROFILES OF THE OZONE BOUNDARY VALUES, AVERAGED OVER THE PERIOD MAY-SEPTEMBER, BETWEEN BASELINE 2031 (BLUE) AND CLEAN (RED) BOUNDARY CONDITIONS

In summary, ozone sensitivity analyses reveal that ozone design values in unmonitored areas are predominantly influenced by the boundary conditions. These conditions represent air masses being transported from outside the modeling domain, like pollution coming from Mexico and other regions, but not originated from the South Coast Air Basin. The areas less responsive to changes in local emissions from the Coachella Valley and nearby basins are primarily situated at high elevations in steep terrain, where meteorology and air quality model uncertainties typically increase. When cleaner boundary conditions are applied, the Coachella Valley is more sensitive to emission reductions within the Valley and the upwind basin, and the entire Coachella Valley is expected to attain the standard. In conclusion, despite the uncertainties inherent in projecting ozone levels in the western part of the Coachella Valley, modeling indicates that vast majority of the Coachella Valley, including highly populated areas will meet the 2008 ozone NAAQS in 2031 with the emission reductions proposed in this Plan.

Ozone Sensitivity to NOx and VOC Emissions

Additional sensitivity simulations were conducted to understand the sensitivity of ozone to local sources of emissions. These sensitivity simulations incorporated changes in ozone precursor emissions within the Coachella Valley only, not in the South Coast Air Basin or other areas in the modeling domain. Two sensitivity runs were conducted where VOC and NOx emissions within the Coachella Valley boundary were reduced by 39 percent, respectively, from the base year of 2018. U.S. EPA requires Reasonable Further Progress to achieve approximately 3 percent VOC emission reductions per year until attainment. In the case of this Plan, cumulative reductions of ozone precursors required over the 13-year period that spans from base year, 2018 to attainment year, 2031 would be 39 percent. These sensitivity simulations were used to develop RRFs and design values following the same methodology utilized in the attainment demonstration, where the sensitivity simulation results were treated as the future year predictions in the RRF equation.

The design value of the sensitivity cases is calculated as follows:

$$DV_{Sensitivity\ case} = DV_{Base\ year} \times \frac{Ozone\ Predictions\ in\ Sensitivity\ Case}{Ozone\ Predictions\ in\ Base\ Year}$$

where ozone predictions in the base year correspond to the top 10 days selected based on the highest 8-hour ozone value in a 3-by-3 cell grid centered at each monitor in the base case, per U.S. EPA's modeling guidance. Ozone predictions in the sensitivity case are based on the same days and 3-by-3 cell grid selection as in the base year.

Table 5-4 summarizes the design values calculated for the 39 percent NOx and VOC sensitivity simulations. At both sites in the Coachella Valley, the ratio of the change in ozone design value to the NOx emissions change (ΔO3/ΔNOx) is greater than that of the VOC emissions change (ΔO3/ΔVOC). This indicates that local NOx reductions are far more effective than VOC at reducing ozone.

TABLE 5-4
SENSITIVITY OF OZONE TO CHANGES IN NOX AND VOC EMISSIONS FROM THE COACHELLA VALLEY

Site	2018 Average DV (ppb)	DV after 39 percent NOx Reductions (ppb)	ΔDV/ΔNOx (ppb/tpd)	DV after 39 percent VOC Reductions (ppb)	ΔDV/ΔVOC (ppb/tpd)
Indio	84.3	82.4	0.25	84.2	0.03
Palm Springs	89.3	87.5	0.23	89.2	0.03

Weight of Evidence

The ozone design value in the Coachella Valley declined by 21 percent over the last 20 years, as shown in Figure 5-10. However, the progress has slowed down in the last 10 years or so, despite the continuous reductions in ozone precursors emissions in both the Coachella Valley and the South Coast Air Basin. Factors that may have contributed to the slowdown in the ozone trends include unfavorable meteorological conditions, its impact on vegetation and atmospheric dispersion and chemistry, and changes in chemical regimes that have rendered precursor emission reductions less effective at reducing ozone.[37] As discussed in the previous section, the ozone levels in the Coachella Valley are closely tied to those of the South Coast Air Basin. Without substantial improvements in ozone concentration in the South Coast Air Basin, the Coachella Valley would not achieve significant progress. Considering the historical ozone trend, the rate of progress in recent years in the Coachella Valley, relatively stagnant ozone levels in the South Coast Air Basin and uncertainties in photochemical transport modeling, 2031 is the most expeditious year to commit attainment of the 2008 ozone NAAQS. However, the continued implementation of the NOx strategy outlined in the 2022 AQMP would further ensure the Coachella Valley's timely attainment of the 2008 ozone NAAQS, if not earlier attainment.

[37] Interpreting recent trends in ozone and its precursors in the South Coast Air Basin. Presentation by the California Air Resources Board during the Mobile Source Committee meeting on April 22, 2022. https://www.aqmd.gov/docs/default-source/Agendas/Mobile-Source/msc-agenda-041522.pdf

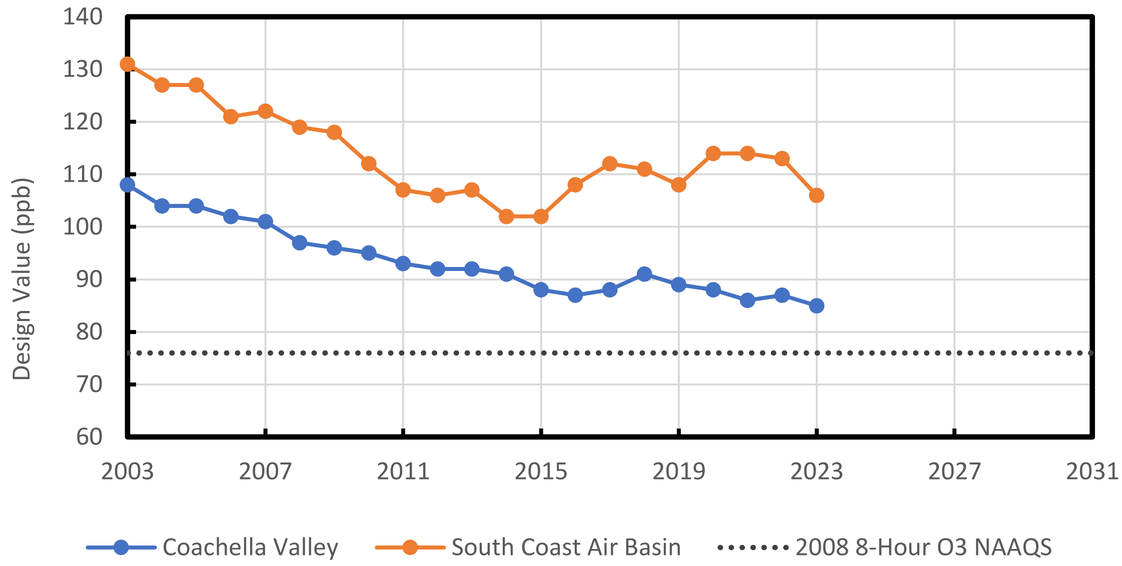


FIGURE 5-10
TRENDS IN THE 8-HOUR OZONE DESIGN VALUES IN THE COACHELLA VALLEY AND THE SOUTH COAST AIR BASIN FROM 2003-2023

Conclusion

Recent air quality trends and the updated modeling analysis in this Plan indicate that the Coachella Valley is on track to attain the ozone air quality standard by the new attainment year of 2031 based on the ongoing implementation of already adopted regulations for stationary, on-road mobile and off-road mobile sources in the South Coast Air Basin and the Coachella Valley. With the emission reductions proposed in this Plan, Palm Springs and Indio are expected to have 74.4 and 74.2 ppb, respectively, which are in attainment level of the 2008 8-hour ozone standard. The Coachella Valley located downwind of the South Coast Air Basin will continue to benefit from the rigorous control programs and associated emission reductions in the South Coast Air Basin. In addition, South Coast AQMD is committed to transition to zero emission technologies, where feasible and low NOx technologies for the rest as outlined in the 2022 AQMP, which will further ensure the Coachella Valley to attain the 2008 8-hour ozone NAAQS in 2031, if not earlier.

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

CHAPTER 6 – FEDERAL CLEAN AIR ACT REQUIREMENTS

~~Other Federal Clean Air Act Requirements~~Introduction

The Coachella Valley is in nonattainment of the 2008 8-hour ozone NAAQS. The Coachella Valley was reclassified from "severe" to "extreme" nonattainment effective April 7, 2023 with a new attainment date of July 20, 2032.[38] As a result of the reclassification, a revision to the SIP is required to address "extreme" nonattainment area requirements (see Table 6-1) and to demonstrate attainment by the new attainment deadline. The Coachella Valley Ozone Plan seeks to fulfill those requirements.

TABLE 6-1
FEDERAL CLEAN AIR ACT REQUIREMENTS FOR THE COACHELLA VALLEY OZONE PLAN

Requirement	CAA Section	Definition	Location in Plan
Emissions Inventory	172(c)(3)	A comprehensive, accurate, current inventory of actual emissions from all sources of the relevant pollutant or pollutants.	Chapter 3
Control Strategy	172(c)(6)	Enforceable commitments and control measures, as well as schedules and timetables for compliance to ensure attainment.	Chapter 4
RACM/RACT	172(c)(1), 182(b)(2)	Provisions to ensure that Reasonably Available Control Technology (RACT) are implemented no later than 5 years after designation, and a demonstration that the control strategy includes all Reasonable Available Control Measures (RACM) to ensure attainment as expeditiously as practicable and to meet any Reasonable Further Progress (RFP) requirements.	Chapter 6
Attainment Demonstration	182(c)(2)(A), 182(e)	Attainment date shall be as expeditiously as practicable but no later than the twentieth year after designation as nonattainment.	Chapter 5
Reasonable Further Progress	172(c)(2), 182(c)(2)(B), 182(g)	A demonstration of RFP compliance.	Chapter 6
Transportation Conformity	176(c)	Plan provisions addressing transportation conformity, including motor vehicle	Chapter 6

[38] U.S. EPA, Designation of Areas for Air Quality Planning Purposes; California; Coachella Valley Ozone Nonattainment Area; Reclassification to Extreme, 88 Fed. Reg. 14291 (March 8, 2023). https://www.federalregister.gov/documents/2023/03/08/2023-04736/designation-of-areas-for-air-quality-planning-purposes-california-coachella-valley-ozone

Requirement	CAA Section	Definition	Location in Plan
		emissions budgets for RFP milestone years and the attainment year.	
Vehicle Miles Travelled (VMT) Offset Demonstration	182(d)(1)(A)	Provisions to offset growth in emissions due to growth in VMT through the implementation of transportation control strategies and transportation control measures (TCMs).	Chapter 6
Clean Fuels for Fleets	182(c)(4)(A)	For fleets of 10 or more vehicles, a demonstration of compliance with federal emission standards or a substitute program that achieves equivalent or greater emission reductions.	Chapter 6
Enhanced Vehicle Inspection and Maintenance (I/M)	182(c)(3)	A program requiring vehicle emission control systems to be inspected and repaired if a malfunction is identified.	Chapter 6
New Source Review	172(c)(5), 173, 182(e)(2)	A program requiring permits and emission offsets for the construction and operation of new and modified major stationary sources of VOC or NOx.	Chapter 6
Emissions Statement	182(a)(3)(B)	A requirement for owners and operators of stationary sources to submit an annual inventory of VOC and NOx emissions for the source.	Chapter 6
Clean Fuels for Boilers	182(e)(3)	A requirement that boilers burn clean fuels or use advanced control technology.	Chapter 6
NOx Requirements	182(f), 182(e)(1)	A requirement that major stationary source requirements for VOC also apply to NOx.	Chapter 6
Nonattainment Fees	185	Provisions to require major stationary sources to pay an annual fee if Coachella Valley fails to attain the standard by the attainment date.	Chapter 6

Requirement	CAA Section	Definition	Location in Plan
Contingency Measures	172(c)(9), 182(c)(9)	Fully adopted rules or control measures that are ready to be implemented, should U.S. EPA issue a final rule that the Coachella Valley failed to meet a regulatory requirement necessitating implementation of a contingency measure. Contingency measures must take effect without significant additional action by the state or local agency or by U.S. EPA.	Chapter 6

The Coachella Valley is also in "extreme" nonattainment for the 1997 8-hour ozone NAAQS, and South Coast AQMD's Coachella Valley Extreme Area Plan for the 1997 8-Hour Ozone Standard already addressed applicable federal Clean Air Act (CAA) Section 182 requirements for "extreme" nonattainment areas.[39] For example, the major stationary source threshold reflected in South Coast AQMD's rules for Coachella Valley has already been lowered to 10 tons per year of VOC and NOx as required under CAA Section 182(e). For other requirements, updates to previous analyses are needed to account for new information. Each of these requirements are evaluated in detail below.

Reasonable Further Progress

The CAA requires that "extreme" nonattainment areas demonstrate RFP towards attainment through emission reductions phased in from the base year until the attainment date. The RFP requirements in the CAA are intended to ensure that there are sufficient precursor emission reductions to attain the ozone NAAQS by the applicable attainment date.

Per CAA Section 171(1), RFP is defined as "such annual incremental reductions in emissions of the relevant air pollutant […] for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date." The goal of RFP is to demonstrate steady progress in emission reductions between the base year and attainment date, which ensures that areas will begin lowering air pollution in a timely manner and will not delay implementation of control programs until immediately before the

[39] South Coast AQMD, Final Coachella Valley Extreme Area Plan for 1997 8-Hour Ozone Standard, December 2020. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/2-final-coachella-valley-extreme-area-plan-for-1997-8-hour-ozone-standard.pdf?sfvrsn=6

attainment deadline. When assessing RFP compliance, U.S. EPA states that the plan should rely only on emission reductions achieved from sources within the nonattainment area.[40]

Section 172(c)(2) of the CAA requires that attainment plans show ongoing annual incremental emission reductions toward attainment, which is commonly expressed in terms of benchmark emissions levels or air quality targets to be achieved by certain interim milestone years. There are two separate RFP requirements for ozone nonattainment areas depending upon their classification. CAA sections 182(b)(1) and 182(c)(2)(B) contain specific emission reduction targets to ensure that each ozone nonattainment area provides for sufficient precursor emission reductions to attain the ozone standard. CAA Section 182(b)(1)(A) requires that each "moderate" or above nonattainment area provide for VOC reductions of at least 15 percent from baseline emissions within six years after November 15, 1990. U.S. EPA's implementation rule for the 2008 ozone standard states that if an area has already met the 15 percent requirement for VOCs under either the 1-hour ozone NAAQS or the 1997 ozone NAAQS, such requirement under CAA Section 182(b)(1) would not have to be fulfilled again.[41] Instead, such areas would need to meet the CAA requirements under Section 182(c)(2)(B), which requires that "serious" and above areas provide VOC and/or NOx reductions (CAA Section 182(c)(2)(C)) of 18 percent over the first six years after the RFP base year for the 2008 8-hour ozone NAAQS, and an additional 3 percent per year averaged over each consecutive 3-year period until the attainment date. In 1997, U.S. EPA approved a 15 percent VOC-only rate of progress demonstration for the 1-hour ozone standard in the South Coast Air Basin.[42] As such, the requirement under CAA Section 182(b)(1) to demonstrate a 15 percent reduction in VOCs in the first 6 years has been met for the Basin.

For the 182(c)(2)(B) RFP requirement, U.S. EPA guidance allows for substitution of NOx reductions for VOC reductions to demonstrate the annual 3 percent reductions of ozone precursors if it can be demonstrated that the substitution yields equivalent ozone reductions.[43] Additional U.S. EPA guidance states that certain conditions are needed to use NOx substitution in an RFP demonstration.[44] First, an equivalency demonstration must show that cumulative RFP emission reductions are consistent with the NOx and VOC emission reductions determined in the ozone attainment demonstration. Second, the reductions in NOx and VOC emissions should be consistent with the continuous RFP emission reduction requirement. U.S. EPA states that "Any combination of VOC and NOx emission reductions which totals 3 percent per year and

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[40] U.S. EPA, Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements, 80 Fed. Reg. 12264 (March 6, 2015). https://www.federalregister.gov/documents/2015/03/06/2015-04012/implementation-of-the-2008-national-ambient-air-quality-standards-for-ozone-state-implementation

[41] Ibid.

[42] U.S. EPA, Approval and Promulgation of Implementation Plans; California — Ozone, 62 Fed. Reg. 1150 (January 8, 1997). https://www.federalregister.gov/documents/1997/01/08/97-144/approval-and-promulgation-of-implementation-plans-california-ozone

[43] U.S. EPA, Guidance on the Post-1996 Rate-of-Progress Plan and the Attainment Demonstration, February 18, 1994. https://nepis.epa.gov/Exe/ZyPDF.cgi/P1001E8Z.PDF?Dockey=P1001E8Z.PDF

[44] U.S. EPA, NOx Substitution Guidance, December 1993. https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/19931201_oaqps_nox_substitution_guidance.pdf

meets other SIP consistency requirements described in this document are allowed."[45] Photochemical modeling shows that NOx reductions are critical for Coachella Valley to reach attainment and yield more ozone reductions in future years compared to the same percentage of VOC reductions. Additional sensitivity simulations were conducted, demonstrating that NOx reductions are approximately 8 times more effective at reducing ozone compared to VOC reductions at both Palm Springs and Indio. For details, refer to Chapter 5.

While the previously submitted RFP SIP included an RFP demonstration,[46] this Plan updates the demonstration to make it consistent with the attainment demonstration and emissions inventory included in this Plan. As of September 2024, U.S. EPA- has not acted on the RFP portion of the RFP SIP. Tables 6-2 and 6-3 summarize the RFP calculations. Figure 6-2 depicts the target level and projected baseline VOC emissions for the RFP demonstration. The emissions used in the RFP demonstration are consistent with the baseline summer planning emissions, which reflect already adopted rules and regulations (see Appendix I). In order to demonstrate consistency between the RFP demonstration and MVEB, a line-item adjustment is made in the RFP demonstration to account for the differences in the total of the MVEBs which are individually rounded up to the nearest tenth of a ton per day.

In accordance with U.S. EPA guidance for 2008 8-hour ozone standard attainment plans, the emission reductions in the RFP demonstration occur inside the nonattainment area and start from a base year of 2011.[47] For all milestone years, the baseline VOC emission levels are above the target levels. To account for the shortfall in VOC reductions, projected NOx baseline emission reductions are needed to show RFP compliance. Table 6-3 demonstrates that for each of the milestone years, Coachella Valley meets the targets based on reductions from existing regulatory programs using a combination of VOC and NOx reductions. No additional reductions are needed for RFP purposes.

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[45] U.S. EPA, Approval and Promulgation of Implementation Plans; California — Ozone, 62 Fed. Reg. 1150 (January 8, 1997). https://www.federalregister.gov/documents/1997/01/08/97-144/approval-and-promulgation-of-implementation-plans-california-ozone

[46] South Coast AQMD, Request to Reclassify Coachella Valley for the 2008 8-Hour Ozone Standard and the Updated Motor Vehicle Emissions Budgets, November 2022. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/cv-mveb/coachella-valley-reclassification-for-the-2008-8-hour-ozone-standard-and-mveb---final-staff-report.pdf?sfvrsn=8

[47] U.S. EPA, Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements, 80 Fed. Reg. 12264 (March 6, 2015). https://www.federalregister.gov/documents/2015/03/06/2015-04012/implementation-of-the-2008-national-ambient-air-quality-standards-for-ozone-state-implementation

TABLE 6-2
SUMMARY OF REASONABLE FURTHER PROGRESS CALCULATIONS – VOC

Row	Calculation Step[a]	2011[b]	2017	2020	2023	2026	2029	2031
1	RFP Baseline VOC Emissions	16.54	13.62	13.63	12.77	12.35	11.94	11.79
2	MVEB Rounding Margin	-	0.0	0.0	0.0	0.06	0.09	0.02
3	Baseline VOC + MVEB Rounding Margin	-	13.62	13.63	12.77	12.41	12.03	11.81
~~2~~4	Required Percent Change Since Previous Milestone Year (%)	-	18	27	36	45	54	60
~~3~~5	Target VOC Level	-	13.56	12.07	10.59	9.10	7.61	6.62
~~4~~6	Cumulative Milestone Year Shortfall	-	0.06	1.56	2.18	3.~~25~~31	4.~~33~~42	5.~~17~~19
~~5~~7	Cumulative Shortfall in VOC (%)	-	0.3	9.4	13.2	~~19.7~~20.0	26.~~2~~7	31.~~2~~4
~~6~~8	Incremental Milestone Year Shortfall (%)	-	0.3	9.1	3.8	6.~~5~~8	6.~~5~~7	~~5.0~~4.7

[a] Units are in tons per day (tpd), based on the summer planning inventory unless otherwise noted.
[b] Base Year (2011).

Row Description:

ROW 1: RFP baseline emissions used for RFP demonstration; Baseline and Future Emission Inventory taking into account existing rules and projected growth.

ROW 2: Motor Vehicle Emissions Budgets Rounding Margins account for the differences in the on-road mobile source emissions projections in the inventory and the total of the MVEBs

ROW 3: [(Row 1) + (Row 2)]; e.g., for 2029, 11.94 tpd + 0.09 tpd= 12.03 tpd

ROW ~~2~~4: Required 18% reduction 6 years after Base Year; future milestone years are every 3 years until attainment year; and required reductions are 3% per year for each milestone year (e.g., for every 3 years, required 9% reduction)

ROW ~~3~~5: [(2011 Base Year Row 1) x (1 – Row 2)]; e.g., for 2029, 16.54 tpd x (1 – 0.54)= 7.61 tpd

ROW ~~4~~6: [(Row 1) – (Row 3)] or (Baseline – Target); negative number meets target level and positive number is shortfall of target level; e.g., for 2029, 11.94 tpd - 7.61 tpd = 4.33 tpd

ROW ~~5~~7: [(Row 4) / (Row 1 Base Year) x 100]; e.g., for 2029, cumulative shortfall is 4.33 tpd /16.54 tpd = 26.2%

ROW ~~6~~8: Negative (Row 5) is zero shortfall; positive number is a shortfall. Incremental milestone year shortfall is determined by subtracting the previous year's cumulative shortfall from the current cumulative shortfall; e.g., for 2029, cumulative shortfall of 26.2% – previous 2026 shortfall of 19.7% = 6.5%

TABLE 6-3
SUMMARY OF REASONABLE FURTHER PROGRESS CALCULATIONS – NOx

Row	Calculation Step[a]	2011[b]	2017	2020	2023	2026	2029	2031
1	RFP Baseline NOx Emissions	28.57	20.28	17.09	14.14	11.65	10.91	10.61
2	MVEB Rounding Margin	-	0.0	0.0	0.0	0.10	0.09	0.0
3	Baseline VOC + MVEB Rounding Margin	-	20.28	17.09	14.14	11.75	11.00	10.61
4~~2~~	Reductions in NOx Emissions since Base Year	-	8.29	11.48	14.43	16.~~92~~82	17.~~66~~57	17.96
5~~3~~	Percent Reductions in NOx Emissions since Base Year (%)	-	29.0	40.2	50.5	~~59~~58.~~3~~9	61.~~8~~5	62.9
6~~4~~	Cumulative Shortfall in VOC (%)	-	0.3	9.4	13.2	~~19.7~~20.0	26.~~2~~7	31.~~2~~4
7~~5~~	Percent Surplus Reduction (%)	-	28.7	30.8	37.3	~~39~~38.~~6~~9	~~35~~34.~~7~~8	31.~~7~~5
8~~6~~	RFP Compliance	-	Yes	Yes	Yes	Yes	Yes	Yes

[a] Units are in tons per day (tpd), based on the summer planning inventory unless otherwise noted.
[b] Base Year (2011).

Row Description:

ROW 1: RFP baseline emissions used for RFP demonstration; Baseline and Future Emission Inventory taking into account existing rules and projected growth.

ROW 2: Motor Vehicle Emissions Budgets Rounding Margins account for the differences in the on-road mobile source emissions projections in the inventory and the total of the MVEBs

ROW 3: [(Row 1) + (Row 2)]; e.g., for 2029, 10.91 tpd + 0.09 tpd= 11.00 tpd

ROW ~~2~~4: Reductions achieved in Baseline: [(Row 1 Base Year) – (Row 3~~1~~ Milestone Year)]; e.g., for 2029: 28.57 tpd – ~~10~~11.~~91~~00 tpd = 17.~~66~~57 tpd

ROW ~~3~~5: % Reductions achieved since Base Year: [(Row ~~2~~4) / (Row 1 Base Year)] x 100; e.g., for 2029: (17.~~66~~57/28.57) x 100 = 61.~~8~~5%

ROW ~~4~~6: Cumulative VOC shortfall from Table 6-2 Row ~~5~~7

ROW ~~5~~7: Surplus reductions achieved [(Row ~~3~~5) – (Row ~~4~~6)]; e.g., for 2029: 61.~~8~~5% – 26.~~2~~7% = ~~35~~34.~~7~~8%

ROW ~~6~~8: Positive number in Row ~~5~~ 7 is percent surplus for each milestone year, thus meeting RFP target levels

RACM Demonstration

As an "extreme" nonattainment area, a RACM Demonstration is required as part of the attainment plan. Section 172(c)(1) of Subpart 1 of the CAA requires nonattainment areas to provide for the implementation of all RACM as expeditiously as practicable, including the adoption of RACT. Section 172(c)(1) of the CAA sets the overall framework for the RACM analysis and requires the nonattainment air districts to:

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

RACM is applicable to a wide range of sources (stationary - point and area - and mobile) and should include measures that are technologically and economically feasible. RACM should also include RACT, which applies to stationary sources and represents the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economical feasibility.[48] The U.S. EPA has previously provided guidance interpreting the RACM requirement in the General Preamble[49] and in a memorandum entitled "Guidance on Reasonably Available Control Measures (RACM) Requirements and Attainment Demonstration Submissions for the Ozone NAAQS."[50] In summary, U.S. EPA guidance provides that to address the requirement to adopt all RACM, states should consider all potentially reasonable control measures for source categories in the nonattainment area to determine whether they are reasonably available for implementation in that area and whether they would, if implemented individually or collectively, advance the area's attainment date by one year or more.

South Coast AQMD periodically conducts RACT/RACM analyses as part of SIPs for various federal air quality standards. As part of the 2016 AQMP, a RACM analysis was conducted for the 2008 8-hour ozone standard for both the South Coast Air Basin and the Coachella Valley.[51] In June 2020, a RACT demonstration was conducted for the 2015 8-hour ozone standard (referred to as 2020 RACT Demonstration hereafter).[52] In December 2020, a RACM evaluation was conducted as part of the Coachella Valley Extreme Area Plan for the 1997 8-hour Ozone Standard (referred to as 2020 RACM Evaluation hereafter).[53] Most recently, as a component of the 2022 AQMP, South Coast AQMD conducted a comprehensive RACM analysis for the

[48] U.S. EPA, State Implementation Plans; General Preamble for Proposed Rulemaking on Approval of Plan Revisions for Nonattainment Areas–Supplement (on Control Techniques Guidelines), 44 Fed. Reg. 53761 (September 17, 1979). https://www.epa.gov/sites/default/files/2016-08/documents/44_fedreg_53761_9-17-79_general_preamble_supplement_on_ract_and_ctgs.pdf

[49] U.S. EPA, State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, 57 Fed. Reg. 13498, 13560 (April 16, 1992). https://www.epa.gov/sites/default/files/2016-03/documents/57fedreg13498.pdf

[50] John Seitz, Guidance on Reasonably Available Control Measures (RACM) Requirements and Attainment Demonstration Submissions for the Ozone NAAQS, November 30, 1999 ("Seitz Memo")

[51] South Coast AQMD, 2016 Air Quality Management Plan, Appendix VI-A: RACM/BACM Demonstration. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/appendix-vi.pdf?sfvrsn=4

[52] South Coast AQMD, Draft Final Staff Report for 2015 8-Hour Ozone Standard Reasonably Available Control Technology (RACT) Demonstration, June 2020. http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2020/2020-Jun5-028.pdf?sfvrsn=8

[53] South Coast AQMD, Final Coachella Valley Extreme Area Plan for 1997 8-Hour Ozone Standard, December 2020. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/2-final-coachella-valley-extreme-area-plan-for-1997-8-hour-ozone-standard.pdf?sfvrsn=6

2015 8-hour ozone standard.[54] The 2022 AQMP RACM analysis was built upon the 2020 RACT Demonstration. A 7-step analysis was conducted to identify potential control measures from various sources including prior RACT/RACM analyses, the U.S. EPA Technical Support Documents, control measures beyond RACM in the 2016 AQMP, rules and regulations adopted by other air districts and states, the U.S. EPA Menu of Control Measures, the U.S. EPA guidance documents, and a Control Measures Workshop.

The purpose of this RACM analysis is to determine whether any feasible measures are available for inclusion in the Coachella Valley Extreme Area Plan for the 2008 8-Hour Ozone Standard. The RACM/RACT analysis provides a comparison of the South Coast AQMD rules and regulations governing precursor emission limits to those established by the U.S. EPA guidance and representative agencies within California and elsewhere throughout the U.S. This Coachella Valley Extreme Area Plan RACM analysis builds upon the 2022 AQMP RACM Demonstration and the 2020 RACM Evaluation to review and, if applicable, update South Coast AQMD's control measures to advance emissions controls to reflect the current state of technology.

The RACM evaluation is broken down into the following emission source categories:

- South Coast AQMD Stationary and Area Sources
- CARB Mobile and Area sources
- Transportation Control Strategies and Transportation Control Measures

South Coast AQMD Stationary and Area Sources

Background and Emissions Inventory

The 2022 AQMP RACM Demonstration was an updated analysis built upon the prior RACT/RACM analyses submitted in 2020 and evaluated the stringency of South Coast AQMD rules and regulations against the rules adopted from March 2020 to September 2021 in other ozone nonattainment air districts and state agencies. Since the 2020 RACT Demonstration, there have been no updates to U.S. EPA's Control Techniques Guidelines (CTGs) and Alternative Control Techniques (ACTs). The Coachella Valley Extreme Area RACM evaluation builds upon the latest 2022 AQMP RACM Demonstration and thus, staff evaluated the stringency of the South Coast AQMD rules and regulations against other agencies' rules adopted from October 2021 to March 2024. To identify VOC and NOx emission sources, the 2018 summer planning emissions inventory in Coachella Valley, segregated by Major Source Category (MSC), was used. As presented in Table 6-4, the stationary and area sources account for 47 percent of total VOC emissions and 7 percent of total NOx emissions in the Coachella Valley. Only MSCs with emissions of VOC or NOx are

[54] South Coast AQMD, 2022 Air Quality Management Plan, Appendix VI-A: RACM/BACM Demonstration. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/appendix-vi.pdf?sfvrsn=12

listed in Table 6-4. South Coast AQMD rules and regulations applicable to these stationary sources are also listed in Table 6-4.

TABLE 6-4
2018 SUMMER PLANNING EMISSIONS INVENTORY FOR STATIONARY AND AREA SOURCES IN COACHELLA VALLEY, TONS PER DAY*

MSC	Description	VOC	NOx	South Coast AQMD Rules and Regulations
010	Electric Utilities	0.02	0.54	Rule 429.2 – Start-Up and Shutdown Exemption Provisions for Oxides of Nitrogen from Electricity Generating Facilities; Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities
050	Manufacturing and Industrial	0.02	0.10	Rule 474 – Fuel Burning Equipment – Oxides of Nitrogen; Rule 476 – Steam Generating Equipment; Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines; Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces; Rule 1112 – Emissions of Oxides of Nitrogen from Cement Kilns; Rule 1117 – Emissions from Container Glass Melting and Sodium Silicate Furnaces; Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; Rule 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; Rule 1147 – NOx Reductions from Miscellaneous Sources; Rule 1147.1 – NOx Reductions from Aggregate Dryers; Rule 1147.2 – NOx Reductions from Metal Melting and Heating Furnaces; Rule 1159 – Nitric Acid Units – Oxides of Nitrogen
060	Service and Commercial	0.05	0.23	Rule 474 – Fuel Burning Equipment – Oxides of Nitrogen; Rule 476 – Steam Generating Equipment; Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines; Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces; Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; Rule 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; Rule 1147 – NOx Reductions from Miscellaneous Sources

MSC	Description	VOC	NOx	South Coast AQMD Rules and Regulations
099	Other (Fuel Combustion)	0.01	0.09	Rule 474 – Fuel Burning Equipment – Oxides of Nitrogen; Rule 476 – Steam Generating Equipment; Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines; Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces; Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; Rule 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; Rule 1147 – NOx Reductions from Miscellaneous Sources
110	Sewage Treatment	0.01	0.00	Rule 442 – Usage of Solvents; Rule 1179 – Publicly Owned Treatment Works Operations
130	Incineration	0.00	0.01	Rule 474 – Fuel Burning Equipment – Oxides of Nitrogen
220	Degreasing	0.27	0.00	Rule 442 – Usage of Solvents; Rule 1122 – Solvent Degreasers; Rule 1171 – Solvent Cleaning Operations
230	Coatings and Related Process Solvents	1.28	0.00	Rule 442 – Usage of Solvents; Rule 1104 – Wood Flat Stock Coating Operations; Rule 1106 – Marine and Pleasure Craft Coating Rule; 1107 – Coating of Metal Parts and Products; Rule 1115 – Motor Vehicle Assembly Line Coating Operations; Rule 1124 – Aerospace Assembly and Component Manufacturing Operations; Rule 1125 – Metal Container, Closure, and Coil Coating Operations; Rule 1126 – Magnet Wire Coating Operations; Rule 1128 – Paper, Fabric, and Film Coating Operations; Rule 1132 – Further Control of VOC Emissions from High-Emitting Spray Booths; Rule 1136 – Wood Products Coatings; Rule 1145 – Plastic, Rubber, Leather, and Glass Coatings; Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations; Rule 1162 – Polyester Resin Operations; Rule 1164 – Semiconductor Manufacturing
240	Printing	0.02	0.00	Rule 442 – Usage of Solvents; Rule 1128 – Paper, Fabric, and Film Coating Operations; Rule 1130 – Graphic Arts; Rule 1130.1 – Screen Printing Operations
250	Adhesives and Sealants	0.14	0.00	Rule 442 – Usage of Solvents; Rule 1168 – Adhesive and Sealant Applications
299	Other (Cleaning and Surface Coatings)	0.02	0.00	Rule 442 – Usage of Solvents; Rule 1144 – Metalworking Fluids and Direct-Contact Lubricants; Rule 1171 – Solvent Cleaning Operations

MSC	Description	VOC	NOx	South Coast AQMD Rules and Regulations
330	Petroleum Marketing	0.33	0.00	Rule 461 – Gasoline Transfer and Dispensing; Rule 461.1 – Gasoline Transfer and Dispensing for Mobile Fueling Operations; Rule 462 – Organic Liquid Loading; Rule 463 – Organic Liquid Storage; Rule 1142 – Marine Tank Vessel Operations; Rule 1170 – Methanol Compatible Fuel Storage and Transfer; Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants; Rule 1177 – Liquefied Petroleum Gas Transfer and Dispensing; Rule 1178 – Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities
410	Chemical	0.12	0.00	Rule 442 – Usage of Solvents; Rule 462 – Organic Liquid Loading; Rule 463 – Organic Liquid Storage; Rule 1103 – Pharmaceutical and Cosmetic Manufacturing Operations; Rule 1141 – Control of Volatile Organic Compound Emissions from Resin Manufacturing; Rule 1141.1 – Coatings and Ink Manufacturing; Rule 1141.2 – Surfactant Manufacturing; Rule 1145 – Plastic, Rubber, Leather, and Glass Coatings; Rule 1163 – Control of Vinyl Chloride Emissions; Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants
420	Food and Agriculture	0.03	0.00	Rule 442 – Usage of Solvents; Rule 1131 – Food Product Manufacturing and Process Operations; Rule 1138 – Control of Emissions from Restaurant Operations; Rule 1153 – Commercial Bakery Ovens
430	Mineral Processes	0.02	0.00	Rule 442 – Usage of Solvents
499	Other (Industrial Processes)	0.07	0.00	Rule 442 – Usage of Solvents; Rule 462 – Organic Liquid Loading; Rule 463 – Organic Liquid Storage; Rule 1133 – Composting and Related Operations – General Administrative Requirements; Rule 1133.1 – Chipping and Grinding Activities; Rule 1133.2 – Emission Reductions from Co-Composting Operations; Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations; Rule 1144 – Metalworking Fluids and Direct-Contact Lubricants; Rule 1162 – Polyester Resin Operations
510	Consumer Products	3.04	0.00	Rule 1143 – Consumer Paint Thinners and Multi-Purpose Solvents; Rule 1168 – Adhesive and Sealant Applications
520	Architectural Coatings and Related Solvents	0.30	0.00	Rule 1113 – Architectural Coatings

MSC	Description	VOC	NOx	South Coast AQMD Rules and Regulations
530	Pesticides/Fertilizers	0.22	0.00	Rule 1133.2 – Emission Reductions from Co-Composting Operations; Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations
540	Asphalt Paving/ Roofing	0.06	0.00	Rule 470 – Asphalt Air Blowing; Rule 1108 – Cutback Asphalt; Rule 1108.1 – Emulsified Asphalt
610	Residential Fuel Combustion	0.09	0.28	Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces; Rule 1121 – Control of Nitrogen Oxides from Residential Type, Natural-Gas-Fired Water Heaters
620	Farming Operations	0.07	0.00	Rule 474 – Fuel Burning Equipment – Oxides of Nitrogen; Rule 476 – Steam Generating Equipment; Rule 1127 – Emission Reductions from Livestock Waste
660	Fires	0.01	0.00	Rule 444 – Open Burning; Rule 445 – Wood Burning
670	Waste Burning and Disposal	0.01	0.01	Rule 473 – Disposal of Solid and Liquid Wastes; Rule 474 – Fuel Burning Equipment – Oxides of Nitrogen; Rule 476 – Steam Generating Equipment
690	Cooking	0.03	0.00	Rule 1174 – Control of Volatile Organic Compound Emissions from the Ignition of Barbecue Charcoal
	RECLAIM	-	0.11	Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx)
	Total Stationary**	**6.26**	**1.38**	

* Certain source categories are not listed because they have zero emissions for both VOC and NOx.

** Values are rounded to nearest integer and may not sum due to rounding.

To capture all potential emission reduction opportunities for stationary point and area sources, an incremental RACM evaluation, focusing on other agencies' rules adopted from October 2021 to March 2024, has been conducted for this Plan. South Coast AQMD rules are evaluated against those adopted by other air quality agencies in ozone nonattainment areas designated as "serious" or above. These air districts and state agencies are listed in Table 6-5.

TABLE 6-5
NONATTAINMENT AREAS DESIGNATED AS "SERIOUS" OR ABOVE FOR 2008 OZONE NAAQS[a]

Nonattainment Status	Nonattainment Area	Responsible Air Agency
Extreme	Los Angeles-South Coast Air Basin, CA	South Coast AQMD
	Riverside County (Coachella Valley), CA	South Coast AQMD
	San Joaquin Valley, CA	San Joaquin Valley Air Pollution Control District (SJVAPCD)
Severe-15	Dallas-Fort Worth, TX	Texas Commission on Environmental Quality (TCEQ)
	Denver-Boulder-Greeley-Ft. Collins-Loveland, CO	Colorado Department of Public Health and Environment (CDPHE)
	Houston-Galveston-Brazoria, TX	TCEQ
	Kern County (Eastern Kern), CA	Eastern Kern County Air Pollution Control District (EKAPCD)
	Los Angeles-San Bernardino Counties (West Mojave Desert), CA	Mojave Desert Air Quality Management District (MDAQMD)
	Morongo Band of Mission Indians, CA	U.S. EPA
	New York-N. New Jersey-Long Island, NY-NJ-CT	New York State Department of Environmental Conservation (NYSDEC); New Jersey Department of Environmental Protection (NJDEP); Connecticut Department of Energy & Environmental Protection (CTDEEP)
	Sacramento Metro, CA	Sacramento Metropolitan Air Quality Management District (SMAQMD)
	San Diego County, CA	San Diego County Air Pollution Control District (SDAPCD)
Serious	Greater Connecticut, CT	CTDEEP
	Nevada County (Western part), CA	Northern Sierra Air Quality Management District (NSAQMD)
	Ventura County, CA	Ventura County Air Pollution Control District (VCAPCD)

[a] Nonattainment status is based on the U.S. EPA's Green Book as of March 31, 2024.

VOC Evaluation

Recently adopted VOC rules and regulations by other air agencies are listed in Table 6-6. Table 6-6 also lists the comparable South Coast AQMD rule(s) and specifies whether applicable emission sources exist in Coachella Valley based on the emissions inventory shown in Table 6-4. If such sources as those regulated by other agencies' rules exist in Coachella Valley, a RACM evaluation is performed to assess the stringency of applicable South Coast AQMD rules. However, if such sources do not exist in Coachella Valley, no further evaluation is performed. Table 6-7 summarizes the RACM evaluation of applicable South Coast AQMD rules and regulations for VOCs.

TABLE 6-6
STATIONARY SOURCE VOC RULES AND REGULATIONS ADOPTED FROM OCTOBER 2021 TO MARCH 2024 IN OTHER AIR AGENCIES AND APPLICABLE SOUTH COAST AQMD RULES AND REGULATIONS

Agency	Other Agency Rules	South Coast AQMD Rules	Sources in Coachella Valley
SJVAPCD	Rule 4354 – Glass Melting Furnaces (amended 12/16/21)	n/a[1]	No
	Rule 4401 – Steam-Enhanced Crude Oil Productions Wells (amended 6/15/23)	Rule 1148 – Thermally Enhanced Oil Recovery Wells (adopted 11/5/82)	No
	Rule 4402 – Crude Oil Production Sumps (amended 12/21/23)	n/a[1]	No
	Rule 4409 – Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities (amended 6/15/23)	Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (amended 2/6/09)	Yes
	Rule 4455 – Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants (amended 6/15/23)	Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (amended 2/6/09)	Yes
	Rule 4623 – Storage of Organic Liquids (amended 6/15/23)	Rule 463 – Organic Liquid Storage (amended 5/5/23); Rule 1149 – Storage Tank and Pipeline Cleaning and Degassing (amended 5/2/08)	Yes
	Rule 4624 – Transfer of Organic Liquid (amended 6/15/23)	Rule 462 – Organic Liquid Loading (amended 5/14/99)	Yes
VCAPCD	Rule 71 – Crude Oil and Reactive Organic Compound Liquids (amended 12/12/23)	Rule 463 – Organic Liquid Storage (amended 5/5/23)	Yes
	Rule 71.1 – Crude Oil Production and Separation (amended 7/7/11/23)	Rule 463 – Organic Liquid Storage (amended 5/5/23)	Yes
	Rule 74.10 – Components at Crude Oil and Natural Gas Production Facilities, Pipeline Transfer Stations	Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from	Yes

Agency	Other Agency Rules	South Coast AQMD Rules	Sources in Coachella Valley
	and Natural Gas Production, Storage and Processing Facilities (amended 12/12/23)	Components at Petroleum Facilities and Chemical Plants (amended 2/6/09)	
	Rule 74.35 – Flares (adopted 9/12/23)	Rule 1118.1 – Control of Emissions from Non-Refinery Flares (adopted 1/4/19)	Yes
BAAQMD	Rule 8-2 – Miscellaneous Operations (amended 5/4/22)	n/a	No
	Rule 8-5 – Storage of Organic Liquids (amended 1/26/22)	Rule 463 – Organic Liquid Storage (amended 5/5/23)	Yes
	Rule 8-6 – Organic Liquid Bulk Terminals and Bulk Plants (amended 1/26/22)	Rule 462 – Organic Liquid Loading (amended 5/14/99)	Yes
	Rule 8-7 – Gasoline Dispensing Facilities (amended 1/26/22)	Rule 461 – Gasoline Transfer and Dispensing (amended 1/7/22)	Yes
	Rule 8-8 – Wastewater Collection and Separation Systems (amended 12/22/23)	Rule 464 – Wastewater Separators (amended 12/7/90)	No
	Rule 8-9 – Vacuum Producing Systems (amended 11/3/21)	Rule 465 – Refinery Vacuum-Producing Devices or System (amended 8/13/99)	No
	Rule 8-18 – Equipment Leaks (amended 11/3/21)	Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (amended 2/6/09)	Yes
	Rule 8-28 – Episodic Releases from Pressure Relief Devices at Refineries and Chemical Plants (amended 1/26/22)	Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (amended 2/6/09)	Yes
	Rule 8-33 – Gasoline Bulk Terminals and Gasoline Cargo Tanks (amended 11/3/21)	Rule 462 – Organic Liquid Loading (amended 5/14/99)	Yes
	Rule 8-39 – Gasoline Bulk Plants and Gasoline Cargo Tanks (amended 11/3/21)	Rule 462 – Organic Liquid Loading (amended 5/14/99)	Yes
	Rule 8-44 – Marine Tank Vessel Operations (amended 11/3/21)	Rule 1142 – Marine Tank Vessel Operations (adopted 7/19/91)	No
	Rule 8-53 – Vacuum Truck Operations (amended 11/3/21)	Rule 462 – Organic Liquid Loading (amended 5/14/99)	Yes
	Rule 12-11 – Flare Monitoring at Refineries (amended 11/3/21)	Rule 1118 – Control of Emissions from Refinery Flares (amended 4/5/24)	No
	Rule 12-12 – Flares at Refineries (amended 11/3/21)	Rule 1118 – Control of Emissions from Refinery Flares (amended 4/5/24)	No
EKAPCD	Rule 410 – Organic Solvents (amended 9/1/22)	Rule 442 – Usage of Solvents (amended 12/15/00)	Yes

Agency	Other Agency Rules	South Coast AQMD Rules	Sources in Coachella Valley
	Rule 410.8 – Aerospace Assembly and Coating Operations (amended 11/3/22)	Rule 1124 – Aerospace Assembly and Component Manufacturing Operations (amended 9/21/01)	Yes
	Rule 412 – Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants (amended 1/13/22)	Rule 461 – Gasoline Transfer and Dispensing (amended 1/7/22)	Yes
	Rule 412.1 – Transfer of Gasoline to Vehicle Fuel Tanks (amended 1/13/22)	Rule 461 – Gasoline Transfer and Dispensing (amended 1/7/22)	Yes
NYSDEC[2]	6 NYCRR 203 – Oil and Natural Gas Sector (3/3/22)	n/a	No
	6 NYCRR 205 – Architectural and Industrial Maintenance (AIM) Coatings (12/31/21)	Rule 1113 – Architectural Coatings (amended 2/5/16)	Yes
	6 NYCRR 226 – Solvent Cleaning Processes and Industrial Cleaning Solvents (12/31/21)	Rule 1171 – Solvent Cleaning Operations (amended 5/1/09)	Yes
	6 NYCRR 228 – Surface Coating Processes, Commercial and Industrial Adhesives, Sealants and Primers (12/31/21)	Rule 1103 – Pharmaceuticals and Cosmetics Manufacturing Operations (amended 3/2/99); Rule 1104 – Wood Flat Stock Coating Operations (amended 8/13/99); Rule 1106 – Marine and Pleasure Craft Coatings (amended 1/6/23); Rule 1107 – Coating of Metal Parts and Products (amended 1/6/23); Rule 1115 – Motor Vehicle Assembly Line Coating Operations (amended 3/4/22); Rule 1124 – Aerospace Assembly and Component Manufacturing Operations (amended 9/21/01); Rule 1125 – Metal Container, Closure, and Coil Coating Operations (amended 3/7/08); Rule 1126 – Magnet Wire Coating Operations (amended 1/13/95); Rule 1128 – Paper, Fabric, and Film Coating Operations (amended 3/8/96); Rule 1136 – Wood Products Coatings (amended 6/14/96); Rule 1145 – Plastic, Rubber, Leather, and Glass Coatings (amended 12/4/09); Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations (amended 9/5/14)	Yes
	6 NYCRR 229 – Petroleum and Volatile Organic Liquid Storage and Transfer (12/31/22)	Rule 462 – Organic Liquid Loading (amended 5/14/99); Rule 463 – Organic Liquid Storage (amended 5/5/23)	Yes

Agency	Other Agency Rules	South Coast AQMD Rules	Sources in Coachella Valley
	6 NYCRR 230 – Gasoline Dispensing Sites and Transport Vehicles (2/5/22)	Rule 461 – Gasoline Transfer and Dispensing (amended 1/7/22)	Yes
	6 NYCRR 233 – Pharmaceutical and Cosmetic Manufacturing Processes (2/15/22)	Rule 1103 – Pharmaceutical and Cosmetic Manufacturing Operations (amended 3/12/99)	
	6 NYCRR 234 – Graphic Arts (2/15/22)	Rule 1130 – Graphic Arts (amended 5/2/14)	Yes
	6 NYCRR 236 – Synthetic Organic Chemical Manufacturing Facility Component Leaks (2/15/22)	Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (amended 2/6/09)	Yes
NJDEP[3]	NJAC 7:27-16.2 – VOC Stationary Storage Tanks	Rule 463 – Organic Liquid Storage (amended 5/5/23)	Yes
	NJAC 7:27-16.3 – Gasoline Transfer Operations	Rule 461 – Gasoline Transfer and Dispensing (amended 1/7/22)	Yes
	NJAC 7:27-16.6 – Open Top Tanks and Solvent Cleaning Operations	Rule 1171 – Solvent Cleaning Operations (amended 5/1/09)	Yes
	NJAC 7:27-6.12 – Surface Coating Operations at Mobile Equipment Repair and Finishing Facilities	Rule 1151 - Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations (amended 9/5/14)	Yes
	NJAC 7:27-16.15 – Miscellaneous Metal and Plastic Parts Coatings	Rule 1106 – Marine and Pleasure Craft Coatings (amended 1/6/23); Rule 1107 – Coating of Metal Parts and Products (amended 1/6/23); Rule 1125 – Metal Container, Closure, and Coil Coating Operations (amended 3/7/08)	Yes
CDPHE	5 CCR 1001-9 – Control of Emissions from Oil and Gas Emissions Operations (amended 2/14/24)	Rule 463 – Organic Liquid Storage (amended 5/5/23); Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (amended 2/6/09)	Yes
	5 CCR 1001-25 – Control of Volatile Organic Compounds from Consumer Products and Architectural and Industrial Maintenance Coatings (amended 12/15/22)	Rule 1113 – Architectural Coatings (amended 2/5/16)	Yes
	5 CCR 1001-29 – Control of Emissions from Volatile Organic Compounds and Petroleum Liquids Storage and Petroleum Processing and Refining (adopted 4/20/23)	Rule 463 – Organic Liquid Storage (amended 5/5/23)	Yes
	5 CCR 1001-29 – Control of Emissions from Surface Coating, Solvents, Asphalt, Graphic Arts and Printing,	Rule 442 – Usage of Solvents (amended 12/15/00); Rule 1103 – Pharmaceuticals and Cosmetics Manufacturing Operations (amended 3/2/99); Rule 1104 – Wood Flat	Yes

Agency	Other Agency Rules	South Coast AQMD Rules	Sources in Coachella Valley
	and Pharmaceuticals (adopted 4/20/23)	Stock Coating Operations (amended 8/13/99); Rule 1106 – Marine and Pleasure Craft Coatings (amended 1/6/23); Rule 1107 – Coating of Metal Parts and Products (amended 1/6/23); Rule 1115 – Motor Vehicle Assembly Line Coating Operations (amended 3/4/22); Rule 1124 – Aerospace Assembly and Component Manufacturing Operations (amended 9/21/01); Rule 1125 – Metal Container, Closure, and Coil Coating Operations (amended 3/7/08); Rule 1126 – Magnet Wire Coating Operations (amended 1/13/95); Rule 1128 – Paper, Fabric, and Film Coating Operations (amended 3/8/96); Rule 1130.1 – Screen Printing Operations (amended 12/13/96); Rule 1136 – Wood Products Coatings (amended 6/14/96); Rule 1145 – Plastic, Rubber, Leather, and Glass Coatings (amended 12/4/09); Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations (amended 9/5/14)	
CTDEEP	22a-174-20 – Control of Organic Compound Emissions (amended 10/28/22)	Rule 442 – Usage of Solvents (amended 12/15/00); Rule 462 – Organic Liquid Loading (amended 5/14/99); Rule 463 – Organic Liquid Storage (amended 5/5/23); Rule 1106 – Marine and Pleasure Craft Coatings (amended 1/6/23); Rule 1107 – Coating of Metal Parts and Products (amended 1/6/23); Rule 1125 – Metal Container, Closure, and Coil Coating Operations (amended 3/7/08); Rule 1128 – Paper, Fabric, and Film Coating Operations (amended 3/8/96); Rule 1145 – Plastic, Rubber, Leather, and Glass Coatings (amended 12/4/09)	Yes

[1] South Coast AQMD Rule 1117 does not have VOC emission limit.

[2] New York Codes, Rules and Regulations (NYCRR) rules are current through specified dates.

[3] New Jersey Administrative Code (NJAC) Title 7 Chapter 27 Subchapter 16 – Control and Prohibition of Air Pollution by Volatile Organic Compounds was last amended on February 24, 2022.

TABLE 6-7

RACM EVALUATION OF APPLICABLE SOUTH COAST AQMD VOC RULES AND REGULATIONS

Rule No	Rule Title	Current Rule Requirements	Other Agency Rules that Are More Stringent	RACM Evaluation
442	Usage of Solvents (Amended 12/15/00)	Organic materials shall not discharge from equipment to the atmosphere, unless such emissions are reduced by 85% or to the following: • 14.3 lb/day for organic materials that come into contact with flame or are baked, heat cured, or heat polymerized • 39.6 lb/day for organic materials from the use of photochemically reactive solvents • 600 lb/day for organic materials from the use of non-photochemically reactive solvents An operator shall not emit VOC to the atmosphere from all VOC-containing materials, equipment or processes, in excess of 833 lb/month/facility. However, operators can install a control device with an 85% overall control efficiency in lieu of meeting the limit.	EKAPCD Rule 410 (Amended 9/1/22) requires that on and after 3/8/24, an operator shall not emit VOC to the atmosphere, in excess of 450 lb/month/facility from all VOC-containing materials, equipment, and processes.	The facility-wide VOC emission limit in South Coast AQMD Rule 442 is less stringent than that in EKAPCD Rule 410 (833 vs. 450 lb/month). However, both rules allow installation and operation of a VOC emission control device in lieu of meeting the VOC emission limit. Lowering the Rule 442 facility-wide VOC emission limit would exceed South Coast AQMD's VOC cost-effectiveness threshold ($36,000/ton) as staff estimates a cost-effectiveness of $41,700/ton of VOC reduced. Nearly all facilities in South Coast AQMD are subject to a Regulation XI source-specific rule which makes Rule 442 not applicable. In the rare instances where Rule 442 is applicable, installation of a control device is the primary compliance pathway and, thus, operators are not subject to the facility-wide VOC limit. For these reasons, staff concluded that Rule 442 meets RACM.
461	Gasoline Transfer and Dispensing (Amended 1/7/22)	For Phase I (gasoline transfer into stationary storage tanks), underground storage tanks: an enhanced vapor recovery system having 98% control efficiency and emission factor not exceeding 0.15 lb/1,000 gallons; aboveground storage tanks: a vapor recovery system having 95% control efficiency. For Phase II (gasoline transfer into vehicle fuel tanks), a vapor recovery system having 95% efficiency and emission factor not exceeding 0.38 lb/1,000 gallons.	n/a*	Meets RACM.
462	Organic Liquid Loading (Amended 5/14/99)	Applicable to facilities loading organic liquids with a true vapor pressure of 1.5 psi or greater. Class A facilities (≥20,000 gallons/day loading) are required to meet a VOC emissions limit at 0.08 lb/1,000 gallons loaded. Class B facilities (4,000–20,000 gallons/day loading) are required a CARB certified vapor recovery system with 90% recovery efficiency. Rule requires no facility vapor leak (defined as a	SJVAPCD Rule 4624 requires at least 95% by weight of VOC displaced during organic liquid transfers for a Class 2 organic liquid transfer facility (4,000–20,000 gallons/day). BAAQMD Rule 8-33 requires emissions of VOC from a vapor recovery system not to exceed 0.04 lb/1,000 gallons of organic liquid loaded.	For a subcategory of applicable sources (Class B facilities), South Coast AQMD's rule is not as stringent as SJVAPCD's rule (90 vs. 95% of VOC displaced). However, South Coast AQMD's compliance records indicate that the actual control efficiency exceeds 95%.

Rule No	Rule Title	Current Rule Requirements	Other Agency Rules that Are More Stringent	RACM Evaluation
		leak in excess of 3,000 ppm as methane above background determined by U.S. EPA Method 21) from loading at Class A and B facilities. In addition, transport vessels shall be operated so that there are no transport vessel leaks or liquid leaks.		BAAQMD Rule 8-33 requires lower VOC emissions from vapor recovery systems than South Coast AQMD rule (0.04 vs. 0.08 lb/1,000 gallons). Lowering the VOC emissions to 0.04 lb/1,000 gallons costs $100,000 to $250,000 per ton of VOC reduced[#] and is not cost-effective and thus, is not a potential RACM. Overall, South Coast Rule 462 provides RACM level of control.
463	Organic Liquid Storage (Amended 6/7/24)	**External Floating Roof (EFR) Requirements** A closure device on a welded/riveted Tank shell using Mechanical Shoe Primary Seal: • Gaps between Primary Seal and Tank shell: ○ No gap larger than 1.5” ○ Gaps >0.5” not to exceed cumulative length of 30% of circumference. ○ Gaps >0.125” not to exceed 60% of circumference. ○ No continuous gap >0.125” can exceed 10% of circumference. • Gaps between Secondary Seal and Tank shell: ○ No gap larger than 0.5” ○ Gaps >0.125” not to exceed cumulative length of 95% of circumference. • Primary and Secondary Seals for Tanks subject to U.S. EPA CFR 40 Part 60 Subpart Kb must meet the Seal Gap requirements specified in 40 CFR Part 60 Subpart Kb. All Roof Openings must be covered (exception for pressure-vacuum valves) and maintained in a Vapor Tight condition. • Contingencies for the applicable ozone NAAQS. • Vapor recovery systems on fixed roof tanks with at least 98% reduction by weight. • Doming for EFR tanks storing organic liquids with a TVP of 3.0 psia or greater. • Other reporting and recordkeeping requirements apply.	SJVAPCD Rule 4623 has the following primary gap allowance requirements: • Not more than 10% (gaps >0.5”) • Not more than 30% (gaps >0.125”) BAAQMD Rule 8-5 has the following primary gap allowance requirements: • Not more than 10% (gaps >0.5”) • Not more than 40% (gaps >0.125”) • Not more than 10% (gaps >1.5”, riveted)	The level of stringency of South Coast AQMD Rule 463 varies depending on category. Rule 463 does not match the stringency of SJVAPCD Rule 4623 and BAAQMD Rule 8-5 for primary gap allowances. Based on staff analysis, adopting identical gap allowances as in San Joaquin Valley and Bay Area rules is not cost-effective. Staff further found that the U.S. EPA CFR 40 Part 60 seal requirements were consistent with the more stringent seal gap requirements found in SJVAPCD Rule 4623 on an emission reduction basis. Based on this finding, staff incorporated the federal standard in Rule 463, providing RACM level of control.

Rule No	Rule Title	Current Rule Requirements	Other Agency Rules that Are More Stringent	RACM Evaluation
1103	Pharmaceuticals and Cosmetics Manufacturing Operations (Amended 3/12/99)	Process equipment requirements: • 15 lb/day VOC limit from each reactor, distillation column, crystallizer, or centrifuge unless vented to surface condensers. Air dryer and production equipment exhaust system requirements: • 90% emissions control from production equipment including air dryers emitting >330 lb/day of VOC • Reduce to <33 lb/day from production equipment including air dryers emitting <330 lb/day of VOC VOC transfer requirements: • Shall not transfer VOC with a vapor pressure >4.1 psi at 20 deg C, from any truck or rail car into a storage thank with capacities >2,000 gallons, unless emissions are reduced by 90%. Facilities that emit, at the design production rating, 15 lb/day or less VOC are exempt.	n/a*	Meets RACM.
1104	Wood Flat Stock Coating Operations (Amended 8/13/99)	Wood flat stock coatings, inks, and adhesives for interior wood panels and exterior wood siding shall contain no more than 250 g of VOC/L of coating (2.1 lb/gallon), less water and exempt solvent). In lieu of VOC limit, use control device having 95% control efficiency (or 50 ppm outlet) and 90% collecting efficiency.	n/a*	Meets RACM.
1106	Marine and Pleasure Craft Coatings (Amended 1/6/23)	Marine Coating: • 275 to 420 g VOC/L, baked • 340 to 610 g VOC/L, air dried. Pleasure Craft Coating: • 330 to 780 g VOC/L. Marine & Pleasure Craft Low-Solids Coating: • 120 g VOC/L	n/a*	Meets RACM.
1107	Coating of Metal Parts and Products (Amended 1/6/23)	Coating-specific VOC emission limits from 2.3 to 3.5 lb/gal. In lieu of complying with specific emission limits, operator can use air pollution control system with at least 95% control efficiency (or 5 ppm outlet concentration) and 90% capture efficiency. Solvent cleaning operations must comply with Rule 1171.	n/a*	Meets RACM.
1113	Architectural Coatings (Amended 2/5/16)	Coating-specific VOC emission limits of 50–730 g/L. VOC limits for Colorants range from 50–600 g/L of colorant.	n/a*	Meets RACM.

Rule No	Rule Title	Current Rule Requirements	Other Agency Rules that Are More Stringent	RACM Evaluation
1118.1	Control of Emissions from Non-Refinery Flares (Adopted 1/4/19)	Flare gas VOC emission limits (lb/MMBtu): • Digester gas – major facility: 0.038 • Landfill gas: 0.038 • Produced gas: 0.008	n/a*	Meets RACM.
1124	Aerospace Assembly and Component Manufacturing Operations (Amended 9/21/01)	Coating-specific content limits from 160 to 1,000 g/L. Specific high transfer coating applications (e.g., HVLP spray). In lieu of complying with specific emission limits, operator can use air pollution control system with at least 95% control efficiency (or 50 ppm outlet concentration) and 90% capture efficiency. Solvent cleaning operations must comply with Rule 1171.	EKAPCD Rule 410.8 has various VOC emission limits by coating category from 160 to 1,230 g/L. Some categories have separate VOC limits by differing compliance schedule before 11/3/24 or on and after 11/3/24. On and after 11/3/24, the following VOC limits are more stringent than those in Rule 1124: • Other Flight-Test Coating: 600 g/L (vs. 840 g/L) • Mold Release Coatings: 762 g/L (vs. 780 g/L) • Clear Topcoat: 420 g/L (vs. 520 g/L) • Fastener Sealant: 600 g/L (vs. 675 g/L) • Line Sealer Maskant: 650 g/L (vs. 750 g/L)	While South Coast AQMD Rule 1124 has many categories that are comparable to EKAPCD Rule 410.8 requirements, Rule 410.8 has, in general, more subcategories than Rule 1124. For the VOC limits effective 11/3/24, some subcategories, such as Other Flight-Test Coating, and Line Sealer Maskant, in South Coast AQMD Rule 1124 are less stringent than those in Rule 410.8. Both Mold Release Coatings and Fastener Sealant have lower VOC limits with a condition that "classified" and space vehicle coatings are exempt from these limits, whereas South Coast AQMD Rule 1124 does not include such an exemption. The categories with lower VOC limits are low-usage categories. In totality, Rule 1124 is as stringent as the EKAPCD rule and meets RACM.
1125	Metal Container, Closure, and Coil Coating Operations (Amended 3/7/08)	Spray coating of 1 gallon per day is exempt. Drum coating, reconditioned, interior: 510 g VOC/L coating.	CTDEEP Rule 22a-174-20 (s) Miscellaneous metal and plastic parts coatings: Drum coating, reconditioned, interior: 500 g VOC/L coating.	The VOC limit for the drum coating category in South Coast AQMD Rule 1125 is comparable to that in Connecticut DEEP rule 22a-174-20 and provides RACM level of control.
1126	Magnet Wire Coating Operations (Amended 1/13/95)	Magnet wire coating shall contain no more than 200 g VOC/L (1.67 lb/gal) of coating less water and less exempt compounds, or the emission control system shall achieve at least 90% overall efficiency by direct incineration at 1,499 deg F or higher.	n/a*	Meets RACM.
1128	Paper, Fabric, and Film Coating Operations (Amended 3/8/96)	VOC concentration limit in paper, fabric, or film coating application with or without heating ovens: 265 g/L of coating less water and less exempt compounds. For plastisol, VOC emission limit is 20 g/L. VOC control efficiency of 85% is required.	n/a*	Meets RACM.

Rule No	Rule Title	Current Rule Requirements	Other Agency Rules that Are More Stringent	RACM Evaluation
1130.1	Screen Printing Operations (Amended 12/13/96)	VOC limits in screen printing operations range from 400 to 800 g/L. A facility or screen printing operations performed by manufacturers for performance research and development (R&D) that emit ≤2 lb VOC/day are exempt from rule requirements.	n/a*	Meets RACM.
1136	Wood Products Coatings (Amended 6/14/96)	VOC limit for wood products coatings is in the range of 120–750 g/L. A VOC limit for high-solid stains is 350 g/L.	n/a*	Meets RACM.
1145	Plastic, Rubber, Leather, and Glass Coatings (Amended 12/4/09)	VOC limits: 50–800 g/L (0.4–6.7 lb/gal). Average provisions and add-on control at 95% control efficiency (50 ppm outlet), 90% capture efficiency. High transfer coating equipment (e.g., HVLP). Solvent cleaning operations must comply with Rule 1171.	n/a*	Meets RACM.
1151	Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations (Amended 9/5/14)	VOC content limits range from 250–840 g/L. Averaging provisions are allowed. High transfer coating equipment is required. Solvent cleaning operations must comply with Rule 1171.	n/a*	Meets RACM.
1171	Solvent Cleaning Operations (Amended 5/1/09)	VOC content limits for cleaning solutions for printing presses range from 25 g/L for flexographic printing to 100 g/L for lithographic printing. VOC content limit in a solvent for general solvent cleaning operations is 25 g/L. Combined collection and destruction efficiency of control equipment is required 85.5% of VOC or an output of less than 50 ppm as carbon.	n/a*	Meets RACM.

1173	Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (Amended 2/6/09)	**Leak standards**
		• Light liquid leak: no more than 3 drops/min
		• Vapor leak for components:
		  ○ Light liquid/gas/vapor service: ≤50,000 ppm
		  ○ Heavy liquid service: ≤500 ppm
		• Certain leaks over a continuous 24-hr period:
		  ○ Light liquid/gas/vapor service: ≤10,000 ppm
		  ○ Atmospheric Pressure Relief Device (PRD): ≤200 ppm
		  ○ Pump in heavy liquid service: ≤100 ppm
		• Open-ended lines and end valves must have a blind flange, plug, cap, or a second closed value.
			SJVAPCD Rules 4409 and 4455 have different gas leak standards before and after 6/30/24. Gas leak standards after 6/30/24 are:
			• Rule 4409 has two gas leak classifications – a major leak as >10,000 ppm and a minor leak as between 200 and 10,000 ppm depending on component and service types.
			• Rule 4455 classifies a major leak as >10,000 ppm and a minor leak as between 100 and 10,000 ppm depending on components and service types. For example, leak standard for PRD is 100 ppm in liquid service.
				Rule 1173 has a different structure on gas leak standards compared to SJVAPCD, BAAQMD, and VCAPCD rules. Some components such as PRD have a lower leak standard (e.g., 100 ppm per SJVAPCD Rule 4455 vs. 200 ppm in Rule 1173). South Coast AQMD recently lowered the LAER/BACT gas/vapor and light liquid service leak standard from 500 ppm to 200 ppm for new or modified sources, except for pumps, compressors, and drains.^ A public process is underway to amend Rule 1173 with adoption scheduled in Fall 2024.** The rulemaking process will include a Best

<table>
<tr><th>Rule No</th><th>Rule Title</th><th>Current Rule Requirements</th><th>Other Agency Rules that Are More Stringent</th><th>RACM Evaluation</th></tr>
<tr><td></td><td></td><td>
Leak Numbering Thresholds
<table>
<tr><th>Component Type</th><th>Max # of leaks for ≤200 components inspected</th><th>Max # of leaks for >200 components inspected</th></tr>
<tr><td>• Valves</td><td>1</td><td>0.5% of number inspected</td></tr>
<tr><td>• Pumps</td><td>2</td><td>1% of number inspected</td></tr>
<tr><td>• Compressors</td><td>1</td><td>1</td></tr>
<tr><td>• Atmospheric PRD</td><td>1</td><td>1</td></tr>
<tr><td>• Threaded Pipe Connectors</td><td>1</td><td>0.5% of number inspected</td></tr>
<tr><td>• Other Components</td><td>1</td><td>1</td></tr>
</table>
Leak Repair Periods
<table>
<tr><th>Type of Leak</th><th>Time Period</th><th>Extended Time Period</th></tr>
<tr><td>• Light liquid/gas/vapor >500 ppm but ≤10,000 ppm</td><td>7 days</td><td>7 days</td></tr>
<tr><td>• Heavy liquid >100 ppm but ≤500 ppm</td><td>7 days</td><td>7 days</td></tr>
<tr><td>• Heavy liquid >3 drops/min and >100 ppm but ≤500 ppm</td><td>7 days</td><td>--</td></tr>
<tr><td>• Any leak >10,000 ppm but ≤25,000 ppm</td><td>2 days</td><td>3 days</td></tr>
<tr><td>• Atmospheric PRD >200 ppm but ≤25.000 ppm</td><td>2 days</td><td>3 days</td></tr>
<tr><td>• Any leak >25,000 ppm</td><td>1 day</td><td>--</td></tr>
<tr><td>• Heavy liquid >500 ppm</td><td>1 day</td><td>--</td></tr>
</table>
</td><td>BAAQMD Rule 8-18 prohibits use of equipment that leaks VOC in excess of 100 ppm for most equipment categories and sets a 10,000 ppm VOC leak standard for essential equipment.
VCAPCD 74.10 classifies a major gas leak as ≥10,000 ppm and a minor gas leak as between 500 ppm and <10,000 ppm.</td><td>Available Retrofit Control Technology (BARCT) assessment of leak standards which is expected to address the deficiencies identified in this analysis.</td></tr>
</table>

Rule No	Rule Title	Current Rule Requirements			Other Agency Rules that Are More Stringent	RACM Evaluation
		• Light liquid >3 drops/min	1 day	--		

* There are no analogous requirements in other air agencies that are more stringent than the South Coast AQMD rule being evaluated.

2022 AQMP, Appendix VI-A: RACM Demonstration, page 55. December 2, 2022. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/appendix-vi.pdf?sfvrsn=12.

^ South Coast AQMD Proposed Updates to BACT Guidelines, February 2, 2024. https://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2024/2024-feb2-029.pdf?sfvrsn=2.

****** https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1173.

NOx Evaluation

Table 6-8 provides a list of NOx rules and regulations in California and other states adopted from October 2021 to March 2024 along with applicable South Coast AQMD rules. Table 6-9 includes a detailed evaluation of the applicable South Coast AQMD NOx rules that correspond to the rules adopted by other agencies provided in Table 6-8.

TABLE 6-8
STATIONARY SOURCE NOX RULES AND REGULATIONS ADOPTED FROM OCTOBER 2021 TO MARCH 2024 IN OTHER AIR DISTRICTS AND APPLICABLE SOUTH COAST AQMD RULES AND REGULATIONS

Agency	Other Agency Rules	South Coast AQMD Rules	Sources in Coachella Valley
SJVAQMD	Rule 4352 – Solid Fuel-Fired Boilers, Steam Generators and Process Heaters (amended 12/16/21)	Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters (amended 12/4/20); Rule 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (amended 12/7/18); Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters (amended 12/7/18)	Yes
	Rule 4354 – Glass Melting Furnaces (amended 12/16/21)	Rule 1117 – Emissions from Container Glass Melting and Sodium Silicate Furnaces (amended 6/5/20)	No
	Rule 4905 – Natural Gas-Fired, Fan-Type Central Furnaces (amended 3/21/24)	Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces (amended 9/1/23)	Yes
BAAQMD	Rule 9-4 – Nitrogen Oxides from Natural Gas-Fired Furnaces (amended 3/15/23)	Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces (amended 9/1/23)	Yes
	Rule 9-6 – Nitrogen Oxides Emissions from Natural Gas-Fired Boilers and Water Heaters (amended 3/15/23)	Rule 1121 – Control of Nitrogen Oxides from Residential Type, Natural-Gas-Fired Water Heaters (amended 9/3/04); Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters (amended 12/7/18)	Yes
	Rule 9-10 – Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Refineries (amended 11/3/21)	Rule 1109.1 – Emission of Oxides of Nitrogen from Petroleum Refineries from Related Operations (adopted 11/5/21)	No

Agency	Other Agency Rules	South Coast AQMD Rules	Sources in Coachella Valley
SDAPCD	Rule 69.3.1 – Stationary Gas Turbine Engines (amended 12/9/21)	Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (amended 2/4/22)	Yes
	Rule 69.7 – Landfill Gas Flares (adopted 3/9/23)	Rule 1118.1 – Control of Emissions from Non-Refinery Flares (adopted 1/4/19)	Yes
VCAPCD	Rule 74.35 – Flares (adopted 9/12/23)	Rule 1118.1 – Control of Emissions from Non-Refinery Flares (adopted 1/4/19)	Yes
NYSDEC	6 NYCRR 227 – Stationary Combustion Installations (12/31/21)	Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines (amended 11/3/23); Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (amended 2/4/22); Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters (amended 12/4/20); Rule – 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (amended 12/7/18); Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters (amended 12/7/18)	Yes
CTDEEP	22a-174-22e – Control of Nitrogen Oxides Emissions from Fuel-Burning Equipment at Major Stationary Sources of Nitrogen Oxides (amended 11/13/23)	Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines (amended 11/3/23); Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (amended 1/7/22); Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters (amended 12/4/20)	Yes

TABLE 6-9
RACM EVALUATION OF APPLICABLE SOUTH COAST AQMD'S NOX RULES AND REGULATIONS

RULE NO	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER AGENCY RULES THAT ARE MORE STRINGENT	RACM EVALUATION
1110.2	Emissions from Gaseous- and Liquid-Fueled Engines (Amended 11/3/23)	Applied to all stationary and portable engines rated >50 bhp. NOx emission limits: Stationary engines with approved emission control plan: 11 ppm Other stationary engines without an emission control plan, biogas-fired: 11 ppm Limits for low-use engines*: • <500 bhp = 45 ppm • ≥500 bhp = 36 ppm * Low use engines <500 hrs/yr or 1 billion Btu/yr. Slightly higher limits are also applicable to landfill or biogas fired engines to account for efficiency. Non-emergency electrical generators: 0.070 lb/MWh. Note: agricultural and non-agricultural engines held to the same standards but different compliance schedules applied.	n/a*	Meets RACM.
1111	Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces (Amended 9/1/23)	For natural gas-fired residential furnaces rated < 175,000 Btu/hr, NOx emission limits: • 14 ng/J for mobile home furnaces • 14 ng/J for condensing, non-condensing, and weatherized home furnaces	BAAQMD Regulation 9 Rule 4 (Rule 9-4) requires no more than 0.0 ng/J of NOx after 1/1/29 from natural gas-fired furnaces, including wall furnaces and non-residential applications.	South Coast AQMD Rule 1111 has less stringent NOx emission limits than BAAQMD Rule 9-4. A public process is underway to amend Rule 1111 with zero NOx emission limits with an anticipated public hearing in the 4th quarter of 2024. The proposed limits will phase in more quickly than those in BAAQMD's regulation.
1118.1	Control of Emissions from Non-Refinery Flares (Amended 1/4/19)	Flare gas NOx emission limits range from 0.018 lbs/MMBtu for produced gas to 0.025 lbs/MMBtu for major digester gas and landfill gas. All other flare gas including minor digester gas is required NOx emission limits at 0.06 lbs/MMBtu. Organic liquid storage has NOx emission limit at 0.25 lbs/MMBtu and organic liquid loading has NOx limit at 0.034 lbs/1,000 gallons loaded.	n/a*	Meets RACM.
1121	Control of Nitrogen Oxides from Residential Type, Natural Gas-Fired Water Heaters (Amended 9/3/04)	For natural gas-fired water heaters rated < 75,000 Btu/hr, NOx emission limits: • 40 ng/J (55 ppm) for mobile home • 20 ng/J (30 ppm) for residential home • 10 ng/J (15 ppm) for water heaters ≤ 50 gallons	BAAQMD Rule 9-6 requires the following NOx emission limits for natural gas-fired storage tank water heaters rated < 75,000 Btu/hr: • 10 ng/J for water heaters > 50 gallons (current limit) • 0.0 ng/J for water heaters after 1/1/27	BAAQMD Rule 9-6 requires 10 ng/J of NOx for water heaters regardless of its tank size, while the 10 ng/J NOx limit applies only to units ≤ 50 gallons in South Coast AQMD Rule 1121. Rule 9-6 imposes a zero emission NOx

RULE NO	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER AGENCY RULES THAT ARE MORE STRINGENT	RACM EVALUATION
				limit for residential water heaters by 2027. A public process is underway to amend Rule 1121 with zero NOx emission limits with an anticipated public hearing in the 4th quarter of 2024. The proposed limits will phase in more quickly than those in BAAQMD's regulation for new buildings.
1134	Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Amended 2/4/22)	Rule applies to all stationary gas turbines ≥0.3 MW. NOx emission limits (@ 15% O2) effective 1/1/24: • Liquid fuel – turbines located on Outer Continental Shelf (OCS): 30 ppm • Natural gas – combined cycle/cogeneration turbine: 2 ppm • Natural gas – simple cycle turbine: 2.5 ppm • Produced gas: 9 ppm • Produced gas – turbine located on OCS: 15 ppm Other (including recuperative gas turbines): 12.5 ppm	n/a*	Meets RACM.

1146
1146.1
1146.2
	Rule 1146 - Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (Amended 12/4/20)
	Rule 1146.1 - Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (Amended 12/7/18)
	Rule 1146.2 - Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters (Amended 6/7/24)
		Rule 1146 NOx emission limits for industrial/commercial boilers, steam generators, and process heaters ≥ 5 MMBtu/hr:
		• Gaseous fuel: 30 ppm
		• Non-gaseous fuel: 40 ppm
		• Landfill gas: 25 ppm
		• Digester gas: 15 ppm
		• Atmospheric units (5–10 MMBtu/hr): 12 ppm
		• Group I (≥75 MMBtu/hr burning natural gas): 5 ppm
		• Group II (≥20 & <75 MMBtu/hr with gaseous fuels)
		  ○ Fire-tube boilers with previous limits 5–9 ppm: 7 ppm
		  ○ All other units (with previous limits 5–12 ppm): 9 ppm
		  ○ All others: 5 ppm
		• Group III (≥5 & <20 MMBtu/hr with gaseous fuels)
		  ○ Fire-tube boilers with previous limits 9–12 ppm: 7 ppm
		  ○ All others: 9 ppm
		• Thermal fluid heaters: 12 ppm.
			n/a*	Meets RACM.

<table>
<tr><th>RULE NO</th><th>RULE TITLE</th><th>CURRENT RULE REQUIREMENTS</th><th>OTHER AGENCY RULES THAT ARE MORE STRINGENT</th><th>RACM EVALUATION</th></tr>
<tr><td></td><td></td><td>
Rule 1146.1 NOx emission limits for industrial/commercial boilers, steam generators, and process heaters between 2-5 MMBtu/hr:

Landfill gas: 25 ppm
Digester gas: 15 ppm
Atmospheric units (5–10 MMBtu/hr): 12 ppm
Fire-tube boilers: 7 ppm
Natural gas units: 9 ppm
Thermal fluid heaters: 12 ppm

All other units: 30 ppm
Rule 1146.2 - For water heaters, boilers, and process heaters ≤ 2 MMBtu/hr fired with, or designed to be fired with, natural gas. Type 1 units (≤400,000 Btu/hr) and Type 2 units (>400,000 – 2,000,000 Btu/hr):
NOx Emission Limits
<table>
<tr><th>Equipment Category</th><th>NOx Limit</th></tr>
<tr><td>Type 1 units, excluding pool heaters</td><td>14 ng/J (20 ppm)</td></tr>
<tr><td>Type 1 pool heaters</td><td>40 ng/J (55 ppm)</td></tr>
<tr><td>Type 2 units</td><td>14 ng/J (20 ppm)</td></tr>
</table>
Zero Emission Limits, Compliance Schedule, and Unit Age
<table>
<tr><th>Equipment Category</th><th>NOx Limit (ppm)</th><th>Compliance Schedule</th><th>Unit Age (years)</th></tr>
<tr><td>Type 1 Unit</td><td>0</td><td rowspan="2">Phase I</td><td>15</td></tr>
<tr><td>Instantaneous Water Heater≤200,000 Btu/hr</td><td>0</td><td>25</td></tr>
<tr><td>Instantaneous water Heater >200,000 Btu/hr</td><td>0</td><td rowspan="3">Phase II</td><td>25</td></tr>
<tr><td>Type 1 Pool Heater</td><td>0</td><td>15</td></tr>
<tr><td>Type 2 Unit</td><td>0</td><td>25</td></tr>
<tr><td>Type 1 High Temperature Unit</td><td>0</td><td>Phase III</td><td>25</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

RULE NO	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER AGENCY RULES THAT ARE MORE STRINGENT	RACM EVALUATION

Type 2 High Temperature Unit	0		25

Compliance Dates for Zero Emission Limits

Phase	Building Type	Compliance Date
Phase I	New Buildings	1/1/26
	Existing Buildings	1/1/29
Phase II	New Buildings	1/1/28
	Existing Buildings	1/1/31
Phase III	New Buildings	1/1/29
	Existing Buildings	1/1/33

* There are no analogous requirements in other air agencies that are more stringent than the South Coast AQMD rule being evaluated.

Stationary and Area Source Conclusion

As demonstrated in this RACM evaluation, the requirements in South Coast AQMD rules and regulations are generally as stringent as, or more stringent than, the requirements in other air districts and states. Multiple rules, including Rules 1111 and 1121, are undergoing an amendment process to introduce more stringent emission limits. This RACM demonstration reflects the current rule amendment efforts. Following analysis of both existing and proposed rule requirements, South Coast AQMD concludes that RACM level control is achieved in Coachella Valley.

CARB Mobile and Area Sources

The CAA requires the implementation of all RACM as expeditiously as practicable and shall provide for attainment of the air quality standards. This section demonstrates that for the 75 ppb 8-hour ozone standard, California's mobile source, consumer products, and pesticide measures meet the RACM requirement in the Coachella Nonattainment Area.

RACM Requirements

U.S. EPA has interpreted RACM to be those emission control measures that are technologically and economically feasible and when considered in aggregate, would advance the attainment date by at least one year. Section 172(c)(1) of the CAA requires SIPs to provide for the implementation of RACM as expeditiously as practicable. Given the severity of California's air quality challenges, CARB has implemented the most stringent mobile source emissions control program in the nation. CARB's comprehensive strategy to reduce emissions from mobile sources includes stringent emissions standards for new vehicles, in-use programs to reduce emissions from existing vehicle and equipment fleets, cleaner fuels that minimize emissions, and incentive programs to accelerate the penetration of the cleanest vehicles beyond that achieved by regulations alone. Taken together, California's mobile source program meets RACM requirements in the context of ozone nonattainment.

To ensure it continues to meet RACM requirements and achieve its emissions reductions goals in the future, California continues to develop new programs and regulations to strengthen its overall mobile source program and to achieve new emissions reductions from mobile sources.

RACM For Mobile Sources

1. Waiver Approvals

While section 209 of the CAA preempts other states from adopting emission standards and other emission-related requirements for new motor vehicles and engines that differ from the federal standards set by U.S. EPA, the CAA provides California with the ability to seek a waiver or authorization from the federal preemption clause in order to enact emission standards and other emission-related requirements for new motor vehicles and engines, as well as new and in-use off-road vehicles and engines[55] – provided that the California standards are at least as protective as applicable federal standards.

Over the years, California has received waivers and authorizations for over 100 regulations. Some of the most recent California standards and regulations that have received waivers and authorizations are: the Advanced Clean Cars (ACC) Regulations for light duty vehicles (including the Zero Emission Vehicle (ZEV) and the Low-Emission Vehicle III (LEV III) Regulations); the Advanced Clean Trucks Regulation; the Large Spark Ignition (LSI) Engine and Fleets Regulation; the Commercial Harbor Craft (CHC) Regulation; the Transport Refrigeration Unit (TRU) ATCM; the Off Highway Recreational Vehicles Regulation; and the Ocean-Going Vessels At-Berth Regulation. Further, CARB has recently submitted and is awaiting U.S. EPA action on waiver and authorization requests for the Heavy-Duty Omnibus Regulation; In-Use Locomotive Regulation; Advanced Clean Cars II; the In-Use Off-Road Diesel-Fueled Fleets Regulation (2022 Amendments); Advanced Clean Fleets Regulation; the Small-Off Road Engine Standards (2021 Amendments); the Commercial Harbor Craft (CHC) Regulation (2022 Amendments); and the Transport Refrigeration Unit (TRU) Regulation Phase I (2022 Amendments).

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

The waiver and authorizations California has received are integral to the success and stringent emission requirements that characterize CARB's mobile source program. Due to California's unique waiver authority under the Act, no other state or nonattainment area has the authority to promulgate mobile source emission standards at levels that are more stringent than the federal standards. Other states can elect to match either the federal standards or the more stringent California standards. As such, no state or nonattainment area has a more stringent suite of mobile source emission control programs than California, implying a de-facto level of control that at least meets, if not exceeds, RACM.

2. CARB's Mobile Source Controls

CARB's current mobile source control program, along with efforts at the local and federal level, have been tremendously successful in reducing emissions of air pollutants, resulting in significantly cleaner vehicles and equipment in operation today.

[55] Locomotives and engines less than 175 horsepower (hp) used in farm and construction equipment are exempt from California's waiver authority.

CARB developed its 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy)[56] through a multi-step measure development process, including extensive public consultation, to develop and evaluate potential strategies for categories under CARB's regulatory authority that could contribute to expeditious attainment of the 70 parts per billion (ppb) 8-hour ozone standard (70 ppb ozone standard), as well as supporting attainment for the 75 ppb 8-hour ozone standard and other national and State air quality standards. This effort built on the measures and commitments already made in the 2016 State SIP Strategy, and expanded on the scenarios and concepts included in the 2020 Mobile Source Strategy, CARB's multi-pollutant planning effort that identified the pathways forward to achieve the State's many air quality, climate, and community risk reduction goals.

With the 2022 State SIP Strategy, CARB committed to an unprecedented variety of new measures to reduce emissions from the sources under our authority using all mechanisms available. The measures included in the 2022 State SIP Strategy encompass actions to establish requirements for cleaner technologies (both zero emissions and near zero emissions), deploy these technologies into the fleet, and to accelerate the deployment of cleaner technologies through incentives.

3. Light- and Medium-Duty Vehicles

Since setting the nation's first motor vehicle exhaust emission standards in 1966 that led to the first pollution controls, California has dramatically tightened emission standards for light-duty vehicles. Through CARB regulations, today's new cars pollute 99% less than their predecessors did thirty years ago. In 1970, CARB required auto manufacturers to meet the first standards to control NOx emissions along with hydrocarbon emissions, which together form smog. The simultaneous control of emissions from motor vehicles and fuels led to the use of cleaner-burning gasoline that has removed the emissions equivalent of 3.5 million vehicles from California's roads.

Light- and medium-duty vehicles are currently regulated under California's Advanced Clean Cars (ACC) program, which includes the Low-Emission Vehicle III (LEV III) and Zero-Emission Vehicle (ZEV) programs. The ACC program combines the control of smog, soot-causing pollutants, and greenhouse gas emissions into a single coordinated package of requirements for model years 2015 through 2025. Since first adopted in 1990, CARB's LEV I and LEV II, and the ZEV Programs have resulted in the production and sales of hundreds of thousands of ZEVs in California. The ACC program has ushered in a new zero emission passenger transportation system, and the success of this program is evident: California is the world's largest market for ZEVs, with a wide variety now available at lower price points, attracting new consumers. In April 2023, California's 2012 target of 1.5 million ZEVs on the road by 2025 was attained two years early, facilitated in part by $2 billion in ZEV incentive funding and rebates that have been distributed to Californians through programs like the Clean Vehicle Rebate Project and Clean Cars 4 All. In support of

[56] CARB 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy) https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy

California's transition to zero emission, in 2020, Governor Newsom signed Executive Order N-79-20, which established a goal that 100% of California sales of new passenger cars and trucks be zero emission by 2035.

Advanced Clean Cars II (ACC II), which was adopted by the CARB Board in August 2022, imposes the next level of low emission and zero emission vehicle standards for model years 2026-2035 that contribute to meeting federal ambient air quality standards and California's carbon neutrality targets. ACC II will rapidly scale down emissions of light-duty passenger cars, pickup trucks and SUVs starting with the 2026 model year through 2035. ACC II also takes the State's already growing zero emission vehicle market and robust motor vehicle emission control rules and augments them to meet more aggressive tailpipe emissions standards and ramp up to 100 percent zero emission sales by 2035 for all new passenger cars, trucks and sport utility vehicles sold in California. ACC II is two-pronged: it will drive the sales of ZEVs and the cleanest-possible plug-in hybrid-electric vehicles (PHEV) to 100% in California by the 2035 model year through the ZEV Regulation, while also reducing smog-forming emissions from new internal combustion engine vehicles through the LEV IV Regulation. For passenger vehicles, the 2022 State SIP Strategy included actions to further increase the penetration of ZEVs by targeting ride-hailing services offered by transportation network companies through the Clean Miles Standard, adopted by the CARB Board in 2021, in order to reduce GHG and criteria pollutant emissions, and promote electrification of the fleet.

CARB is also active in implementing incentive programs for owners of older dirtier vehicles to retire them early. The "car scrap" programs, like Clean Cars 4 All and the recently-phased out Clean Vehicle Rebate Project, provide monetary incentives to replace old vehicles with zero emission vehicles. CARB also has numerous other incentive programs and projects to support the transition of light-duty vehicles to ZEVs, as well as to more broadly support active transportation and other equitable transportation mobility options.

Taken together, California's emission standards, fuel specifications, and incentive programs for on-road light- and medium-duty vehicles represent all measures that are technologically and economically feasible within California, and fully meet the requirements for RACM.

4. Heavy-Duty Vehicles

California's heavy-duty vehicle emissions control program includes requirements for increasingly stringent new engine emission standards and addresses vehicle idling, certification procedures, on-board diagnostics, emissions control device verification, and in-use measures to ensure that emissions from the existing vehicle fleet remain adequately controlled. Taken together, the on-road heavy-duty vehicle program was designed in past decades to achieve an on-road heavy-duty diesel fleet with 2010 engines emitting 98 percent less NOx and PM2.5 than trucks sold in 1986. Looking forward, CARB's on-road heavy-duty vehicle programs are driving towards zero emission, while also setting the most stringent emissions standards and in-use requirements for the remaining combustion vehicles on California's roads.

In 2013, California recognized that heavy-duty engines could be cleaner and established optional low-NOx standards for heavy-duty diesel engines (Optional Reduced Emissions Standards for Heavy-Duty Engines regulation), with the most aggressive standard being 0.02 g/bhp-hr, 90% below the 2010 federal standard.

Further, in 2021, CARB adopted the Heavy-Duty Engine and Vehicle Omnibus Regulation (Omnibus Regulation) which made the 0.02 g/bhp-hr a mandatory standard beginning in 2027, and comprehensively overhauled how NOx emissions from new heavy-duty engines are regulated in California. The Omnibus Regulation also includes in-use standards that significantly reduce tailpipe NOx emissions during most vehicle operating modes, and revisions to the emissions warranty, useful life, emissions warranty and reporting information and corrective action procedures, and durability demonstration procedures.

To drive the heavy-duty sector to zero emissions, CARB has a suite of regulations that include manufacturing requirements, fleet requirements, and a powertrain standard and certification program. In 2021, CARB adopted the Advanced Clean Trucks regulation (ACT), a first of its kind regulation requiring medium- and heavy-duty manufacturers to produce ZEVs as an increasing portion of their sales beginning in 2024. This regulation is expected to result in roughly 100,000 heavy-duty ZEVs by 2030 and nearly 300,000 ZEVs by 2035. The complementary Advanced Clean Fleets (ACF) Regulation was adopted in 2023, and was developed to works in conjunction with the ACT regulation; ACT helps ensure that ZEVs are available for sale while ACF accelerates ZEV adoption in the medium-to heavy-duty sectors by setting zero emission requirements for fleets. The ACF regulation targets drayage trucks, public fleets, and other high priority fleets with 50 or more trucks or entities with trucks and $50 million in annual revenues. This effort is part of a comprehensive strategy to achieve a zero emission truck and bus fleet by 2045 everywhere feasible, and significantly earlier for certain well-suited market segments such as last mile delivery, drayage, and government fleets.

Prior to ACT and ACF, in 2019, CARB adopted the Zero Emission Powertrain Certification Regulation, which established a heavy-duty zero emission powertrain standard and certification process that will help reduce variability in the quality and reliability of heavy-duty electric and fuel cell vehicles, ensure information regarding these vehicles and their powertrains are effectively and consistently communicated to purchasers, and accelerate progress towards greater vehicle reparability. This certification process will be required by the Zero Emission Airport Shuttle regulation starting in model year 2026 and the ACT regulation starting in model year 2024.

While heavy-duty engine technology has become significantly cleaner in the past few decades, the long useful lives of some heavy-duty engines means that older, higher-emitting trucks remain on the road for many years after newer generations of engine standards have gone into effect. To address these emission sources, CARB's heavy-duty program also targets in-use emission reductions. The Cleaner In-Use Heavy-duty Truck Regulation (Truck and Bus Regulation) impacts approximately one million inter- and intra-state vehicles, and required upgrades to newer, cleaner engines. Starting in 2012, the Truck and Bus Regulation phased in requirements so that by 2014, nearly all vehicles operating in California had PM emission controls, and by 2023 nearly all vehicles met 2010 model year engine emissions levels. The regulation applies to nearly all diesel fueled trucks and buses with a GVWR greater than 14,000 pounds that are privately or federally owned, including on-road and off-road agricultural yard goats, cargo handling equipment, drayage trucks, solid waste collection vehicles, and school buses. To further control emissions from the in-use fleet, CARB adopted in 2021 the first-of-its-kind Clean Truck Check (Heavy-Duty Inspection and Maintenance Program), which requires periodic demonstration that vehicles' emissions control systems are properly functioning in order to legally operate within the State. This regulation is designed to achieve criteria emissions reductions by ensuring that malfunctioning emissions control systems are timely repaired.

CARB has also in place additional fleet rules to drive the adoption and use of zero emission technologies in specific sectors. In addition to the ACF Regulation that was described above, there are a suite of regulations driving zero emission technologies in certain well-suited market segments. In 2018, CARB adopted the Innovative Clean Transit (ICT) Regulation, which requires all public transit agencies to gradually transition to a 100 percent zero emission bus (ZEB) fleet. The Zero-Emission Airport Shuttle Bus Regulation was adopted in 2019 and requires airport shuttle operators to transition to 100 percent zero emission vehicle technologies. Vehicles like airport shuttles that operate on fixed routes, have stop-and-go operations, maintain low average speeds, and in a central location are ideal candidates for targeting zero emission technologies. Airport shuttle operators must begin adding zero emission shuttles to their fleets in 2027 and complete the transition to ZEVs by the end of 2035. The Regulation applies to airport shuttle operators who own, operate, or lease vehicles at any of the 13 California airports regulated under this rule (regulated airports), including Palm Springs International Airport, Los Angeles International Airport, John Wayne Orange County Airport, Hollywood Burbank Airport, Ontario International Airport, and Long Beach Airport.

Other significant fleet and in-use control measures CARB has in place include: the Drayage (Port or Rail Yard) Regulation; the Public Agency and Utilities Regulation; the Solid Waste Collection Vehicle Regulation; the Heavy-Duty (Tractor-Trailer) Greenhouse Gas (GHG) Regulation, the Airborne Toxic Control Measures (ATCM) to Limit Diesel-Fueled Commercial Motor Vehicle Idling; the Heavy-Duty Diesel Vehicle Inspection Program; the Periodic Smoke Inspection Program (PSIP); the, Fleet Rule for Transit Agencies; the Lower-Emission School Bus Program; and Heavy-Duty Truck Idling Requirements.

In addition, CARB’s significant investment in incentive programs provides an additional mechanism to achieve maximum emission reductions from this source sector. California has a variety of programs to incentivize clean heavy-duty vehicles that include the Carl Moyer Air Quality Standards Attainment Program (Moyer Program), the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, the Truck Loan Assistance Program, the Low Carbon Transportation Program, the Volkswagen Environmental Mitigation Trust, and AB 617 Community Air Protection Incentives for On-Road Heavy-Duty Vehicles.

Taken together, California’s emission standards, fuel specifications, and incentive programs for on-road heavy-duty vehicles represent all measures that are technologically and economically feasible within California, and fully meet the requirements for RACM.

5. Off-Road Vehicles and Equipment

California regulations for off-road equipment include not only increasingly stringent emission standards for new off-road diesel engines, but also in-use requirements and idling restrictions. CARB has programs in place to control emissions from various types of new off-road vehicles and equipment. CARB also has in-use programs and fleet requirements for off-road vehicles and equipment, including the Large Spark-

Ignition Engine Fleet Requirements Regulation and the In-Use Off-Road Diesel Fueled Fleets Regulation (Off-Road Regulation), which was amended in November 2022, and the Zero-Emission Off-Road Forklift regulation, which the Board adopted in June 2024. Incentive programs include the Clean Off-Road Equipment (CORE) Voucher Incentive Project, the Moyer Program, and the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) program. CARB adopted amendments to the Small Off-Road Engine (SORE) regulations in December 2021, the Transport Refrigeration Unit (TRU) Air Toxic Control Measure Phase 1 amendments in February 2022, and the In-Use Locomotive Regulation in November 2022.

CARB's in-use requirements for off-road equipment include the In-Use Off-Road Diesel-Fueled Fleets Regulation (Off-Road Regulation), adopted in 2010 and amended in 2022, which is an extensive program designed to accelerate the penetration of the cleanest equipment into California's fleets, and impose idling limits on off-road diesel vehicles. The program goes beyond emission standards for new engines through comprehensive in-use requirements for legacy fleets. The 2022 amendments to the Off-Road Regulation create additional requirements to the currently regulated fleets by targeting the oldest and dirtiest equipment that was allowed to operate indefinitely under the prior regulatory structure. The 2022 amendments require fleets to phase-out use of the oldest and highest polluting off-road diesel vehicles in California, while prohibiting the addition of high-emitting vehicles to a fleet, and requiring the use of R99 or R100 renewable diesel in off-road diesel vehicles.

The Large Spark-Ignition (LSI) Engine Fleet Requirements Regulation applies to operators of forklifts, sweeper/scrubbers, industrial tow tractors, and airport ground support equipment (GSE). The 2006 LSI rulemaking and 2010 amendments required operators of in-use fleets to achieve specific hydrocarbon + NOx fleet average emission level standards that became more stringent over time. In June 2024, the Board adopted the Zero-Emission Forklift regulation, which is designed to phase out LSI forklifts by 2038 by accelerating the transition of LSI engine powered forklifts to zero emission technology. The regulation requires forklift fleets to transition spark-ignited forklifts (e.g., propane and gasoline forklifts) to zero emission technology starting in 2026 with the oldest, highest-emitting forklifts being phased out first.

CARB adopted amendments to the SORE regulations in December 2021 that will accelerate the transition of SORE equipment to zero emission equipment. Deployment of zero emission equipment is key to meeting the expected emission reductions in the 2016 State SIP Strategy. As discussed in the 2016 and 2022 State SIP Strategies, CARB is also developing new requirements to transition diesel-powered TRU to zero emission technology in two phases. CARB adopted the Phase 1 amendments to the existing TRU ATCM in February 2022, which requires the transition of diesel-powered truck TRUs to zero emission.

Further, CARB implements a number of incentive programs and projects to advance the turnover of off-road equipment to cleaner technologies. The Moyer Program has provided funding towards on- and off-road equipment for decades. CORE is a newer project that is intended to accelerate deployment of advanced technology in the off-road sector and targets commercial-ready products that have not yet achieved a significant market foothold. For engines and equipment used in agricultural processes, CARB has the FARMER program to support fleet turnover to cleaner engines.

Taken together, California's comprehensive suite of emission standards, fuel specifications, and incentive programs for off-road vehicles and engines represent all measures that are technologically and economically feasible within California, and fully meet the requirements for RACM.

6. Locomotives

The recently adopted In-Use Locomotive Regulation accelerates the adoption of advanced, cleaner technologies for locomotive operations, including zero emission technologies. The regulatory elements include a spending account and idling limits (both beginning in 2024), and in-use operational requirements that begin in 2030. Spending account funds will be used to fund turnover to cleaner locomotives, rail equipment, and/or related infrastructure, with a structure that requires locomotive operators to fund their own trust account based on the emissions created by their locomotive operations in California so that the dirtier the locomotive, the more funds must be set aside. All locomotives with automatic shutoff devices (AESS) are subject to idling requirements of less than 30 minutes, unless for an exempted for reasons like maintaining air brake pressure or to perform maintenance. Starting in 2030, only locomotives less than 23 years old would be able to be used in California. Switchers, industrial, and passenger locomotives with original engine build dates of 2030 or newer would be required to operate in a zero emission configuration in California. Freight line haul locomotives with original engine build dates of 2035 and newer would be required to operate in a zero emission configuration in California.

7. Marine Sources

Because attainment of the standard in the Coachella Valley is dependent on emission reductions achieved in the upwind South Coast Air Basin, this document describes the emission control measures for marine sources that may not be present within the Coachella Valley nonattainment area.

Commercial harbor craft include any private, commercial, government, or military marine vessels including, but not limited to ferries, excursion vessels, tugboats (including ocean-going tugboats), barges, and commercial passenger fishing boats. CARB's Commercial Harbor Craft Regulation (CHC Regulation) was adopted in 2007 to reduce toxic and criteria emissions to protect public health and subsequently amended in 2010. As described in the 2022 State SIP Strategy, the Board also adopted amendments to the CHC Regulation in March 2022, which establish expanded and more stringent in-use requirements to cover more vessel categories and mandate accelerated deployment of zero emission and advanced technologies in vessel categories where technology feasibility has been demonstrated.

To reduce emissions from Ocean Going Vessels (OGV), CARB has adopted to date the Ocean-Going Vessel Fuel Regulation "Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels within California Waters and 24 Nautical Miles of the California Baseline" (2008) and the Ocean-Going Vessels At-Berth Regulation (2007). The At-Berth Regulation requires container ships, passenger ships, and refrigerated-cargo ships at six California ports to meet compliance requirements for auxiliary engines while they are docked, including emission or power reduction requirements. Reduced vessel speeds also can provide emission reduction benefits, and incentive programs are operated by local air districts along the

California coast to incentivize lower speeds. To control emissions from personal watercraft, CARB also has had in place exhaust emission standards for new outboard and personal watercraft engines since 1998.

Taken together, California's comprehensive suite of emission standards, fuel specifications, and in-use programs for marine vehicles and engines represent all measures that are technologically and economically feasible within California and fully meet the requirements for RACM.

8. Fuels

As mentioned earlier, cleaner burning fuels also play an important role in reducing emissions from motor vehicles and engines in these source categories. CARB has adopted standards to ensure that the fuels sold in California are the cleanest in the nation. These programs include the California Reformulated Gasoline program (CaRFG), which controls emissions from gasoline, and the Ultra-Low Sulfur Diesel requirements (2006), which provide the nation's cleanest diesel fuel specifications and help to ensure that diesel fuels burn as cleanly as possible and work synergistically with cleaner-operating heavy-duty trucks equipped with advanced emission control systems that debuted in 2007, and the Low Carbon Fuel Standard. These fuel standards, in combination with engine technology requirements, ensure that California's transportation system achieves the most effective emission reductions possible.

Taken together, California's fuel specifications and other fuels requirements represent all measures that are technologically and economically feasible within California, and fully meets the requirements for RACM.

9. Mobile Source Summary

California's long history of comprehensive and innovative emissions control has resulted in the most stringent mobile source control program in the nation. U.S. EPA has previously acknowledged the strength of the program in their approval of CARB's regulations and through the waiver process. In its 2020 approval of the Coachella Valley's 75 ppb 8-hour ozone plan,[57] which included the State's current program and new measure commitments, U.S. EPA found that, "there are no additional RACM that would advance attainment of the 2008 ozone NAAQS in the Coachella Valley by at least one year." More recently, in June of 2024, U.S. EPA approved the Coachella Valley Extreme Area Plan for the 1997 8-Hour Ozone Standard.[58] In its proposal for that action, U.S. EPA found that,

[57] U.S. EPA, Approval of Air Quality Implementation Plans; California; Coachella Valley; 2008 8-Hour Ozone Nonattainment Area Requirements, 85 Fed. Reg. 57714 (September 16, 2020). https://www.federalregister.gov/documents/2020/09/16/2020-19162/approval-of-air-quality-implementation-plans-california-coachella-valley-2008-8-hour-ozone

[58] U.S. EPA, Approval and Promulgation of Implementation Plans; State of California; Coachella Valley; Extreme Attainment Plan for 1997 8-Hour Ozone Standards, 89 Fed. Reg. 49815 (June 12, 2024) https://www.govinfo.gov/content/pkg/FR-2024-06-12/pdf/2024-12786.pdf

> "The Coachella Valley Ozone Plan provides for implementation of all RACM necessary to demonstrate expeditious attainment of the 1997 8-hour ozone standards in the Coachella Valley."[59]

In addition, U.S. EPA has provided past determinations that CARB's mobile source control programs meet Best Available Control Measure (BACM) requirements, which are more stringent than RACM, as part of their 2019 approval of the South Coast's 24-hour PM2.5 Plan:

> "Overall, we believe that the program developed and administered by CARB and SCAG provide for the implementation of BACM for PM2.5 and PM2.5 precursors in the South Coast nonattainment area."[60]

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

The CARB process for developing the State measures included an extensive public process and is consistent with U.S. EPA RACM guidance. Through this process, CARB found that with the current mobile source control program including measures already adopted from the 2022 State SIP Strategy, there are no additional reasonable available control measures that would advance attainment of the 75 ppb 8-hour ozone standard in the Coachella Valley ozone nonattainment area. As a result, California's mobile source control programs fully meet the requirements for RACM.

<u>RACM for Consumer Products</u>

Consumer products are defined as chemically formulated products used by household and institutional consumers. For thirty years, CARB has taken actions pertaining to the regulation of consumer products. Three regulations have set VOC limits for 129 consumer product categories. These regulations, referred to as the Consumer Product Program, have been amended frequently, and progressively stringent VOC limits and reactivity limits have been established. These are: the Regulation for Reducing VOC Emissions from Antiperspirants and Deodorants; the Regulation for Reducing Emissions from Consumer Products; and the Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions, and the Tables of Maximum Incremental Reactivity Values. The 2016 State SIP Strategy included commitments to further strengthen the program through additional emission reductions, and toward this end, CARB has submitted

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[59] U.S. EPA, Approval and Promulgation of Implementation Plans; State of California; Coachella Valley; Extreme Attainment Plan for 1997 8-Hour Ozone Standards, 89 Fed. Reg. 26817 (April 16, 2024). https://www.federalregister.gov/documents/2024/04/16/2024-08121/approval-and-promulgation-of-implementation-plans-state-of-california-coachella-valley-extreme

[60] U.S. EPA, Air Quality State Implementation Plans; Approvals and Promulgations: California; South Coast Moderate Area Plan for the 2006 PM2.5 Standards; Correction of Deficiency, 83 Fed. Reg. 5923 (February 12, 2018). https://www.federalregister.gov/documents/2018/02/12/2018-02677/air-quality-state-implementation-plans-approvals-and-promulgations-california-south-coast-moderate

to U.S. EPA lower VOC emission limits for seven consumer product categories. Additionally, a voluntary regulation, the Alternative Control Plan, has been adopted to provide compliance flexibility to companies. The program's most recent rulemaking occurred in 2021 with amendments to Consumer Products Regulation and Method 310.

U.S. EPA also regulates consumer products. U.S. EPA's consumer products regulation was promulgated in 1998, however, federal consumer products VOC limits have not been revised since their adoption. U.S. EPA also promulgated reactivity limits for aerosol coatings. As with the general consumer products, California's requirements for aerosol coatings are more stringent than the U.S. EPA's requirements. Other jurisdictions, such as the Ozone Transport Commission states, have established VOC limits for consumer products which are modeled after the California program. However, the VOC limits typically lag those applicable in California.

U.S. EPA has also confirmed the stringency of California's Consumer Products program. In its May 2024 proposal for the approved Coachella Valley Extreme Area Plan for the 1997 8-Hour Ozone Standard, they stated that,

> "we find that CARB's consumer products program generally exceeds the controls in place throughout other areas of the country. The additional commitments included in the 2016 State Strategy further strengthen this program by achieving additional VOC reductions."[61]

In summary, California's Consumer Products Program, with the most stringent VOC requirements applicable to consumer products, represent all measures that are technologically and economically feasible within California, and fully meets the requirements for RACM. There are no additional reasonable available control measures that would advance attainment of the 75 ppb 8-hour ozone standard in the Coachella Valley ozone nonattainment area.

RACM for Pesticides

The Department of Pesticide Regulation (DPR) is the State agency responsible for regulating the application of pesticides, which are a source of VOCs in the Coachella Valley nonattainment area. California began including in the SIP controls to reduce VOC emissions from pesticide applications in the 1994 Ozone SIP. The 1994 Ozone SIP included a commitment to reduce VOC emissions from pesticide use 20% below the 1990 baseline emission levels by 2005, with flexibility to achieve reductions of less than 20 percent if less pesticidal VOC emissions reductions were needed in a given district. This commitment, known as the 1994 Pesticide Element, governed the application of agricultural and structural pesticides in five California

[61] U.S. EPA, Approval and Promulgation of Implementation Plans; State of California; Coachella Valley; Extreme Attainment Plan for 1997 8-Hour Ozone Standards, 89 Fed. Reg. 26817 (April 16, 2024). https://www.federalregister.gov/documents/2024/04/16/2024-08121/approval-and-promulgation-of-implementation-plans-state-of-california-coachella-valley-extreme

nonattainment areas: South Coast, San Joaquin Valley, Sacramento Metro, Ventura County, and the Southeast Desert, which includes the Coachella Valley.

Under the Pesticide Element of the 1994 Ozone SIP, California's commitment for the Southeast Desert nonattainment area was to adopt and submit to U.S. EPA by 1997, any regulations necessary to reduce VOC emissions resulting from agricultural and structural pesticides by 20 percent of the 1990 base year emissions.[62]

DPR compiles and publishes annual reports on VOC emissions from pesticides. In its latest report, DPR identified that VOC emissions in the Southeast Desert nonattainment area were 73 percent lower than the 1990 base year, and remain in compliance with the SIP goal benchmark of 20 percent below 1990 levels.[63] Beyond ensuring that the control measures in the Southeast Desert nonattainment area are maintaining that VOC emissions from pesticides do not exceed the prescribed limits, DPR assessment indicates that no other state, aside from California, is required to adopt into their SIP measures to reduce VOC emissions from pesticides. This requirement suggests that the California pesticide control program exceeds the RACT threshold of 'reasonably available' control technologies, and meet at least the more stringent threshold of "Best available" control technologies (BACT).

Finally, the pesticide control program currently being implemented in the Southeast Desert, including the Coachella Valley, has been found by U.S. EPA to meet RACT/RACM requirements. In 2012, as part of their final approval of California's 2009 Field Fumigant Regulations and the Revised SIP Commitment for the SJV, U.S. EPA evaluated California's field fumigant regulations for the South Coast, Ventura County, the Southeast Desert, San Joaquin Valley, and Sacramento Metropolitan nonattainment areas, and concluded that the controls met RACT requirements:

> "[U.S.] EPA believes, based on the information provided in the CDPR's alternatives analysis, and the research cited to support it, that CDPR has demonstrated that the proposed regulations are stringent enough to implement RACT-level controls on the application of pesticides."[64]

U.S. EPA has also approved the RACM demonstration in the 80 ppb 8-hour ozone SIPs for the South Coast and San Joaquin Valley, including the VOC control measures,[65] as well as the RACM demonstration in the

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[62] U.S. EPA, Approval and Promulgation of Implementation Plans; California — Ozone, 62 Fed. Reg. 1150 (January 8, 1997). https://www.govinfo.gov/content/pkg/FR-1997-01-08/pdf/97-144.pdf

[63] California DPR, Annual Report on Volatile Organic Compound Emissions from Pesticides for 1990 – 2022, April 2024. https://www.cdpr.ca.gov/docs/emon/vocs/vocproj/2022_voc_annual_report.pdf

[64] U.S. EPA, Technical Support Document for Final Rule (August 14, 2012). https://www.regulations.gov/document/EPA-R09-OAR-2012-0194-0023

[65] U.S. EPA, Approval of Air Quality Implementation Plans; California; San Joaquin Valley; Attainment Plan for 1997 8-Hour Ozone Standards, 77 Fed. Reg. 12652 (March 1, 2012). https://www.govinfo.gov/content/pkg/FR-2012-03-01/pdf/2012-4674.pdf and U.S. EPA, Approval of Air Quality Implementation Plans; California; South Coast; Attainment Plan for 1997 8-Hour Ozone Standards, 77 Fed. Reg 12674 (March 1, 2012). https://www.federalregister.gov/documents/2012/03/01/2012-4673/approval-of-air-quality-implementation-plans-california-south-coast-attainment-plan-for-1997-8-hour

PM2.5 SIP for the South Coast.[66] Finally, U.S. EPA has also determined that California's pesticide control program meets the more stringent control level requirements of BACM, as was affirmed in the Technical Support Document for U.S. EPA's action to approve California's 2009 Field Fumigant Regulations and the Revised SIP Commitment, [67] wherein they reference their prior approval of the PM10 SIPs for South Coast and Southeast Desert[68] and other SIPs:

> "The approval of the fumigant regulations is consistent with these approved RACM/BACM demonstrations and therefore will not interfere with these SIPs' compliance with the RACM/BACM requirements."

Beyond the VOC controls provided by the pesticide control program currently being implemented, the 2022 State SIP Strategy also includes a measure to reduce emissions associated with the use of a pesticide known as 1,3-Dichloropropene (1,3-D), which is considered a VOC. This measure was developed to limit short-term air concentrations of 1,3-D, a fumigant used to control nematodes, insects, and disease organisms in soil, by shifting application methods to those with lower emissions, such as requiring applicators to use totally impermeable film tarpaulins or other mitigation measures. DPR is in the process of developing this regulation, which has a targeted effective date of 2024.

In summary, DPR's pesticide regulations represent all measures that are technologically and reasonably available in the context of Coachella's ozone attainment plan, and meets RACM. There are no additional measures that, when considered in aggregate, would advance the attainment date by at least one year.

Transportation Control Strategies and Transportation Control Measures

SCAG's RACM evaluation of transportation control strategies and transportation control measures are included in Appendix I.

Supplemental RACT Demonstration

The CAA requires that areas classified as "moderate" nonattainment and higher must develop and submit a demonstration that their current air pollution regulations fulfill the RACT requirements for major stationary sources and sources covered by U.S. EPA's CTGs/ACTs. For areas classified as "extreme" nonattainment, CAA Section 182(e) defines a major stationary source threshold of 10 tons per year (tpy) of VOC or NOx. RACT requires implementation of the lowest emission limitation that an emission source

[66] U.S. EPA, Approval of Air Quality Implementation Plans; California; South Coast; Attainment Plan for 1997 PM2.5 Standards, 76 Fed. Reg. 69928 (November 9, 2011). https://www.govinfo.gov/content/pkg/FR-2011-11-09/pdf/2011-27620.pdf

[67] U.S. EPA *Technical Support Document for Final Rule* (August 14, 2012). https://www.regulations.gov/document/EPA-R09-OAR-2012-0194-0023

[68] U.S. EPA, Approval and Promulgation of State Implementation Plans for Air Quality Planning Purposes; California-South Coast and Coachella, 70 Fed. Reg. 69081 (November 14, 2005). https://www.federalregister.gov/documents/2005/11/14/05-22463/approval-and-promulgation-of-state-implementation-plans-for-air-quality-planning-purposes

is capable of meeting by the application of a control technology that is reasonably available, considering technological and economic feasibility.

U.S. EPA approved RACT SIPs for the South Coast AQMD for the 1997 and 2008 8-hour ozone standards, which included rules applicable to the Coachella Valley.[69] U.S. EPA also approved South Coast AQMD's revised RACT rules in response to the 1988 SIP call and 1990 CAA amendments.[70] The most recent comprehensive RACT SIP was developed in 2020 for the 2015 ozone standard and considered major stationary sources emitting greater than or equal to 25 tpy in Coachella Valley.[71] The only RACT deficiency identified in that demonstration was related to Rule 1115 - Motor Vehicle Assembly Line Coating Operations. Rule 1115 was amended in March 2022 to address the RACT deficiency. In addition, the RACT SIP for the 2015 ozone standard included a negative declaration for the 2007 Paper, Film, and Foil Coatings CTG (EPA 453/R-07-003) as there are no sources in South Coast AQMD that are subject to the CTG. The CTG requirements only apply to facilities with a potential to emit at least 25 tpy of VOC from coatings. In Coachella Valley, the 2018 VOC emissions from paper coatings are approximately 3 tpy. Thus, there are no sources applicable to the CTG.

The Coachella Valley Extreme Area Plan for the 1997 Ozone Standard included a supplemental RACT demonstration to address sources subject to the lower major stationary source threshold of 10 tpy for "extreme" nonattainment areas.[72] Although two additional Title V facilities were identified, these facilities were determined to be subject to and compliant with South Coast AQMD's rules which represent RACT level control. Staff reviewed the list of Title V facilities in 2023 to determine if there were any changes. The two additional facilities identified in the supplemental RACT demonstration for the 1997 ozone standard are no longer in the Title V program. No new Title V facilities in Coachella Valley were identified. Thus, all applicable sources in the Coachella Valley have already been determined to implement RACT. While U.S. EPA did not explicitly address RACT in its recent proposed approval of the Coachella Valley Extreme Area Plan for the 1997 Ozone Standard, U.S. EPA noted that it would "consider the rules in relevant RACT

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[69] U.S. EPA, Revisions to the California State Implementation Plan, South Coast Air Quality Management District, 73 Fed. Reg. 76947 (December 18, 2008). https://www.federalregister.gov/documents/2008/12/18/E8-29641/revisions-to-the-california-state-implementation-plan-south-coast-air-quality-management-district; Approval of California Air Plan Revisions, South Coast Air Quality Management District, 82 Fed. Reg. 43850 (September 20, 2017). https://www.federalregister.gov/documents/2017/09/20/2017-19693/approval-of-california-air-plan-revisions-south-coast-air-quality-management-district

[70] U.S. EPA, Approval and Promulgation of Implementation Plans; California State Implementation Plan Revision, Mojave Desert Air Quality Management District and South Coast Air Quality Management District, 60 Fed. Reg. 31081 (June 13, 1995). https://www.govinfo.gov/content/pkg/FR-1995-06-13/pdf/95-14391.pdf; Approval and Promulgation of Implementation Plans; California State Implementation Plan Revision, San Diego County Air Pollution Control District, South Coast Air Quality Management District, and Ventura County Air Pollution Control District, 60 Fed. Reg. 40285 (August 8, 1995). https://www.govinfo.gov/content/pkg/FR-1995-08-08/pdf/95-19504.pdf

[71] South Coast AQMD, Draft Final Staff Report for 2015 8-Hour Ozone Standard Reasonably Available Control Technology (RACT) Demonstration, June 2020. https://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2020/2020-Jun5-028.pdf?sfvrsn=8

[72] South Coast AQMD, Final Coachella Valley Extreme Area Plan for the 1997 8-Hour Ozone Standard, December 2020. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/2-final-coachella-valley-extreme-area-plan-for-1997-8-hour-ozone-standard.pdf?sfvrsn=6

demonstrations as potentially addressing RACM demonstration requirements."[73] U.S. EPA subsequently took final action to approve the RACM demonstration.[74]

In its 2008 ozone standard SIP requirements rule, U.S. EPA notes that "sources already addressed by RACT determinations for the 1-hour and/or 1997 ozone NAAQS do not need to implement additional controls to meet the 2008 ozone NAAQS RACT requirement."[75] Applicable sources in the Coachella Valley have already been addressed by RACT determinations for the 1979, 1997, 2008, and 2015 ozone standards through previous SIP revisions. These sources are subject to and compliant with South Coast AQMD's rules. In addition, review of U.S. EPA's CTGs and ACTs as well as the comprehensive RACM demonstration, presented in the previous section, did not reveal any new control technologies for RACT consideration.[76] Thus, applicable sources in Coachella Valley already implement RACT. No new RACT rules are proposed in this Plan.

Contingency Measures

CAA Sections 172(c)(9) and 182(c)(9) require contingency measures if an ozone nonattainment area fails to meet the RFP milestones or attain the national primary ambient air quality standard by the attainment date. South Coast AQMD addressed the contingency measure requirement for the 2008 ozone standard through a separate SIP revision for the Coachella Valley.[77] The SIP revision contained CARB's Smog Check Contingency Measure and a commitment to consider amending Rule 463 – Organic Liquid Storage to introduce a contingency measure to require more frequent Optical Gas Imaging (OGI) inspections to facilitate leak detection and repair. In addition, an infeasibility analysis was performed to demonstrate that there are no additional opportunities for contingency measures in the Coachella Valley. South Coast AQMD adopted Rule 463, including the contingency measure, on June 7, 2024.

[73] U.S. EPA, Approval and Promulgation of Implementation Plans; State of California; Coachella Valley; Extreme Attainment Plan for 1997 8-Hour Ozone Standards, 89 Fed. Reg. 26817 (April 16, 2024). https://www.federalregister.gov/documents/2024/04/16/2024-08121/approval-and-promulgation-of-implementation-plans-state-of-california-coachella-valley-extreme

[74] Approval and Promulgation of Implementation Plans; State of California; Coachella Valley; Extreme Attainment Plan for 1997 8-Hour Ozone Standards, 89 Fed. Reg. 49815 (June 12, 2024). https://www.federalregister.gov/documents/2024/06/12/2024-12786/approval-and-promulgation-of-implementation-plans-state-of-california-coachella-valley-extreme

[75] U.S. EPA, Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements, 80 Fed. Reg. 12264 (March 6, 2015). https://www.federalregister.gov/documents/2015/03/06/2015-04012/implementation-of-the-2008-national-ambient-air-quality-standards-for-ozone-state-implementation

[76] U.S. EPA, Control Techniques Guidelines and Alternative Control Techniques Documents for Reducing Ozone-Causing Emissions. https://www.epa.gov/ground-level-ozone-pollution/control-techniques-guidelines-and-alternative-control-techniques

[77] South Coast AQMD, Coachella Valley Contingency Measure SIP Revision for the 2008 8-Hour Ozone Standard Final Staff Report, March 2024. https://www.aqmd.gov/docs/default-source/clean-air-plans/ozone-plans/coachella-valley-contingency-measure-sip-revision/c-final-coachella-valley-contingency-sip-staff-report.pdf?sfvrsn=6

Transportation Conformity

Introduction

CARB has prepared the motor vehicle emissions budget (MVEB)[78] for the Coachella Valley Ozone Plan. The MVEB is the maximum allowable emissions from motor vehicles within a nonattainment area and is used for determining whether transportation plans and projects conform to the applicable SIP.

Transportation conformity is the federal regulatory procedure for linking and coordinating the transportation and air quality planning processes through the MVEB established in the SIP. Under Section 176(c) of the CAA, federal agencies may not approve or fund transportation plans and projects unless they are consistent with the regional SIP. In addition, conformity with the SIP requires that transportation activities do not (1) cause or contribute to new air quality violations, (2) increase the frequency or severity of any existing violation, or (3) delay the timely attainment of NAAQS. Therefore, quantifying on-road motor vehicle emissions and comparing those emissions with a budget established in the SIP determine transportation conformity between air quality and transportation planning.

The MVEBs are set for each criteria pollutant or its precursors for each milestone year and the attainment year of the SIP. Subsequent transportation plans and programs produced by transportation planning agencies must demonstrate that the emissions from the proposed plan, program, or project do not exceed the MVEBs established in the applicable SIP. The MVEBs established in this SIP apply as a "ceiling" or limit on transportation emissions for the SCAG for the years in which they are defined and for all subsequent years until another year for which a different budget is specified, or until a SIP revision modifies the budget. For the Coachella Valley Ozone Plan, the interim and attainment years of the SIP (also referred to as the plan analysis years) are 2026, 2029, and 2031.

Methodology

The MVEB for the Plan is established based on guidance from the U.S. EPA on the motor vehicle emission categories and precursors that must be considered in transportation conformity determinations as found in the transportation conformity regulation and final rules as described below.

The MVEB must be clearly identified, precisely quantified, and consistent with applicable CAA requirements. Further, it should be consistent with the Plan's emission inventory and control measures.

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

The Plan establishes the MVEB only for primary emissions of VOC and NOx from motor vehicles. This section discusses budgets that have been set for annual average daily emissions in the analysis years 2026, 2029, and 2031. The MVEB presented below uses emission rates from California's motor vehicle emission model, EMFAC2021 (V.1.0.2),[79] with Coachella Valley activity data (VMT and speed distributions) from SCAG. The activity data are from the region's 2020 Regional Transportation Plan (RTP).[80] Thus, the MVEB is consistent with the emission inventory and attainment demonstration for the SIP.

On November 15, 2022, U.S. EPA approved EMFAC2021 for use in SIPs and for demonstrating transportation conformity.[81] The EMFAC model estimates emissions from two combustion processes (running and start exhaust) and four evaporative processes (hot soak, running losses, diurnal, and resting losses). Further, the estimated emissions were adjusted for the Heavy-Duty Inspection and Maintenance (HD I/M) Program,[82] the Advanced Clean Fleets (ACF) program,[83] the Advanced Clean Cars II (ACCII) program,[84] the Clean Miles Standard (CMS),[85] and the Clean Trucks Plan.[86]

The MVEB for Coachella Valley Ozone Plan was developed to be consistent with the on-road emissions inventory[87] and maintenance demonstration using the following method:

1.) Used the EMFAC2021 model to produce the on-road motor vehicle emissions (average annual day) for the appropriate pollutants (VOC and NOx) using 2020 RTP activity data;

2.) Applied the off-model adjustments (HD I/M, ACF, ACCII, CMS, and Clean Trucks Plan) to account for recently adopted regulations; and

3.) Rounded the totals for VOC and NOx to the nearest tenth of a ton.

Motor Vehicle Emissions Budget

The MVEB in Table 6-10 was established according to the methodology outlined above and in consultation with SCAG, the South Coast AQMD, U.S. EPA, Federal Highway Administration, and Federal Transit

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79 More information on data sources can be found in the EMFAC technical support documentation at: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-road-documentation

80 SCAG, Connect SoCal 2020. https://scag.ca.gov/read-plan-adopted-final-connect-socal-2020

81 U.S. EPA, Official Release of EMFAC2021 Motor Vehicle Emission Factor Model for Use in the State of California, 87 Fed. Reg. 68483 (November 15, 2022). https://www.federalregister.gov/documents/2022/11/15/2022-24790/official-release-of-emfac2021-motor-vehicle-emission-factor-model-for-use-in-the-state-of-california#:~:text=Dates%3A,is%20effective%20November%2015%2C%202022

82 CARB Heavy-Duty Engine and Vehicle Omnibus Regulations. https://ww2.arb.ca.gov/rulemaking/2020/hdomnibuslownox

83 CARB Advanced Clean Fleet. https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets

84 CARB Advanced Clean Cars II. https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii

85 CARB Clean Miles Standard. https://ww2.arb.ca.gov/our-work/programs/clean-miles-standard

86 U.S. EPA Clean Trucks Plan. https://www.epa.gov/system/files/documents/2021-08/420f21057.pdf

87 More information about the on-road motor vehicle emission budgets can be found in Chapter 3 of the Plan

Administration. The MVEB is consistent with the emission inventories and line item adjustments in the South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard.[88] These budgets will be effective once U.S. EPA determines they are adequate or approved.

Table 6-10 contains the summary MVEB for the Coachella Valley region. It includes precursor pollutants of VOC and NOx emissions for milestone and attainment years using the EMFAC2021 model and 2020 RTP activity data.

TABLE 6-10
SUMMARY MVEB FOR THE COACHELLA VALLEY (SUMMER SEASON)

Coachella Valley Totals (Tons per day)	2026		2029		2031	
	VOC	NOx	VOC	NOx	VOC	NOx
Vehicular Exhaust	2.35	5.12	2.11	4.80	1.98	4.60
Reductions from HD I/M	-	1.81	-	2.09	-	2.12
Reductions from ACF	-	-	-	-	0.02	0.34
Reductions from ACCII	-	-	-	-	0.06	0.06
Reductions from CMS	-	-	-	-	0.00	0.00
Reductions from Clean Trucks Plan	-	-	-	-	0.00	0.14
Total[a]	2.35	3.30	2.11	2.71	1.90	1.94
Motor Vehicle Emission Budget[b]	2.4	3.4	2.2	2.8	2.0	2.0

[a] Values from EMFAC2021 v1.02 may not add up due to rounding.

[b] Motor Vehicle Emission Budgets calculated are rounded up to the nearest tenth of a tpd.

Source: EMFAC2021 v1.02

[88] South Coast AQMD, South Coast Air Basin Attainment Plan for the 2012 Annual PM2.5 Standard. https://www.aqmd.gov/home/air-quality/air-quality-management-plans/other-state-implementation-plan-(sip)-revisions/2012-annual-pm2-5-plan

VMT Offset

The CAA requires "extreme" nonattainment areas to submit enforceable transportation control strategies (TCSs) and TCMs to offset any growth in emissions from growth in VMT or numbers of vehicle trips.

Introduction

The CAA requires states to submit enforceable transportation control strategies (TCSs) and TCMs to offset any growth in VOC emissions due to increases in VMT or the number of vehicle trips from the base year (2011) to the attainment year (2031) of the SIP. Further, the motor vehicle control program should be frozen at base year levels to determine whether additional TCSs and TCMs are necessary to reduce VOC emissions from increased VMT. Accordingly, CARB prepared the VMT emissions-offset demonstrations for the Coachella Valley nonattainment area (Severe-15 classification) for the 2008 8-hour ozone standard as required by Section 182(d)(1)(A). CARB Board approved the VMT emissions-offset demonstrations for Coachella Valley on March 13, 2017, in the 2016 AQMP as a "severe" nonattainment area, and submitted them to U.S. EPA on April 27, 2017. However, the South Coast AQMD voluntarily reclassified the Coachella Valley from a "severe" to an "extreme" nonattainment area for the 75 ppb 8-hour ozone standard. Hence, CARB is updating the VMT emissions-offset demonstrations for the Coachella Valley as an "extreme" nonattainment area in accordance with the U.S. EPA's August 2012 guidance entitled "Implementing Clean Air Act Section 182(d)(1)(A): Transportation Control Measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Traveled" ("hereafter referred to as the 2012 guidance").[89]

U.S. EPA Guidance on VMT Offset Requirement

In its 2012 guidance, U.S. EPA indicated that technological improvements to vehicles, motor vehicle fuels, and other transportation-related control strategies could be used to offset emission increases from VMT. The 2012 guidance also set forth a methodology for demonstrating the achievement of the VMT offset requirement. The projected attainment year emissions, assuming no new control measures and no VMT growth, are to be compared with projected actual attainment year emissions, including new control measures and VMT growth. If the latter emissions are smaller than the former, no additional TCMs or TCSs are required. The 2012 guidance recommends that the base year used in the VMT offset demonstration be the nonattainment area's base year for the 2008 8-hour ozone standard.

Transportation Control Strategies and Transportation Control Measures

By listing them separately, CAA Section 182(d)(1)(A) differentiates between TCSs and TCMs, both of which can be used as options to offset increased emissions from growth in VMT per the provisions of CAA Section

[89] U.S. EPA, Office of Transportation and Air Quality. (2012, August). *Implementing Clean Air Act Section 182(d)(1)(A): Transportation Control Measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Traveled* (EPA-420-B-12-053). Retrieved from the EPA website

182(d)(1)(A) and the 2012 guidance. Since 1990, when this requirement was established, California has adopted a substantial number of enforceable TCSs. Table 6-11 provides a list of the State's mobile source TCSs that CARB has adopted between 1990 and the 2011 base year.

TABLE 6-11

TRANSPORTATION CONTROL STRATEGIES ADOPTED BY THE CALIFORNIA AIR RESOURCES BOARD 1990–2011

Measure	Hearing Date	Category
California Reformulated Gasoline (CalRFG), Phase I. T 13, CCR, 2251.5	9/27/1990	Fuels
California Reformulated Gasoline, Phase II. T 13, CCR, 2250, 2255.1, 2252, 2260 - 2272, 2295	11/21/1991	Fuels
Wintertime Gasoline Program. T 13, CCR, 2258, 2298, 2251.5, 2296	11/21/1991	Fuels
Wintertime Oxygenate Program. T 13, CCR, 2258, 2251.5, 2263(b), 2267, 2298, 2259, 2283, 2293.5	9/9/1993	Fuels
Diesel Fuel Certification Test Methods. T 13, CCR, 1956.8(b), 1960.1(k), 2281(c), 2282(b), (c) and (g)	10/24/1996	Fuels
Diesel Fuel Test Methods. T 13, CCR, 1956.8(b), 1960.1(k), 2281(c), 2282(b), (c) and (g)	10/24/1996	Fuels
1997 Amendments to Onboard Diagnostics, Phase II, Technical Status. T 13, CCR, 1968.1, 2030, 2031	12/12/1996	On-Road
Low Emission Vehicles Standards (LEV 2) and Compliance Assurance Program (CAP 2000). T 13, CCR,1961 & 1962 (both new); 1900, 1960.1, 1965, 1968.1, 1976, 1978, 2037, 2038, 2062, 2101, 2106, 2107, 2110, 2112, 2114, 2119, 2130, 2137-2140, 2143-2148	11/5/1998	On-Road
Exhaust Standards for (On-Road) Motorcycles. T 13, CCR, 1900, 1958, 1965	12/10/1998	On-Road
Light-and Medium Duty Low Emission Vehicle Alignment with Federal Standards. Exhaust Emission Standards for Heavy Duty Gas Engines. T 13, CCR, 1956.8 &1961	12/7/2000	On-Road
Heavy Duty Diesel Engine Standards for 2007 and Later. T 13, CCR, 1956.8 and incorporated test procedures	10/25/2001	On-Road
Low Emission Vehicle Regulations. T 13, CCR, 1960.1,1960.5, 1961, 1962 and incorporate test procedures and guidelines	11/15/2001	On-Road
2003 Amendments to On-Board Diagnostic II Review Amendments. T 13, CCR, 1968.1, 1968.2, 1968.5	4/25/2002	On-Road

Measure	Hearing Date	Category
CaRFG Phase 3 Amendments. T 13, CCR, 2261, 2262, 2262.4, 2262.5, 2262.6, 2262.9, 2266.5, 2269, 2271, 2272, 2265, and 2296	7/25/2002	Fuels
Adoption of Minor Amendments to the Low-Emission Vehicle Regulations. T 13, CCR, 1961, 1965, 1978, and the incorporate test procedures	12/12/2002	On-Road
Incorporation of Federal Exhaust Emission Standards for 2008 and Later Model-Year Heavy Duty Gasoline Engines and the Adoption of Minor Amendments to the Low-Emission Vehicle Regulations. T 13, CCR, 1956.8 and documents incorporated by reference	12/12/2002	On-Road
CaRFG Phase 3 Amendments (specifications for De Minimis Levels of Oxygenates and MTBE Phase Out Issues). T 13, CCR, 2261, 2262.6, 2263, 2266.5, 2272, 2273, 2260, 2273.5	12/12/2002	Fuels
Specifications for Motor Vehicle Diesel Fuel. T 13 & T17, CCR, 1961, 2281, 2282, 2701, 2284, 2285, 93114, and incorporated test procedures	7/24/2003	Fuels
California Reformulated Gasoline, Phase 3. T 13, CCR, 2260, 2262, 2262.4, 2262.5, 2262.6, 2262.9, 2263, 2265 (and the incorporated "California Procedures"), and 2266.5	11/18/2004	Fuels
On-Board Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Engines (HD OBD). T 13, CCR, 1971.1	7/21/2005	On-Road
Requirements to Reduce Idling Emissions from New and In-Use Trucks, Beginning in 2008. T 13, CCR, 1956.8, 2404, 2424, 2425, and 2485 and the incorporated document	10/20/2005	On-Road
Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yard. T 13, CCR, 2479	12/8/2005	On-road and Off-road
Evaporative and Exhaust Emission Test Procedures. T 13, CCR, 1961, 1976, 1978	6/22/2006	On-road
Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	9/28/2006	On-Road
2007 Amendments to On-Board Diagnostic II. T 13, CCR, 1968.2, 1968.5, 2035, 2037 and 2038	9/28/2006	On-Road
Phase 3 Reformulated Gasoline (Ethanol Permeation) T 13, CCR, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2270, 2271, and 2273	6/14/2007	Fuels
2007 Amendments to Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	12/6/2007	On-Road
Port Truck Modernization T 13, CCR, 2027	12/6/2007	On-Road

Measure	Hearing Date	Category
Cleaner In-Use Heavy-Duty Trucks (Truck and Bus Reg) T 13, CCR, 2025	12/11/2008	On-Road
2010 Amendments to On-Board Diagnostic II. T 13, CCR, 1968.2, 1968.5, 2035, 2037 and 2038	5/28/2009	On-Road
Plug-In Hybrid Electric Vehicle Test Procedure Amendments. T 13, CCR, 2032, 1900, 1962, 1962.1	5/28/2009	On-Road
2010 Amendments to On-Board Diagnostic System Requirements for Heavy-Duty Engines (HD OBD). T 13, CCR, 1971.1 and 1971.5	5/28/2009	On-Road
Truck and Bus Regulation 2010. T13, CCR, 2025	12/16/2010	On-Road
2011 Amendments to Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	6/23/2011	On-Road
Amendments to Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yard. T 13, CCR, 2479	9/22/2011	On-Road

In contrast, TCMs are generally adopted as part of a regional transportation plan (RTP). Under federal law, SCAG is designated as a metropolitan planning organization (MPO) and under State law as a regional transportation planning agency and a council of governments. The SCAG region encompasses several ozone nonattainment areas, including the Coachella Valley. On September 3, 2020, SCAG adopted its RTP, also known as Connect SoCal. However, the RTP does not include specific TCMs for the Coachella Valley because upwind emissions from the South Coast Air Basin largely influence ozone air quality in Coachella Valley.[90] Thus, emission controls in the Basin are sufficient to reduce ozone levels in the Coachella Valley region.

Methodology

The following calculations are based on the 2012 guidance. For the 2008 8-hour ozone standard for the "extreme" area, 2011 and 2031 are the base and attainment years, respectively.

This analysis uses California's motor vehicle emissions model, EMission FACtor (EMFAC).[91] On November 15, 2022, U.S. EPA approved EMFAC2021 for use in SIPs and to demonstrate transportation conformity.[92]

[90] South Coast AQMD, Final Coachella Valley Extreme Area Plan for 1997 8-Hour Ozone Standard, December 2020. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/2-final-coachella-valley-extreme-area-plan-for-1997-8-hour-ozone-standard.pdf?sfvrsn=6

[91] More information on data sources can be found in the EMFAC technical support documentation at: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-road-documentation

[92] U.S. EPA, Official Release of EMFAC2021 Motor Vehicle Emission Factor Model for Use in the State of California, 87 Fed. Reg. 68483 (November 15, 2022). https://www.federalregister.gov/documents/2022/11/15/2022-

The EMFAC model estimates the emissions from two combustion processes – running exhaust and start exhaust, and four evaporative processes – hot soak, running losses, diurnal, and resting losses. Emissions from running exhaust, start exhaust, hot soak, and running losses are a function of how much a vehicle is driven. Therefore, emissions from these processes are directly related to VMT and vehicle starts. These processes are included in the calculation of the emissions levels used in the VMT offset demonstration. Emissions from resting loss and diurnal loss processes are not related to VMT, trips, or vehicle starts and are not included in the analysis because these emissions occur whether or not the vehicle travel occurs on a given day.

To calculate on-road emission inventories in the Coachella Valley ozone nonattainment area, EMFAC combines VMT and speed distributions from Connect SoCal. The number of vehicle starts per day is based on household travel surveys, and vehicle population data are from the California Department of Motor Vehicles with corresponding emission rates to calculate emissions.

Analysis of Coachella Valley

Step 1. Calculate the emissions levels for the 2011 base year.

Calculate emission levels for calendar year 2011 using the EMFAC2021 model. Table 6-12 shows the Coachella Valley VOC emissions for the calendar year 2011 from the EMFAC2021 model.

TABLE 6-12

COACHELLA VALLEY BASE YEAR (2011) VMT AND EMISSIONS

Description	VMT (miles/day)	VOC (tons/day)
2011 Vehicle-Miles Traveled and On-Road Emissions	9,806,099	4.2

Step 2. Calculate three emission levels in the 2031 attainment year.

(1) Calculate emissions levels with the motor vehicle control program frozen at 2011 levels and with projected VMT in the attainment year. This represents what the emissions in the attainment year would have been if TCSs and TCMs had not been implemented after 2011.

(2) Calculate emissions levels with the motor vehicle control program frozen at 2011 levels and assuming VMT does not increase from 2011 levels.

24790/official-release-of-emfac2021-motor-vehicle-emission-factor-model-for-use-in-the-state-of-california#:~:text=Dates%3A,is%20effective%20November%2015%2C%202022

Calculate an emissions level that represents emissions with full implementation of all TCSs and TCMs since 2011.

Calculation 1. Calculate the emissions in the attainment year assuming growth in VMT and no new control measures since the base year.

To perform this calculation, CARB staff identified the on-road motor vehicle control programs adopted since 2011 and adjusted the EMFAC2021 output to reflect the VOC emission levels in 2031 without the benefits of the post-2011 control programs using VMT in 2031 (14,137,977 miles). As a result, the projected VOC emissions will be 1.5 tons per day in 2031.

Calculation 2. Calculate the emissions with no growth in VMT.

EMFAC2021 allows the user to input different VMT values. CARB ran EMFAC2021 for the calendar year 2031 with the 2011 VMT level of 9,806,099 miles per day without the benefits of the post-2011 control programs. The VOC emissions associated with the 2011 VMT level will be 1.1 tons per day in 2031.

Calculation 3. Calculate emissions reductions with full implementation of TCSs and TCMs.

CARB calculated the VOC emission levels for 2031, assuming the benefits of the post-2011 motor vehicle control program and the projected VMT levels in 2031 are calculated using EMFAC2021. The projected VOC emissions levels will be 1.1 tons per day in 2031.

VOC emissions for the three sets of calculations described above are provided in Table 6-13.

TABLE 6-13
COACHELLA VALLEY VOC EMISSIONS CALCULATIONS FOR ATTAINMENT YEAR (2031)

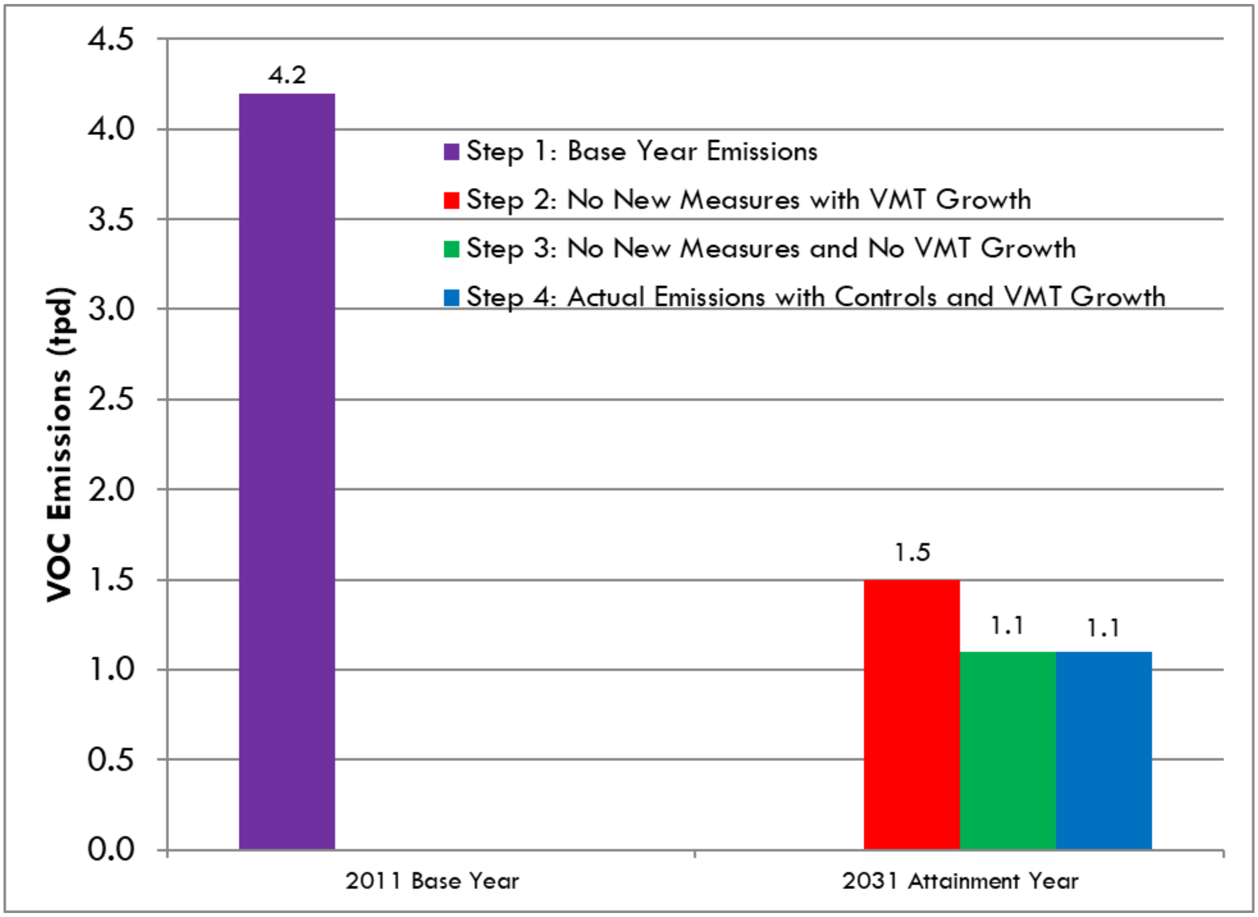
Calculation Number	Description	VMT Base Year	Vehicle Control Program year	VMT (miles/day)	VOC (tons/day)
1	Emissions with motor vehicle control program frozen at 2011 levels (VMT at 2031 projected levels)	2031	2011	14,137,977	1.5
2	Emissions with motor vehicle control program frozen at 2011 levels (VMT at 2011 levels)	2011	2011	9,806,099	1.1
3	Emissions with a full motor vehicle control program in place (VMT at 2031 projected levels)	2031	2031	14,137,977	1.1

As provided in the 2012 guidance, to determine compliance with CAA Section 182(d)(1)(A), Calculation 3 emissions levels should be less than or equal to the Calculation 2 emissions levels:

VOC: 1.1 = 1.1 tons per day

Since the estimated attainment year emissions are approximately equal to the VMT Offset ceiling (calculation 2), additional TCMs and TCSs will not be needed.

To further illustrate the demonstration, Figure 6-1 graphically displays the emissions benefits of the motor vehicle control programs in offsetting VOC emissions resulting from VMT increases in Coachella Valley for the 75 ppb 8-hour ozone standard with an extreme classification. The left-most bar (in purple) shows the emissions in the base year, 2011, for the 75 ppb 8-hour standard. The three bars on the right show the emission levels in the attainment year 2031. The bars on the right represent the emissions if there were no further motor vehicle controls after the base year and with projected VMT increases (red bar), the emissions if VMT does not increase from base year levels and there are no TCSs or TCMs after the base year (green bar), and the emission levels with all the existing motor vehicle control programs in place with projected VMT increases (blue bar).



* Does not include resting or diurnal loss emissions.

FIGURE 6-1
COACHELLA VALLEY VMT OFFSET DEMONSTRATION*

Conclusion

The previous sections provide an analysis to demonstrate compliance with CAA Section 182(d)(1)(A). Based on the 2012 guidance, since emissions with updated control measures and VMT are less than or equal to emissions with no new measures and no VMT growth, no additional TCSs and TCMs will be needed to offset the growth in emissions.

Clean Fuels Fleet Program and Enhanced Vehicle I/M Program

Clean Fuels for Fleets Program

Sections 182(c)(4) of the CAA require ozone nonattainment areas classified as Serious or above with a 1980 population of 250,000 or more to submit revisions to the SIP to implement a clean-fuel vehicle program for fleets. The Clean-Fuel Vehicle Program requires at least a specified percentage of all new covered fleet vehicles purchased by fleet operators to be clean-fuel vehicles and that they use clean alternative fuels when operating in the nonattainment area. Alternately, the state, and the nonattainment areas within the state that need to meet the Clean-Fuel Vehicle Program requirement, can opt out of the program by submitting a revision into the SIP for a program that will achieve long-term reductions in ozone-producing and toxic air emissions equal to those achievable by the U.S. EPA Program.

CARB's Low-Emission Vehicle (LEV) programs are implemented Statewide and far exceed the level of reduction that would be achieved through implementation of the U.S. EPA Program. As such, California ozone nonattainment areas classified as Serious and above have provided certification to this effect and opted out of the U.S. EPA Program since the first California SIP, the 1994 California State Implementation Plan, was submitted to U.S. EPA on November 15, 1994, and approved on September 27, 1999.[93] California has continued to strengthen the requirements for light-duty passenger cars. The second-generation LEV II regulations were adopted in 1998 and the third-generation LEV III regulations in 2012 as part of the Advanced Clean Cars rulemaking package that also includes the State's ZEV regulation. The LEV III regulations include increasingly stringent emission standards for criteria pollutants and greenhouse gases for new passenger vehicles through the 2025 model year. CARB adopted Advanced Clean Cars II in 2022 that further strengthened the criteria pollutant and zero emission vehicles standards for model years 2026 and beyond.

For the 75 ppb 8-hour ozone standard in the Coachella Valley, the clean fuels for fleets requirement of the CAA was addressed and certified in the 2016 Air Quality Management Plan (AQMP).[94] In 2020, U.S. EPA approved the Coachella Valley 75 ppb ozone SIP including that Coachella Valley met the clean fuels for fleets requirement[95] as specified in the Act.

To further demonstrate that the Coachella Valley and areas across California comply with requirements of the Act, California has documented that the Clean Fuels for Fleet requirement has also been met for the more stringent 70 ppb 8-hour ozone standard. In 2022, CARB adopted and submitted the California Clean

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[93] U.S. EPA, Approval and Promulgation of State Implementation Plans; California, 66 Fed. Reg. 46849 (August 27, 1999). 99-22187.pdf (govinfo.gov)

[94] South Coast AQMD, 2016 Air Quality Management Plan. final2016aqmp.pdf (aqmd.gov)

[95] U.S. EPA, Approval of Air Quality Implementation Plans; California; Coachella Valley; 2008 8-Hour Ozone Nonattainment Area Requirements, 85 Fed. Reg. 57714 (September 16, 2020). 2020-19162.pdf (govinfo.gov)

Fuels for Fleets Certification for the 70 ppb Ozone Standard.[96] This action re-certified that California's LEV program qualifies as a substitute for the U.S. EPA Program and satisfies Section 182(c)(4) of the CAA for the 70 ppb ozone standard for nonattainment areas in California, including Coachella Valley. On May 25, 2023, U.S. EPA approved the Coachella Valley 70 ppb 8-hour ozone clean fuels for fleets requirement.[97]

Vehicle Inspection and Maintenance Program

Sections 182(a)(2)(B), 182(b)(4), and 182(c)(3) of the CAA require ozone nonattainment areas to have in place a vehicle inspection and maintenance (I/M) program to implement Basic and Enhanced I/M in applicable areas that is at least as stringent as the federal program. In California, the Bureau of Automotive Repair (BAR) develops and implements the I/M program. California's I/M program was first submitted and approved by U.S. EPA for inclusion in the California SIP in 1997, and subsequent revisions were approved in 2007 and 2010.

For the 75 ppb 8-hour ozone standard in the Coachella Valley, the I/M program requirement of the Act, was addressed and submitted to U.S. EPA as part of the 2016 AQMP. In 2020, U.S. EPA approved the Coachella Valley 75 ppb ozone SIP including the I/M demonstration in the 2016 AQMP as meeting the CAA requirements for the 75 ppb ozone standard.

To further demonstrate that the Coachella Valley and areas across California comply with requirements of the Act, California has documented that the I/M requirement has also been met for the more stringent 70 ppb ozone standard. In 2023, CARB adopted the California Smog Check Performance Standard Modeling and Program Certification for the 70 Parts Per Billion (ppb) 8-Hour Ozone Standard.[98] This analysis demonstrated that California's Smog Check Program meets the federal I/M program requirements for all applicable nonattainment areas, including Coachella Valley.

Major Stationary Source Definition

Coachella Valley is already classified as "extreme" nonattainment for the 1997 ozone standard. As such, South Coast AQMD's Regulations XIII – New Source Review, XX – Regional Clean Air Incentives Market, and XXX - Title V have already been amended to reflect the lower major stationary source threshold for

[96] CARB, California Clean Fuels for Fleets Certification for the 70 ppb Ozone Standard, December 2021. https://ww2.arb.ca.gov/sites/default/files/2021-12/70ppb-clean-fuels-fleet-certification.pdf

[97] U.S. EPA, Clean Air Plans; 2015 8-Hour Ozone Nonattainment Area Requirements; Clean Fuels for Fleets; California, 88 Fed. Reg. 33830 (May 25, 2023). 2023-11006.pdf (govinfo.gov)

[98] CARB, California Smog Check Performance Standard Modeling and Program Certification for the 70 Parts Per Billion (ppb) 8-Hour Ozone Standard, February 2023. https://ww2.arb.ca.gov/sites/default/files/2023-02/california_smog_check_psm_and_certification_staff_report_2-10-2023.pdf

"extreme" areas of 10 tons per year or higher of VOC or NOx.[99] U.S. EPA approved the amendments to South Coast AQMD's Title V permit program.[100]

Offset Requirement

CAA Section 182(e)(1) requires a modified offset ratio of 1.5 to 1 of total emission reductions of VOCs to total increased VOC emissions of each air pollutant (due to permit modifications), unless federal best available control technology (BACT) is required for all new or modified existing major sources. The Federal NSR requirements are reflected in South Coast AQMD Regulation XIII – New Source Review. South Coast AQMD's regulations implement best available control technology (BACT) which is the equivalent of federal Lowest Achievable Emission Reduction (LAER) for major and non-major sources, and therefore an offset ratio of 1.2 to 1 is used for NSR offset requirements for all nonattainment criteria air contaminants identified in Rule 1303. Therefore, South Coast AQMD's existing NSR rules already satisfy offset requirements for VOC and NOx sources.

Modifications at Major Stationary Sources

CAA Section 182(e)(2) requires any increase of emissions at a major stationary source to be considered as a modification and subject to NSR requirements. South Coast AQMD Regulation XIII requires any new or modified source that results in an emissions increase of any nonattainment air contaminant to be subject to NSR. Therefore, the modification requirement is already addressed in existing NSR rules. The definitions of "major polluting facility" and "major modification threshold" have already been revised to be consistent with requirements for "extreme" ozone nonattainment areas and federal NSR requirements.

Use of Clean Fuels or Advanced Control Technology for Boilers

CAA Section 182(e)(3) requires each new, modified, and existing electric utility and industrial and commercial boiler that emits more than 25 tpy of NOx to burn a low polluting fuel or use advanced NOx control technology. Existing boilers are already subject to South Coast AQMD Rule 1146 (Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters) and Rule 1135 (Emissions of Oxides of Nitrogen from Electricity Generating Facilities), which reflects BARCT for existing equipment. Any new or modified sources with emission increases of 1 pound

[99] South Coast AQMD, Determine That Amendments to Regulation XIII – New Source Review, Regulation XX – Regional Clean Air Incentives Market and Regulation XXX – Title V Permits, Are Exempt from CEQA and Amend Regulations XIII, XX and XXX, December 2020. https://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2020/2020-Dec4-032.pdf?sfvrsn=6

[100] U.S. EPA, Clean Air Act Operating Permit Program; California; South Coast Air Quality Management District, 89 Fed. Reg. 58628 (July 19, 2024). https://www.federalregister.gov/documents/2024/07/19/2024-15106/clean-air-act-operating-permit-program-california-south-coast-air-quality-management-district

per day or more of VOC or NOx are also subject to BACT requirements. As such, the implementation of existing BARCT and BACT already require new, modified, and existing electric utility and industrial and commercial boilers to use advanced NOx control technology, and therefore, no additional action is proposed in this Plan.

Emissions Statements

U.S. EPA approved the Coachella Valley's emissions statement program under the "severe" classification for the 2008 8-hour ozone standard.[101] South Coast AQMD continues to implement Rule 301, upon which the emissions statement program is based, that requires emission reporting from all sources emitting 4 tons per year or more of VOC/NOx and paying a fee. Rule 301 exceeds the requirements of CAA Section 182(a)(3)(B), which exempts sources emitting less than 25 tons per year of VOC or NOx. South Coast AQMD therefore concludes that the emissions statement requirement has been fulfilled.

Nonattainment Fees

Should Coachella Valley fail to attain the 2008 8-hour ozone standard by July 20, 2032, CAA Section 185 requires the collection of annual fees from major stationary sources until the area is redesignated as attainment. On June 7, 2024, South Coast AQMD adopted Rule 317.1 to establish a regulatory pathway necessary to comply with the requirements of CAA Section 185 for the 1997 and 2008 8-hour ozone standards.[102] Rule 317.1 requires the collection of fees for NOx and VOC emissions that exceed 80 percent of a major stationary source's baseline emissions during each calendar year beginning after the attainment date until the area is redesignated as attainment.

New Technologies

CAA Section 182(e)(5) allows for "extreme" nonattainment area attainment demonstrations to be based on the anticipated development of new technologies or improvement of existing control technologies. These long-term control measures are often referred to as "black box" measures and go beyond the short-term control measures that are based on known and demonstrated technologies. For "extreme" nonattainment areas, the "black box" measures may be used as part of the attainment strategy. As presented in Chapters 4 and 5 of this Plan, existing rules and regulations provide the needed reductions for attainment in 2031, and "black box" measures were not used to demonstrate attainment.

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[101] U.S. EPA, Approval of Air Quality Implementation Plans; California; Coachella Valley; 2008 8-Hour Ozone Nonattainment Area Requirements, 85 Fed. Reg. 57714 (September 16, 2020). https://www.federalregister.gov/documents/2020/09/16/2020-19162/approval-of-air-quality-implementation-plans-california-coachella-valley-2008-8-hour-ozone

[102] South Coast AQMD Rule 317.1, adopted June 7, 2024. https://www.aqmd.gov/docs/default-source/rule-book/reg-iii/rule-317-1.pdf?sfvrsn=16

NOx Requirements

Pursuant to CAA Section 182(f), all provisions required for major stationary sources of VOC shall also apply to major stationary sources of NOx as defined in 182(e)(1), including the offset ratio. The "extreme" nonattainment area offset ratio for NOx mirrors that of VOCs in Rule 1303 and South Coast AQMD's existing NSR rules satisfy all applicable requirements for NOx.

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

CHAPTER 7 – PUBLIC PROCESS

Public Process

The Coachella Valley Ozone Plan will be developed through a public process. The Draft Plan was released on July 31, 2024 for public review. South Coast AQMD staff ~~will~~ he~~o~~ld a Public Consultation Meeting (PCM) on August 14, 2024 to solicit information, comments, and suggestions from the public, affected businesses and stakeholders. Meeting materials for the PCM were~~ill be~~ translated to Spanish and live Spanish translation was~~ill be~~ available. In addition, the Plan w~~il~~as~~l be~~ presented to South Coast AQMD's Mobile Source Committee on August 16, 2024 and the AB 617 Eastern Coachella Valley Community Steering Committee on September 5, 2024. A public hearing is scheduled at the South Coast AQMD Governing Board Meeting on October 4, 2024 (subject to change). Following approval by the South Coast AQMD Governing Board, the Plan will be submitted to the U.S. EPA via CARB for inclusion into the SIP.

Written Comment and Response to Comment

South Coast AQMD staff received one comment letter on the Draft Coachella Valley Ozone Plan.

Comment Letter #1

From: Laura Rosenberger Haider <lauagreen.rosenberger@gmail.com>
Sent: Friday, August 30, 2024 11:54 PM
To: AQMPTeam AQMPteam@aqmd.gov
Subject: [EXTERNAL] Comment on Draft Coachella Valley Ozone Plan

Please implement your proposed control measures and enforce all previous rules. Control emissions from refineries and non-refinery flares, because in 2022, 551 new oil wells were permitted to be drilled in Los Angeles. There is a high rate of leakage of VOCs. Air from Los Angeles blows into Coachella Valley. The gas peaker plants need to be shut down. Mixing hydrogen with nitrogen would increase NOx emissions. Also, at night, air blows from the geothermal projects near Salton Sea carrying VOCs because they don't have the BACT. There is some oil stimulation in Coachella Valley. I will see if there is any evidence of VOC of methane leakage. You forget to restrict NOx from agriculture, since there is a lot of agriculture in Coachella Valley. You should restrict the use of Nitrous oxide fumigant on crops and foods. Grapes are sprayed with a lot of fumigants. Fumigant Pesticides produce an 8 times increase in Nitrous Oxide. They influence soil mircobes and their ability to sequester nitrogen.
Source: *2023 Pesticides in the Pantry* -- a report published by the *As You Sow Organization*: The full-report is here: https://www.asyousow.org/report-page/2023-pesticides-pantry 1-1

Response to Comment 1-1: South Coast AQMD has several rules that control emissions from flares, oil and gas production wells, and power plants. For example, Rules 1118 and 1118.1 control emissions from refinery flares and non-refinery flares, respectively, while the Rule 1148 series regulates emissions of VOC and other toxic air contaminants from the operation and maintenance of oil and gas production wells in the South Coast AQMD jurisdiction. In particular, Rule 1148.1, amended on August 2, 2024, enhances VOC leak detection requirements. Additional rules including Rules 463, 1176, and 1173 may also be applicable to oil and gas production sources. Peaker power plants, which typically employ gas turbines, generate electricity during periods of high demand and are subject to stringent emission limits in Rules 1134 and 1135. In addition, any new or modified fossil-fueled power plant is required to incorporate BACT.

South Coast AQMD lacks the authority to regulate pesticides as California Health and Safety Code Section 39655(a) provides that regulation of pesticides is reserved for the California Department of Pesticide Regulation (DPR). DPR develops pesticide regulations in consultation with various agencies, including CARB. This collaboration helps ensure that pesticide regulations consider air quality impacts and other environmental factors. In addition, South Coast AQMD has designated the Eastern Coachella Valley (ECV) as an AB 617 community and is committed to working in partnership with the Community Steering Committee as well as local, state, and federal agencies to reduce pesticide emissions and exposure. For additional details on pesticide concerns in ECV, please refer to the Community Emissions Reduction Plan for ECV.[103]

Staff is aware of the geothermal and lithium extraction projects in the Salton Sea region. However, these projects are located in the Imperial County Air Pollution Control District jurisdiction and fall outside of the South Coast AQMD's jurisdiction.

[103] South Coast AQMD, Eastern Coachella Valley Community Emissions Reduction Plan Final, July 2021. https://www.aqmd.gov/docs/default-source/ab-617-ab-134/steering-committees/eastern-coachella-valley/final-cerp/final-cerp-july-2021.pdf?sfvrsn=9

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

CHAPTER 8 – CALIFORNIA ENVIRONMENTAL QUALITY ACT

California Environmental Quality Act (CEQA)

Pursuant to CEQA Guidelines Sections 15002(k) and 15061, the proposed project (Coachella Valley Ozone Plan) is exempt from CEQA pursuant to CEQA Guidelines Sections 15061(b)(3) and 15308. Further, there is no substantial evidence indicating that any of the exceptions in CEQA Guidelines Section 15300.2 apply to the proposed project. A Notice of Exemption has been ~~will be~~ prepared pursuant to CEQA Guidelines Section 15062. If the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties, and with the State Clearinghouse of the Governor's Office of Planning and Research.

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

CHAPTER 9 – STAFF RECOMMENDATION

Staff Recommendation

Staff recommends adoption of the Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard and subsequent submission to U.S. EPA via CARB. The Coachella Valley Ozone Plan must be submitted for incorporation into the SIP by October 7, 2024 to comply with the deadline established by U.S. EPA.[104]

[104] U.S. EPA, Designation of Areas for Air Quality Planning Purposes; California; Coachella Valley Ozone Nonattainment Area; Reclassification to Extreme, 88 Fed. Reg. 14291 (March 8, 2023). https://www.federalregister.gov/documents/2023/03/08/2023-04736/designation-of-areas-for-air-quality-planning-purposes-california-coachella-valley-ozone

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

APPENDIX I: SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY

THE SOUTH COAST AIR BASIN AND THE COACHELLA VALLEY

TABLE I-1

2018 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN COACHELLA VALLEY (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	0.09	0.02	0.54	0.13	0.17	0.02	0.02	0.02	0.02
20	Cogeneration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	Manufacturing and Industrial	0.07	0.02	0.10	0.90	0.00	0.02	0.02	0.02	0.00
52	Food and Agricultural Processing	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
60	Service and Commercial	0.09	0.05	0.23	0.56	0.01	0.03	0.03	0.03	0.01
99	Other (Fuel Combustion)	0.01	0.01	0.09	0.02	0.00	0.00	0.00	0.00	0.00
	Total Fuel Combustion	**0.26**	**0.09**	**0.97**	**1.63**	**0.18**	**0.06**	**0.06**	**0.06**	**0.05**
Waste Disposal										
110	Sewage Treatment	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	Landfills	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	Incineration	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Waste Disposal	**0.02**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Cleaning and Surface Coatings										
210	Laundering	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	1.59	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	1.32	1.28	0.00	0.00	0.00	0.07	0.07	0.07	0.00
240	Printing	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	Adhesives and Sealants	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Cleaning and Surface Coatings	**3.23**	**1.74**	**0.00**	**0.00**	**0.00**	**0.07**	**0.07**	**0.07**	**0.00**
Petroleum Production and Marketing										
310	Oil and Gas Production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	Petroleum Marketing	1.34	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**1.34**	**0.33**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Industrial Processes										
410	Chemical	0.12	0.12	0.00	0.00	0.00	0.01	0.01	0.01	0.00
420	Food and Agriculture	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02
430	Mineral Processes	0.03	0.02	0.00	0.00	0.00	0.34	0.11	0.04	0.00
440	Metal Processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	Wood and Paper	0.00	0.00	0.00	0.00	0.00	0.23	0.16	0.09	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
499	Other (Industrial Processes)	0.07	0.07	0.00	0.00	0.00	0.03	0.03	0.02	0.00
	Total Industrial Processes	**0.25**	**0.24**	**0.00**	**0.00**	**0.00**	**0.60**	**0.31**	**0.17**	**0.02**
Solvent Evaporation										
510	Consumer Products	3.84	3.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.60
540	Asphalt Paving/Roofing	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Solvent Evaporation	**4.43**	**3.63**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.60**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	0.21	0.09	0.28	0.53	0.00	0.08	0.08	0.08	0.00
620	Farming Operations	0.86	0.07	0.00	0.00	0.00	0.70	0.32	0.05	0.34
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	34.94	17.10	1.71	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	11.00	5.03	0.75	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	4.80	2.85	0.29	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	2.28	1.18	0.17	0.00
660	Fires	0.01	0.01	0.00	0.08	0.00	0.01	0.01	0.01	0.00
670	Waste Burning and Disposal	0.01	0.01	0.01	0.12	0.00	0.02	0.02	0.01	0.00
690	Cooking	0.06	0.03	0.00	0.00	0.00	0.26	0.26	0.26	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
	RECLAIM	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00
	Total Miscellaneous Processes	**1.15**	**0.21**	**0.40**	**0.72**	**0.00**	**54.09**	**26.85**	**3.33**	**1.15**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	1.40	1.32	0.66	13.41	0.02	0.09	0.09	0.03	0.18
722	Light Duty Trucks - 1 (LDT1)	0.36	0.34	0.23	3.74	0.00	0.01	0.01	0.00	0.02
723	Light Duty Trucks - 2 (LDT2)	0.64	0.59	0.60	8.11	0.01	0.04	0.04	0.02	0.08
724	Medium Duty Trucks (MDV)	0.67	0.61	0.68	7.90	0.01	0.04	0.04	0.01	0.07
725	Light Heavy Duty Trucks - 1 (LHDT1)	0.09	0.08	0.33	0.44	0.00	0.02	0.02	0.01	0.02
726	Light Heavy Duty Trucks - 2 (LHDT2)	0.02	0.02	0.12	0.10	0.00	0.01	0.01	0.00	0.01
727	Medium Heavy Duty Trucks (MHDT)	0.10	0.09	1.21	0.71	0.00	0.05	0.05	0.04	0.03
728	Heavy Heavy Duty Trucks (HHDT)	0.28	0.23	6.55	1.50	0.02	0.29	0.29	0.19	0.24
750	Motorcycles (MCY)	0.25	0.24	0.02	0.76	0.00	0.00	0.00	0.00	0.00
775	Buses	0.08	0.01	0.12	0.54	0.00	0.01	0.01	0.00	0.02
780	Motor Gomes (MH)	0.02	0.02	0.03	0.05	0.00	0.00	0.00	0.00	0.00
	Total On-Road Motor Vehicles	**3.91**	**3.55**	**10.54**	**37.27**	**0.07**	**0.57**	0.57	**0.31**	**0.66**
Other Mobile Sources										
810	Aircraft	0.10	0.10	0.33	1.24	0.03	0.03	0.03	0.02	0.00
820	Trains	0.21	0.18	3.77	0.86	0.00	0.10	0.10	0.09	0.00
840	Recreational Boats	0.83	0.78	0.11	1.97	0.00	0.04	0.04	0.03	0.00
850	Off-Road Recreational Vehicles	0.14	0.14	0.00	0.16	0.00	0.00	0.00	0.00	0.00
860	Off-Road Equipment	2.19	2.05	2.57	24.81	0.00	0.15	0.15	0.13	0.00
861	Off-Road Equipment (PERP)	0.05	0.04	0.50	0.27	0.00	0.02	0.02	0.02	0.00
870	Farm Equipment	0.13	0.11	0.47	1.01	0.00	0.03	0.03	0.03	0.00
890	Fuel Storage and Handling	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**3.91**	**3.65**	**7.74**	**30.31**	**0.04**	**0.37**	0.36	**0.32**	**0.01**
Natural Sources										
910	Biogenic Sources	33.56	32.91	0.69	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
930	Wildfires	3.53	2.92	0.45	41.69	0.28	4.21	4.05	4.05	0.42
	Total Natural Sources Category	**37.09**	**35.83**	**1.14**	**41.69**	**0.28**	**4.21**	**4.05**	**4.05**	**1.02**
Total Stationary and Area Sources		10.69	6.25	1.38	2.36	0.18	54.83	27.28	3.63	1.83
Total On-Road Vehicles		3.91	3.55	10.54	37.27	0.07	0.57	0.57	0.31	0.66
Total Other Mobile		3.91	3.65	7.74	30.31	0.04	0.37	0.36	0.32	0.01
Total Anthropogenic		**18.52**	**13.46**	**19.66**	**69.93**	**0.30**	**55.78**	**28.22**	**4.26**	**2.49**
Total Natural Sources		37.09	35.83	1.14	41.69	0.28	4.21	4.05	4.05	1.02
Grand Total		**55.61**	**49.29**	**20.80**	**111.63**	**0.57**	**59.99**	**32.26**	**7.68**	**3.51**

TABLE I-2
2020 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN COACHELLA VALLEY (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	0.10	0.02	0.60	0.15	0.18	0.02	0.02	0.02	0.03
20	Cogeneration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	Manufacturing and Industrial	0.07	0.02	0.11	0.93	0.00	0.02	0.02	0.02	0.00
52	Food and Agricultural Processing	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
60	Service and Commercial	0.10	0.05	0.23	0.56	0.01	0.03	0.03	0.03	0.01
99	Other (Fuel Combustion)	0.01	0.01	0.07	0.02	0.00	0.00	0.00	0.00	0.00
	Total Fuel Combustion	**0.28**	**0.09**	**1.01**	**1.65**	**0.20**	**0.07**	**0.07**	**0.06**	**0.05**
Waste Disposal										
110	Sewage Treatment	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	Landfills	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	Incineration	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Waste Disposal	**0.02**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Cleaning and Surface Coatings										
210	Laundering	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	1.67	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	1.40	1.35	0.00	0.00	0.00	0.08	0.07	0.07	0.00
240	Printing	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	Adhesives and Sealants	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Cleaning and Surface Coatings	**3.40**	**1.84**	**0.00**	**0.00**	**0.00**	**0.08**	**0.07**	**0.07**	**0.00**
Petroleum Production and Marketing										
310	Oil and Gas Production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	Petroleum Marketing	1.41	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**1.41**	**0.33**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Industrial Processes										
410	Chemical	0.13	0.13	0.00	0.00	0.00	0.01	0.01	0.01	0.00
420	Food and Agriculture	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02
430	Mineral Processes	0.03	0.03	0.00	0.00	0.00	0.35	0.12	0.04	0.00
440	Metal Processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	Wood and Paper	0.00	0.00	0.00	0.00	0.00	0.25	0.17	0.10	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
499	Other (Industrial Processes)	0.07	0.07	0.00	0.00	0.00	0.03	0.03	0.03	0.00
	Total Industrial Processes	**0.26**	**0.25**	**0.00**	**0.00**	**0.00**	**0.64**	**0.33**	**0.19**	**0.02**
Solvent Evaporation										
510	Consumer Products	4.12	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	0.32	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.59
540	Asphalt Paving/Roofing	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Solvent Evaporation	**4.74**	**3.88**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.59**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	0.22	0.10	0.32	0.55	0.00	0.09	0.08	0.08	0.00
620	Farming Operations	0.86	0.07	0.00	0.00	0.00	0.70	0.32	0.05	0.34
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	36.76	17.99	1.80	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	11.27	5.15	0.77	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	4.80	2.85	0.29	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	2.27	1.17	0.17	0.00
660	Fires	0.01	0.01	0.00	0.08	0.00	0.01	0.01	0.01	0.00
670	Waste Burning and Disposal	0.01	0.01	0.01	0.12	0.00	0.02	0.02	0.01	0.00
690	Cooking	0.07	0.03	0.00	0.00	0.00	0.27	0.27	0.27	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84
	RECLAIM	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00
	Total Miscellaneous Processes	**1.16**	**0.21**	**0.66**	**0.75**	**0.00**	**56.18**	**27.86**	**3.45**	**1.18**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	1.39	1.33	0.58	11.83	0.02	0.09	0.09	0.03	0.18
722	Light Duty Trucks - 1 (LDT1)	0.38	0.36	0.21	3.42	0.00	0.01	0.01	0.00	0.02
723	Light Duty Trucks - 2 (LDT2)	0.64	0.59	0.49	7.19	0.01	0.05	0.05	0.02	0.09
724	Medium Duty Trucks (MDV)	0.67	0.62	0.58	7.03	0.01	0.04	0.04	0.01	0.07
725	Light Heavy Duty Trucks - 1 (LHDT1)	0.09	0.08	0.27	0.41	0.00	0.02	0.02	0.01	0.02
726	Light Heavy Duty Trucks - 2 (LHDT2)	0.02	0.02	0.10	0.09	0.00	0.01	0.01	0.00	0.01
727	Medium Heavy Duty Trucks (MHDT)	0.07	0.06	0.79	0.51	0.00	0.03	0.03	0.02	0.05
728	Heavy Heavy Duty Trucks (HHDT)	0.19	0.15	4.88	1.29	0.02	0.24	0.24	0.13	0.28
750	Motorcycles (MCY)	0.28	0.27	0.02	0.71	0.00	0.00	0.00	0.00	0.00
775	Buses	0.06	0.01	0.08	0.56	0.00	0.00	0.00	0.00	0.02
780	Motor Gomes (MH)	0.01	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.00
	Total On-Road Motor Vehicles	**3.81**	**3.51**	**8.03**	**33.06**	**0.07**	**0.51**	**0.50**	**0.24**	**0.74**
Other Mobile Sources										
810	Aircraft	0.10	0.09	0.36	1.23	0.03	0.03	0.03	0.02	0.00
820	Trains	0.21	0.18	3.88	0.89	0.00	0.10	0.10	0.09	0.00
840	Recreational Boats	0.75	0.71	0.10	1.91	0.00	0.04	0.04	0.03	0.00
850	Off-Road Recreational Vehicles	0.14	0.13	0.00	0.15	0.00	0.00	0.00	0.00	0.00
860	Off-Road Equipment	2.16	2.02	2.24	26.01	0.00	0.15	0.14	0.12	0.00
861	Off-Road Equipment (PERP)	0.04	0.04	0.39	0.27	0.00	0.01	0.01	0.01	0.00
870	Farm Equipment	0.12	0.10	0.41	0.98	0.00	0.03	0.03	0.02	0.00
890	Fuel Storage and Handling	0.24	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**3.76**	**3.50**	**7.39**	**31.45**	**0.04**	**0.35**	**0.34**	**0.30**	**0.01**
Natural Sources										
910	Biogenic Sources	33.56	32.91	0.69	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
930	Wildfires	1.86	1.53	0.23	21.92	0.14	2.20	2.12	1.79	0.22
	Total Natural Sources Category	**35.42**	**34.45**	**0.92**	**21.92**	**0.14**	**2.20**	**2.12**	**1.79**	**0.82**
	Total Stationary and Area Sources	11.27	6.62	1.68	2.41	0.20	56.96	28.33	3.77	1.85
	Total On-Road Vehicles	3.81	3.51	8.03	33.06	0.07	0.51	0.50	0.24	0.74
	Total Other Mobile	3.76	3.50	7.39	31.45	0.04	0.35	0.34	0.30	0.01
	Total Anthropogenic	**18.84**	**13.63**	**17.09**	**66.92**	**0.32**	**57.81**	**29.18**	**4.31**	**2.60**
	Total Natural Sources	35.42	34.45	0.92	21.92	0.14	2.20	2.12	1.79	0.82
	Grand Total	**54.26**	**48.08**	**18.01**	**88.84**	**0.46**	**60.02**	**31.29**	**6.10**	**3.42**

TABLE I-3

2023 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN COACHELLA VALLEY (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	0.10	0.02	0.59	0.14	0.18	0.02	0.02	0.02	0.03
20	Cogeneration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	Manufacturing and Industrial	0.07	0.02	0.11	0.98	0.00	0.02	0.02	0.02	0.00
52	Food and Agricultural Processing	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
60	Service and Commercial	0.10	0.05	0.24	0.57	0.01	0.03	0.03	0.03	0.01
99	Other (Fuel Combustion)	0.01	0.01	0.07	0.02	0.00	0.00	0.00	0.00	0.00
	Total Fuel Combustion	**0.29**	**0.10**	**1.02**	**1.72**	**0.19**	**0.07**	**0.07**	**0.07**	**0.05**
Waste Disposal										
110	Sewage Treatment	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	Landfills	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	Incineration	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Waste Disposal	**0.02**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Cleaning and Surface Coatings										
210	Laundering	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	1.79	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	1.52	1.47	0.00	0.00	0.00	0.08	0.08	0.08	0.00
240	Printing	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	Adhesives and Sealants	0.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Cleaning and Surface Coatings	**3.64**	**1.97**	**0.00**	**0.00**	**0.00**	**0.08**	**0.08**	**0.08**	**0.00**
Petroleum Production and Marketing										
310	Oil and Gas Production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	Petroleum Marketing	1.41	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**1.41**	**0.33**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Industrial Processes										
410	Chemical	0.14	0.14	0.00	0.00	0.00	0.01	0.01	0.01	0.00
420	Food and Agriculture	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02
430	Mineral Processes	0.03	0.03	0.00	0.00	0.00	0.36	0.12	0.05	0.00
440	Metal Processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	Wood and Paper	0.00	0.00	0.00	0.00	0.00	0.28	0.19	0.12	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
499	Other (Industrial Processes)	0.08	0.07	0.00	0.00	0.00	0.03	0.03	0.03	0.00
	Total Industrial Processes	**0.28**	**0.27**	**0.00**	**0.00**	**0.00**	**0.68**	**0.36**	**0.20**	**0.02**
Solvent Evaporation										
510	Consumer Products	4.12	3.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	0.34	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.59
540	Asphalt Paving/Roofing	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Solvent Evaporation	**4.76**	**3.90**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.59**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	0.22	0.10	0.31	0.55	0.00	0.09	0.08	0.08	0.00
620	Farming Operations	0.86	0.07	0.00	0.00	0.00	0.69	0.31	0.05	0.34
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	39.24	19.20	1.92	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	12.08	5.52	0.83	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	4.80	2.85	0.29	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	2.25	1.17	0.16	0.00
660	Fires	0.01	0.01	0.00	0.08	0.00	0.01	0.01	0.01	0.00
670	Waste Burning and Disposal	0.01	0.01	0.01	0.12	0.00	0.02	0.02	0.01	0.00
690	Cooking	0.07	0.03	0.00	0.00	0.00	0.28	0.28	0.28	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88
	RECLAIM	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00
	Total Miscellaneous Processes	**1.17**	**0.21**	**0.56**	**0.75**	**0.00**	**59.45**	**29.45**	**3.63**	**1.22**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	1.03	0.98	0.42	9.39	0.02	0.09	0.09	0.03	0.19
722	Light Duty Trucks - 1 (LDT1)	0.27	0.25	0.15	2.54	0.00	0.01	0.01	0.00	0.02
723	Light Duty Trucks - 2 (LDT2)	0.52	0.49	0.37	6.33	0.01	0.05	0.05	0.02	0.11
724	Medium Duty Trucks (MDV)	0.52	0.48	0.41	5.54	0.01	0.04	0.04	0.01	0.08
732	Light Heavy Duty Trucks - 1 (LHDT1)	0.06	0.06	0.18	0.31	0.00	0.02	0.02	0.01	0.02
733	Light Heavy Duty Trucks - 2 (LHDT2)	0.01	0.01	0.07	0.07	0.00	0.01	0.01	0.00	0.01
734	Medium Heavy Duty Trucks (MHDT)	0.05	0.04	0.47	0.39	0.00	0.02	0.02	0.01	0.06
736	Heavy Heavy Duty Trucks (HHDT)	0.13	0.10	3.33	1.20	0.02	0.21	0.21	0.10	0.34
742	Motorcycles (MCY)	0.25	0.24	0.02	0.66	0.00	0.00	0.00	0.00	0.00
743	Buses	0.08	0.01	0.06	0.73	0.00	0.00	0.00	0.00	0.02
744	Motor Gomes (MH)	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00
	Total On-Road Motor Vehicles	**2.94**	**2.67**	**5.50**	**27.17**	**0.08**	**0.47**	**0.47**	**0.19**	**0.86**
Other Mobile Sources										
810	Aircraft	0.09	0.08	0.40	1.22	0.04	0.03	0.03	0.02	0.00
820	Trains	0.21	0.18	4.07	0.95	0.00	0.10	0.10	0.09	0.00
840	Recreational Boats	0.66	0.62	0.10	1.84	0.00	0.03	0.03	0.02	0.00
850	Off-Road Recreational Vehicles	0.12	0.12	0.00	0.15	0.00	0.00	0.00	0.00	0.00
860	Off-Road Equipment	2.10	1.96	1.84	27.52	0.00	0.13	0.12	0.10	0.00
861	Off-Road Equipment (PERP)	0.04	0.03	0.29	0.27	0.00	0.01	0.01	0.01	0.00
870	Farm Equipment	0.10	0.09	0.34	0.98	0.00	0.02	0.02	0.02	0.00
890	Fuel Storage and Handling	0.23	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**3.54**	**3.30**	**7.05**	**32.92**	**0.05**	**0.32**	**0.31**	**0.27**	**0.01**
Natural Sources										
910	Biogenic Sources	33.56	32.91	0.69	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
930	Wildfires	1.86	1.53	0.23	21.92	0.14	2.20	2.12	1.79	0.22
	Total Natural Sources Category	**35.42**	**34.45**	**0.92**	**21.92**	**0.14**	**2.20**	**2.12**	**1.79**	**0.82**
Total Stationary and Area Sources		11.57	6.79	1.59	2.47	0.20	60.29	29.95	3.98	1.89
Total On-Road Vehicles		2.94	2.67	5.50	27.17	0.08	0.47	0.47	0.19	0.86
Total Other Mobile		3.54	3.30	7.05	32.92	0.05	0.32	0.31	0.27	0.01
Total Anthropogenic		**18.05**	**12.77**	**14.14**	**62.57**	**0.32**	**61.07**	**30.73**	**4.44**	**2.76**
Total Natural Sources		35.42	34.45	0.92	21.92	0.14	2.20	2.12	1.79	0.82
Grand Total		**53.47**	**47.21**	**15.05**	**84.49**	**0.46**	**63.28**	**32.84**	**6.24**	**3.58**

TABLE I-4
2026 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN COACHELLA VALLEY (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	0.10	0.02	0.80	0.14	0.17	0.02	0.02	0.02	0.02
20	Cogeneration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	Manufacturing and Industrial	0.07	0.02	0.12	1.01	0.00	0.02	0.02	0.02	0.00
52	Food and Agricultural Processing	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
60	Service and Commercial	0.10	0.05	0.24	0.56	0.01	0.03	0.03	0.03	0.02
99	Other (Fuel Combustion)	0.01	0.01	0.07	0.02	0.00	0.00	0.00	0.00	0.00
	Total Fuel Combustion	**0.28**	**0.10**	**1.24**	**1.73**	**0.18**	**0.07**	**0.07**	**0.07**	**0.05**
Waste Disposal										
110	Sewage Treatment	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	Landfills	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	Incineration	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Waste Disposal	**0.02**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Cleaning and Surface Coatings										
210	Laundering	0.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	1.88	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	1.61	1.56	0.00	0.00	0.00	0.09	0.08	0.08	0.00
240	Printing	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	Adhesives and Sealants	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Cleaning and Surface Coatings	**3.83**	**2.08**	**0.00**	**0.00**	**0.00**	**0.09**	**0.08**	**0.08**	**0.00**
Petroleum Production and Marketing										
310	Oil and Gas Production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	Petroleum Marketing	1.40	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**1.40**	**0.32**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Industrial Processes										
410	Chemical	0.15	0.15	0.00	0.00	0.00	0.01	0.01	0.01	0.00
420	Food and Agriculture	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02
430	Mineral Processes	0.03	0.03	0.00	0.00	0.00	0.38	0.13	0.05	0.00
440	Metal Processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	Wood and Paper	0.00	0.00	0.00	0.00	0.00	0.30	0.21	0.13	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
499	Other (Industrial Processes)	0.08	0.08	0.00	0.00	0.00	0.03	0.03	0.03	0.00
	Total Industrial Processes	**0.29**	**0.28**	**0.00**	**0.00**	**0.00**	**0.72**	**0.38**	**0.21**	**0.02**
Solvent Evaporation										
510	Consumer Products	4.36	3.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	0.36	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.58
540	Asphalt Paving/Roofing	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Solvent Evaporation	**5.03**	**4.12**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.58**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	0.21	0.10	0.29	0.55	0.00	0.09	0.08	0.08	0.00
620	Farming Operations	0.86	0.07	0.00	0.00	0.00	0.68	0.31	0.05	0.34
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	41.06	20.09	2.01	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	12.60	5.76	0.86	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	4.80	2.85	0.28	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	2.24	1.16	0.16	0.00
660	Fires	0.01	0.01	0.00	0.08	0.00	0.01	0.01	0.01	0.00
670	Waste Burning and Disposal	0.01	0.01	0.01	0.12	0.00	0.02	0.02	0.01	0.00
690	Cooking	0.07	0.03	0.00	0.00	0.00	0.30	0.30	0.30	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92
	Total Miscellaneous Processes	**1.17**	**0.21**	**0.30**	**0.75**	**0.00**	**61.78**	**30.58**	**3.77**	**1.26**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	0.87	0.84	0.33	7.75	0.02	0.09	0.09	0.03	0.20
722	Light Duty Trucks - 1 (LDT1)	0.20	0.19	0.11	1.87	0.00	0.01	0.01	0.00	0.02
723	Light Duty Trucks - 2 (LDT2)	0.48	0.45	0.31	5.68	0.01	0.06	0.06	0.02	0.13
724	Medium Duty Trucks (MDV)	0.44	0.42	0.29	4.46	0.01	0.04	0.04	0.01	0.09
732	Light Heavy Duty Trucks - 1 (LHDT1)	0.05	0.04	0.13	0.28	0.00	0.02	0.02	0.01	0.02
733	Light Heavy Duty Trucks - 2 (LHDT2)	0.01	0.01	0.05	0.05	0.00	0.01	0.01	0.00	0.01
734	Medium Heavy Duty Trucks (MHDT)	0.04	0.03	0.33	0.32	0.00	0.02	0.02	0.01	0.07
736	Heavy Heavy Duty Trucks (HHDT)	0.13	0.10	1.66	1.26	0.02	0.20	0.20	0.08	0.36
742	Motorcycles (MCY)	0.25	0.24	0.02	0.62	0.00	0.00	0.00	0.00	0.00
743	Buses	0.08	0.01	0.05	0.74	0.00	0.00	0.00	0.00	0.02
744	Motor Gomes (MH)	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00
	Total On-Road Motor Vehicles	**2.58**	**2.35**	**3.30**	**23.06**	**0.07**	**0.46**	**0.46**	**0.17**	**0.92**
Other Mobile Sources										
810	Aircraft	0.09	0.08	0.45	1.22	0.04	0.03	0.03	0.02	0.00
820	Trains	0.21	0.18	4.19	1.02	0.00	0.09	0.09	0.09	0.00
840	Recreational Boats	0.58	0.55	0.10	1.79	0.00	0.03	0.03	0.02	0.00
850	Off-Road Recreational Vehicles	0.11	0.11	0.00	0.16	0.00	0.00	0.00	0.00	0.00
860	Off-Road Equipment	1.77	1.65	1.53	25.67	0.00	0.11	0.10	0.09	0.00
861	Off-Road Equipment (PERP)	0.03	0.03	0.23	0.28	0.00	0.01	0.01	0.01	0.00
870	Farm Equipment	0.08	0.07	0.29	0.86	0.00	0.02	0.02	0.02	0.00
890	Fuel Storage and Handling	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**3.09**	**2.88**	**6.80**	**31.00**	**0.05**	**0.29**	**0.28**	**0.24**	**0.01**
Natural Sources										
910	Biogenic Sources	33.56	32.91	0.69	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
930	Wildfires	1.86	1.53	0.23	21.92	0.14	2.20	2.12	1.79	0.22
	Total Natural Sources Category	**35.42**	**34.45**	**0.92**	**21.92**	**0.14**	**2.20**	**2.12**	**1.79**	**0.82**
	Total Stationary and Area Sources	12.02	7.13	1.54	2.49	0.19	62.66	31.11	4.13	1.93
	Total On-Road Vehicles	2.58	2.35	3.30	23.06	0.07	0.46	0.46	0.17	0.92
	Total Other Mobile	3.09	2.88	6.80	31.00	0.05	0.29	0.28	0.24	0.01
	Total Anthropogenic	**17.69**	**12.35**	**11.65**	**56.55**	**0.31**	**63.40**	**31.84**	**4.54**	**2.85**
	Total Natural Sources	35.42	34.45	0.92	21.92	0.14	2.20	2.12	1.79	0.82
	Grand Total	**53.11**	**46.80**	**12.56**	**78.47**	**0.45**	**65.60**	**33.96**	**6.34**	**3.67**

TABLE I-5
2029 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN COACHELLA VALLEY (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	0.09	0.02	0.71	0.12	0.15	0.02	0.02	0.02	0.02
20	Cogeneration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	Manufacturing and Industrial	0.07	0.02	0.11	1.00	0.00	0.02	0.02	0.02	0.00
52	Food and Agricultural Processing	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
60	Service and Commercial	0.10	0.05	0.24	0.54	0.01	0.03	0.03	0.03	0.02
99	Other (Fuel Combustion)	0.01	0.01	0.07	0.02	0.00	0.00	0.00	0.00	0.00
	Total Fuel Combustion	**0.27**	**0.10**	**1.14**	**1.69**	**0.17**	**0.06**	**0.06**	**0.06**	**0.05**
Waste Disposal										
110	Sewage Treatment	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	Landfills	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	Incineration	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Waste Disposal	**0.03**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Cleaning and Surface Coatings										
210	Laundering	0.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	1.92	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	1.66	1.60	0.00	0.00	0.00	0.09	0.09	0.08	0.00
240	Printing	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	Adhesives and Sealants	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Cleaning and Surface Coatings	**3.93**	**2.15**	**0.00**	**0.00**	**0.00**	**0.09**	**0.09**	**0.08**	**0.00**
Petroleum Production and Marketing										
310	Oil and Gas Production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	Petroleum Marketing	1.37	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**1.37**	**0.31**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Industrial Processes										
410	Chemical	0.15	0.15	0.00	0.00	0.00	0.01	0.01	0.01	0.00
420	Food and Agriculture	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02
430	Mineral Processes	0.03	0.03	0.00	0.00	0.00	0.38	0.13	0.05	0.00
440	Metal Processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	Wood and Paper	0.00	0.00	0.00	0.00	0.00	0.32	0.22	0.13	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
499	Other (Industrial Processes)	0.08	0.08	0.00	0.00	0.00	0.03	0.02	0.02	0.00
	Total Industrial Processes	**0.30**	**0.29**	**0.00**	**0.00**	**0.00**	**0.74**	**0.39**	**0.22**	**0.02**
Solvent Evaporation										
510	Consumer Products	4.58	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	0.38	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.58
540	Asphalt Paving/Roofing	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Solvent Evaporation	**5.27**	**4.32**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.58**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	0.21	0.10	0.28	0.55	0.00	0.09	0.08	0.08	0.00
620	Farming Operations	0.86	0.07	0.00	0.00	0.00	0.68	0.31	0.05	0.34
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	42.21	20.65	2.06	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	13.11	6.00	0.90	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	4.79	2.85	0.28	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	2.23	1.16	0.16	0.00
660	Fires	0.01	0.01	0.00	0.08	0.00	0.01	0.01	0.01	0.00
670	Waste Burning and Disposal	0.01	0.01	0.01	0.12	0.00	0.02	0.02	0.01	0.00
690	Cooking	0.07	0.03	0.00	0.00	0.00	0.30	0.30	0.30	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.97
	Total Miscellaneous Processes	**1.17**	**0.21**	**0.28**	**0.74**	**0.00**	**63.44**	**31.37**	**3.86**	**1.31**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	0.76	0.73	0.29	6.76	0.02	0.09	0.09	0.03	0.21
722	Light Duty Trucks - 1 (LDT1)	0.16	0.15	0.08	1.42	0.00	0.01	0.01	0.00	0.02
723	Light Duty Trucks - 2 (LDT2)	0.45	0.42	0.27	5.40	0.01	0.06	0.06	0.02	0.14
724	Medium Duty Trucks (MDV)	0.38	0.36	0.22	3.88	0.01	0.04	0.04	0.01	0.09
725	Light Heavy Duty Trucks - 1 (LHDT1)	0.04	0.04	0.10	0.27	0.00	0.02	0.02	0.01	0.02
726	Light Heavy Duty Trucks - 2 (LHDT2)	0.01	0.01	0.04	0.05	0.00	0.01	0.01	0.00	0.01
727	Medium Heavy Duty Trucks (MHDT)	0.04	0.03	0.25	0.28	0.00	0.02	0.02	0.01	0.07
728	Heavy Heavy Duty Trucks (HHDT)	0.14	0.11	1.40	1.31	0.02	0.22	0.22	0.09	0.38
750	Motorcycles (MCY)	0.26	0.25	0.02	0.59	0.00	0.00	0.00	0.00	0.00
775	Buses	0.08	0.01	0.04	0.73	0.00	0.00	0.00	0.00	0.02
780	Motor Gomes (MH)	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	Total On-Road Motor Vehicles	**2.32**	**2.11**	**2.71**	**20.67**	**0.07**	**0.47**	**0.47**	**0.18**	**0.97**
Other Mobile Sources										
810	Aircraft	0.09	0.08	0.51	1.23	0.04	0.03	0.03	0.02	0.00
820	Trains	0.22	0.18	4.41	1.08	0.00	0.10	0.10	0.09	0.00
840	Recreational Boats	0.51	0.48	0.09	1.76	0.00	0.03	0.02	0.02	0.00
850	Off-Road Recreational Vehicles	0.09	0.09	0.00	0.16	0.00	0.00	0.00	0.00	0.00
860	Off-Road Equipment	1.38	1.29	1.30	22.39	0.00	0.09	0.09	0.08	0.00
861	Off-Road Equipment (PERP)	0.03	0.03	0.20	0.30	0.00	0.01	0.01	0.00	0.00
870	Farm Equipment	0.07	0.06	0.24	0.74	0.00	0.02	0.02	0.01	0.00
890	Fuel Storage and Handling	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**2.61**	**2.43**	**6.76**	**27.66**	**0.05**	**0.27**	**0.26**	**0.23**	**0.01**
Natural Sources										
910	Biogenic Sources	33.56	32.91	0.69	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
930	Wildfires	1.86	1.53	0.23	21.92	0.14	2.20	2.12	1.79	0.22
	Total Natural Sources Category	**35.42**	**34.45**	**0.92**	**21.92**	**0.14**	**2.20**	**2.12**	**1.79**	**0.82**
Total Stationary and Area Sources		12.34	7.40	1.43	2.43	0.17	64.34	31.92	4.23	1.97
Total On-Road Vehicles		2.32	2.11	2.71	20.67	0.07	0.47	0.47	0.18	0.97
Total Other Mobile		2.61	2.43	6.76	27.66	0.05	0.27	0.26	0.23	0.01
Total Anthropogenic		**17.27**	**11.94**	**10.91**	**50.76**	**0.29**	**65.08**	**32.65**	**4.63**	**2.94**
Total Natural Sources		35.42	34.45	0.92	21.92	0.14	2.20	2.12	1.79	0.82
Grand Total		**52.69**	**46.39**	**11.82**	**72.68**	**0.43**	**67.28**	**34.77**	**6.43**	**3.76**

TABLE I-6
2031 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN COACHELLA VALLEY (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	0.08	0.02	0.67	0.11	0.14	0.01	0.01	0.01	0.02
20	Cogeneration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	Manufacturing and Industrial	0.07	0.02	0.11	0.99	0.00	0.02	0.02	0.02	0.00
52	Food and Agricultural Processing	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
60	Service and Commercial	0.10	0.05	0.24	0.53	0.01	0.03	0.03	0.03	0.02
99	Other (Fuel Combustion)	0.01	0.01	0.08	0.02	0.00	0.00	0.00	0.00	0.00
	Total Fuel Combustion	**0.27**	**0.10**	**1.10**	**1.66**	**0.16**	**0.06**	**0.06**	**0.06**	**0.05**
Waste Disposal										
110	Sewage Treatment	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	Landfills	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	Incineration	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Waste Disposal	**0.03**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Cleaning and Surface Coatings										
210	Laundering	0.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	1.93	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	1.68	1.63	0.00	0.00	0.00	0.09	0.09	0.08	0.00
240	Printing	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	Adhesives and Sealants	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Cleaning and Surface Coatings	**3.97**	**2.17**	**0.00**	**0.00**	**0.00**	**0.09**	**0.09**	**0.08**	**0.00**
Petroleum Production and Marketing										
310	Oil and Gas Production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	Petroleum Marketing	1.36	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**1.36**	**0.32**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Industrial Processes										
410	Chemical	0.15	0.15	0.00	0.00	0.00	0.01	0.01	0.01	0.00
420	Food and Agriculture	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02
430	Mineral Processes	0.03	0.03	0.00	0.00	0.00	0.38	0.13	0.05	0.00
440	Metal Processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	Wood and Paper	0.00	0.00	0.00	0.00	0.00	0.32	0.23	0.14	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
499	Other (Industrial Processes)	0.08	0.08	0.00	0.00	0.00	0.03	0.02	0.02	0.00
	Total Industrial Processes	**0.30**	**0.29**	**0.00**	**0.00**	**0.00**	**0.74**	**0.40**	**0.22**	**0.02**
Solvent Evaporation										
510	Consumer Products	4.77	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	0.40	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.58
540	Asphalt Paving/Roofing	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Solvent Evaporation	**5.48**	**4.49**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.58**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	0.21	0.10	0.27	0.55	0.00	0.09	0.08	0.08	0.00
620	Farming Operations	0.86	0.07	0.00	0.00	0.00	0.67	0.31	0.05	0.34
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	42.98	21.03	2.10	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	13.34	6.10	0.92	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	4.79	2.85	0.28	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	2.23	1.16	0.16	0.00
660	Fires	0.01	0.01	0.00	0.08	0.00	0.01	0.01	0.01	0.00
670	Waste Burning and Disposal	0.01	0.01	0.01	0.12	0.00	0.02	0.02	0.01	0.00
690	Cooking	0.08	0.03	0.00	0.00	0.00	0.31	0.31	0.31	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
	Total Miscellaneous Processes	**1.17**	**0.21**	**0.28**	**0.74**	**0.00**	**64.43**	**31.85**	**3.92**	**1.34**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	0.70	0.68	0.27	6.38	0.02	0.09	0.09	0.03	0.21
722	Light Duty Trucks - 1 (LDT1)	0.13	0.13	0.06	1.19	0.00	0.01	0.01	0.00	0.02
723	Light Duty Trucks - 2 (LDT2)	0.43	0.41	0.25	5.35	0.01	0.06	0.06	0.02	0.15
724	Medium Duty Trucks (MDV)	0.35	0.33	0.20	3.69	0.01	0.04	0.04	0.01	0.09
725	Light Heavy Duty Trucks - 1 (LHDT1)	0.03	0.03	0.08	0.25	0.00	0.02	0.02	0.01	0.02
726	Light Heavy Duty Trucks - 2 (LHDT2)	0.01	0.01	0.03	0.04	0.00	0.01	0.01	0.00	0.01
727	Medium Heavy Duty Trucks (MHDT)	0.03	0.03	0.21	0.25	0.00	0.02	0.02	0.01	0.07
728	Heavy Heavy Duty Trucks (HHDT)	0.14	0.11	1.31	1.32	0.02	0.22	0.22	0.09	0.39
750	Motorcycles (MCY)	0.26	0.25	0.02	0.58	0.00	0.00	0.00	0.00	0.00
775	Buses	0.08	0.01	0.03	0.69	0.00	0.00	0.00	0.00	0.02
780	Motor Gomes (MH)	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	Total On-Road Motor Vehicles	**2.18**	**1.98**	**2.48**	**19.75**	**0.07**	**0.48**	**0.48**	**0.18**	**0.99**
Other Mobile Sources										
810	Aircraft	0.09	0.09	0.54	1.23	0.04	0.03	0.03	0.02	0.00
820	Trains	0.22	0.18	4.51	1.13	0.00	0.10	0.10	0.09	0.00
840	Recreational Boats	0.47	0.45	0.09	1.75	0.00	0.03	0.02	0.02	0.00
850	Off-Road Recreational Vehicles	0.08	0.08	0.00	0.16	0.00	0.00	0.00	0.00	0.00
860	Off-Road Equipment	1.20	1.12	1.18	19.70	0.00	0.09	0.08	0.07	0.00
861	Off-Road Equipment (PERP)	0.03	0.03	0.20	0.31	0.00	0.00	0.00	0.00	0.00
870	Farm Equipment	0.06	0.06	0.22	0.67	0.00	0.01	0.01	0.01	0.00
890	Fuel Storage and Handling	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**2.38**	**2.21**	**6.74**	**24.96**	**0.05**	**0.26**	**0.25**	**0.22**	**0.01**
Natural Sources										
910	Biogenic Sources	33.56	32.91	0.69	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
930	Wildfires	1.86	1.53	0.23	21.92	0.14	2.20	2.12	1.79	0.22
	Total Natural Sources Category	**35.42**	**34.45**	**0.92**	**21.92**	**0.14**	**2.20**	**2.12**	**1.79**	**0.82**
	Total Stationary and Area Sources	12.57	7.60	1.39	2.41	0.16	65.33	32.40	4.29	1.99
	Total On-Road Vehicles	2.18	1.98	2.48	19.75	0.07	0.48	0.48	0.18	0.99
	Total Other Mobile	2.38	2.21	6.74	24.96	0.05	0.26	0.25	0.22	0.01
	Total Anthropogenic	**17.13**	**11.79**	**10.61**	**47.13**	**0.29**	**66.07**	**33.13**	**4.68**	**2.98**
	Total Natural Sources	35.42	34.45	0.92	21.92	0.14	2.20	2.12	1.79	0.82
	Grand Total	**52.55**	**46.24**	**11.53**	**69.04**	**0.43**	**68.28**	**35.25**	**6.48**	**3.81**

TABLE I-7
2018 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN SOUTH COAST AIR BASIN (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	2.33	0.33	0.65	3.62	0.23	0.46	0.46	0.46	0.58
20	Cogeneration	0.04	0.01	0.02	0.11	0.00	0.02	0.01	0.01	0.17
30	Oil and Gas Production	1.57	0.12	0.58	0.81	0.01	0.12	0.11	0.11	0.26
20	Cogeneration	6.57	1.38	0.00	5.18	0.01	1.81	1.80	1.80	1.54
50	Manufacturing and Industrial	4.11	0.95	6.81	44.65	1.41	1.43	1.35	1.31	2.21
52	Food and Agricultural Processing	0.10	0.05	0.22	0.54	0.00	0.06	0.06	0.06	0.06
60	Service and Commercial	5.14	1.90	8.73	17.63	0.77	1.04	1.04	1.03	2.16
99	Other (Fuel Combustion)	0.84	0.67	3.09	1.26	0.01	0.54	0.51	0.49	0.30
	Total Fuel Combustion	**20.70**	**5.41**	**20.10**	**73.80**	**2.46**	**5.47**	**5.34**	**5.26**	**7.29**
Waste Disposal										
110	Sewage Treatment	0.39	0.28	0.00	0.00	0.00	0.02	0.00	0.00	0.21
120	Landfills	621.99	8.64	0.48	0.41	0.38	0.22	0.22	0.21	3.97
130	Incineration	0.21	0.04	1.02	0.26	0.07	0.12	0.06	0.05	0.23
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	95.37	7.67	0.01	0.01	0.00	0.00	0.00	0.00	1.79
	Total Waste Disposal	**717.96**	**16.62**	**1.51**	**0.68**	**0.46**	**0.36**	**0.28**	**0.27**	**6.20**
Cleaning and Surface Coatings										
210	Laundering	3.43	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	67.41	13.00	0.00	0.00	0.00	0.03	0.03	0.03	0.01
230	Coatings and Related Processes	19.03	18.61	0.00	0.00	0.00	1.64	1.57	1.51	0.13
240	Printing	0.75	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.04
250	Adhesives and Sealants	5.82	5.14	0.00	0.00	0.00	0.03	0.03	0.03	0.00
299	Other (Cleaning and Surface Coatings)	0.64	0.63	0.01	0.11	0.00	0.01	0.01	0.01	0.00
	Total Cleaning and Surface Coatings	**97.07**	**38.31**	**0.01**	**0.12**	**0.00**	**1.71**	**1.64**	**1.58**	**0.18**
Petroleum Production and Marketing										
310	Oil and Gas Production	5.10	2.35	0.01	0.02	0.06	0.04	0.03	0.02	0.00
320	Petroleum Refining	6.37	4.44	0.23	2.40	0.24	1.87	1.25	0.89	0.07
330	Petroleum Marketing	54.87	13.85	0.00	0.23	0.00	0.01	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.04	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**66.38**	**20.67**	**0.25**	**2.66**	**0.30**	**1.92**	**1.28**	**0.91**	**0.07**
Industrial Processes										
410	Chemical	4.64	4.48	0.03	0.12	0.05	0.51	0.44	0.42	0.01
420	Food and Agriculture	0.55	0.52	0.01	0.01	0.01	0.30	0.14	0.06	0.00
430	Mineral Processes	0.45	0.40	0.02	0.36	0.05	9.46	3.90	1.12	0.06
440	Metal Processes	0.12	0.10	0.06	0.26	0.03	0.38	0.30	0.23	0.00
450	Wood and Paper	0.24	0.24	0.00	0.00	0.00	6.43	4.50	2.70	0.01
460	Glass and Related Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	Electronics	0.02	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00
499	Other (Industrial Processes)	5.69	5.07	0.01	0.01	0.00	1.16	0.79	0.51	8.59
	Total Industrial Processes	**11.70**	**10.84**	**0.12**	**0.75**	**0.15**	**18.26**	**10.09**	**5.05**	**8.68**
Solvent Evaporation										
510	Consumer Products	135.71	107.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	10.62	10.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.12	1.12	0.00	0.00	0.00	0.00	0.00	0.00	1.23
540	Asphalt Paving/Roofing	1.30	1.20	0.00	0.00	0.00	0.03	0.03	0.03	0.00
	Total Solvent Evaporation	**148.76**	**120.28**	**0.00**	**0.00**	**0.00**	**0.03**	**0.03**	**0.03**	**1.23**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	4.94	2.25	19.10	13.58	0.13	2.26	2.20	2.16	0.02
620	Farming Operations	22.24	1.86	0.00	0.00	0.00	1.58	0.79	0.18	10.26
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	72.15	35.31	3.53	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	133.09	60.85	9.13	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	28.47	16.92	1.69	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.60	2.27	0.33	0.00
660	Fires	0.34	0.29	0.08	3.02	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	0.26	0.21	0.10	2.88	0.02	0.31	0.30	0.26	0.03
690	Cooking	2.73	1.08	0.00	0.00	0.00	11.44	11.44	11.44	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.98
	RECLAIM	0.00	0.00	18.15	0.00	5.50	0.00	0.00	0.00	0.00
	Total Miscellaneous Processes	**30.50**	**5.69**	**37.42**	**19.49**	**5.65**	**254.36**	**130.51**	**29.13**	**36.30**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	43.23	39.84	24.82	432.70	0.77	4.38	4.33	1.61	6.98
722	Light Duty Trucks - 1 (LDT1)	9.17	8.37	5.85	83.50	0.08	0.45	0.44	0.18	0.71
723	Light Duty Trucks - 2 (LDT2)	18.78	17.05	17.98	208.09	0.35	1.70	1.68	0.63	2.65
724	Medium Duty Trucks (MDV)	17.31	15.57	17.62	178.36	0.30	1.21	1.19	0.45	1.85
725	Light Heavy Duty Trucks - 1 (LHDT1)	2.43	2.22	8.37	14.67	0.04	0.70	0.70	0.30	0.49
726	Light Heavy Duty Trucks - 2 (LHDT2)	0.44	0.40	2.36	2.22	0.01	0.19	0.19	0.08	0.15
727	Medium Heavy Duty Trucks (MHDT)	2.24	1.93	28.46	14.36	0.08	1.11	1.11	0.82	0.79
728	Heavy Heavy Duty Trucks (HHDT)	3.49	1.99	58.71	16.16	0.17	2.30	2.29	1.36	1.94
750	Motorcycles (MCY)	7.86	7.45	0.89	25.24	0.00	0.03	0.03	0.01	0.01
775	Buses	3.27	0.61	5.51	22.66	0.01	0.23	0.23	0.13	0.76
780	Motor Gomes (MH)	0.47	0.45	0.72	1.98	0.01	0.04	0.04	0.03	0.03
	Total On-Road Motor Vehicles	**108.69**	**95.87**	**171.28**	**999.92**	**1.83**	**12.34**	**12.23**	**5.59**	**16.36**
Other Mobile Sources										
810	Aircraft	3.67	3.53	17.16	36.70	1.64	0.79	0.77	0.68	0.00
820	Trains	0.82	0.69	15.10	3.55	0.02	0.37	0.37	0.34	0.01
833	Ocean Going Vessels	10.93	9.36	32.21	4.32	2.04	0.69	0.69	0.64	0.02
835	Commercial Harbor Crafts	0.39	0.33	5.86	1.25	0.00	0.25	0.25	0.23	0.00
840	Recreational Boats	24.14	22.49	3.86	67.11	0.01	1.48	1.33	1.00	0.01
850	Off-Road Recreational Vehicles	1.64	1.62	0.03	1.54	0.00	0.01	0.01	0.00	0.00
860	Off-Road Equipment	64.20	59.50	59.48	681.15	0.10	2.96	2.88	2.54	0.10
861	Off-Road Equipment (PERP)	0.90	0.76	8.83	4.80	0.01	0.34	0.34	0.31	0.01
870	Farm Equipment	0.45	0.41	0.81	6.09	0.00	0.06	0.05	0.05	0.00
890	Fuel Storage and Handling	8.48	8.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**115.62**	**107.16**	**143.35**	**806.50**	**3.82**	**6.93**	**6.68**	**5.79**	**0.16**
Natural Sources										
910	Biogenic Sources	226.62	221.66	6.30	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73
930	Wildfires	109.99	90.85	11.63	465.28	3.89	49.07	47.16	39.95	0.00
	Total Natural Sources Category	**336.61**	**312.51**	**17.93**	**465.28**	**3.89**	**49.07**	**47.16**	**39.95**	**1.73**
Total Stationary and Area Sources		1093.04	217.83	51.61	104.29	9.01	282.23	149.29	42.36	60.59
Total On-Road Vehicles		108.69	95.87	171.28	999.92	1.83	12.34	12.23	5.59	16.36
Total Other Mobile		115.62	107.16	143.35	806.50	3.82	6.93	6.68	5.79	0.16
Total Anthropogenic		**1317.36**	**420.87**	**366.23**	**1910.71**	**14.67**	**301.51**	**168.20**	**53.74**	**77.12**
Total Natural Sources		336.61	312.51	17.93	465.28	3.89	49.07	47.16	39.95	1.73
Grand Total		**1653.97**	**733.38**	**384.16**	**2376.00**	**18.55**	**350.58**	**215.36**	**93.69**	**78.85**

TABLE I-8

2020 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN SOUTH COAST AIR BASIN (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	3.11	0.36	0.22	4.65	0.24	0.62	0.62	0.61	0.80
20	Cogeneration	0.03	0.01	0.02	0.12	0.00	0.02	0.01	0.01	0.18
30	Oil and Gas Production (Combustion)	1.11	0.13	0.62	0.61	0.01	0.10	0.10	0.10	0.19
40	Petroleum Refining (Combustion)	6.57	1.38	0.00	5.18	0.00	1.81	1.80	1.80	1.54
50	Manufacturing and Industrial	4.30	0.94	6.53	47.86	1.41	1.47	1.39	1.35	2.31
52	Food and Agricultural Processing	0.10	0.05	0.22	0.53	0.00	0.06	0.06	0.06	0.06
60	Service and Commercial	4.90	1.91	8.47	19.18	0.78	1.07	1.07	1.06	2.53
99	Other (Fuel Combustion)	0.78	0.64	2.65	1.23	0.01	0.48	0.46	0.43	0.27
	Total Fuel Combustion	**20.90**	**5.43**	**18.70**	**79.35**	**2.47**	**5.62**	**5.49**	**5.41**	**7.89**
Waste Disposal										
110	Sewage Treatment	0.40	0.28	0.00	0.00	0.00	0.02	0.00	0.00	0.21
120	Landfills	631.92	8.77	0.49	0.41	0.38	0.22	0.22	0.21	4.03
130	Incineration	0.21	0.04	1.21	0.27	0.07	0.12	0.06	0.05	0.23
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	96.13	7.73	0.01	0.01	0.00	0.00	0.00	0.00	1.86
	Total Waste Disposal	**728.66**	**16.83**	**1.70**	**0.69**	**0.46**	**0.36**	**0.28**	**0.27**	**6.33**
Cleaning and Surface Coatings										
210	Laundering	3.47	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	67.96	13.13	0.00	0.00	0.00	0.03	0.03	0.03	0.01
230	Coatings and Related Processes	19.38	18.96	0.00	0.00	0.00	1.67	1.60	1.54	0.13
240	Printing	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.04
250	Adhesives and Sealants	5.59	4.94	0.00	0.00	0.00	0.04	0.03	0.03	0.00
299	Other (Cleaning and Surface Coatings)	0.64	0.64	0.04	0.11	0.07	0.01	0.01	0.01	0.00
	Total Cleaning and Surface Coatings	**97.82**	**38.61**	**0.04**	**0.12**	**0.07**	**1.74**	**1.67**	**1.61**	**0.18**
Petroleum Production and Marketing										
310	Oil and Gas Production	5.61	2.58	0.01	0.02	0.07	0.04	0.03	0.02	0.00
320	Petroleum Refining	6.37	4.44	1.04	2.40	0.23	1.87	1.25	0.89	0.07
330	Petroleum Marketing	55.96	13.35	0.02	0.22	0.00	0.01	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.04	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**67.98**	**20.41**	**1.08**	**2.65**	**0.30**	**1.92**	**1.28**	**0.91**	**0.07**
Industrial Processes										
410	Chemical	4.68	4.52	0.10	0.12	0.05	0.51	0.45	0.42	0.01
420	Food and Agriculture	0.55	0.53	0.03	0.01	0.01	0.31	0.14	0.06	0.00
430	Mineral Processes	0.46	0.41	0.47	0.37	0.05	9.50	3.92	1.13	0.06
440	Metal Processes	0.13	0.11	0.26	0.27	0.03	0.40	0.32	0.24	0.00
450	Wood and Paper	0.24	0.24	0.00	0.00	0.00	6.66	4.66	2.80	0.01
460	Glass and Related Products	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	Electronics	0.02	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00
499	Other (Industrial Processes)	5.73	5.11	0.03	0.01	0.00	1.18	0.81	0.52	8.59
	Total Industrial Processes	**11.81**	**10.94**	**0.89**	**0.77**	**0.14**	**18.58**	**10.30**	**5.18**	**8.68**
Solvent Evaporation										
510	Consumer Products	141.85	112.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	10.87	10.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.13	1.13	0.00	0.00	0.00	0.00	0.00	0.00	1.22
540	Asphalt Paving/Roofing	1.32	1.22	0.00	0.00	0.00	0.03	0.03	0.03	0.00
	Total Solvent Evaporation	**155.17**	**125.64**	**0.00**	**0.00**	**0.00**	**0.03**	**0.03**	**0.03**	**1.22**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	5.16	2.34	12.43	14.37	0.14	2.40	2.33	2.30	0.02
620	Farming Operations	19.90	1.66	0.00	0.00	0.00	1.48	0.74	0.17	9.18
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	73.24	35.84	3.58	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	134.40	61.45	9.22	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	28.47	16.92	1.69	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.50	2.22	0.32	0.00
660	Fires	0.34	0.29	0.08	3.02	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	0.26	0.23	0.10	3.03	0.03	0.36	0.35	0.31	0.03
690	Cooking	2.76	1.09	0.00	0.00	0.00	11.58	11.58	11.58	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.37
	RECLAIM	0.00	0.00	21.01	0.00	6.10	0.00	0.00	0.00	0.00
	Total Miscellaneous Processes	**28.42**	**5.62**	**33.61**	**20.43**	**6.28**	**256.87**	**131.86**	**29.58**	**35.60**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	40.57	37.84	20.54	370.51	0.73	4.27	4.22	1.56	7.07
722	Light Duty Trucks - 1 (LDT1)	9.25	8.53	5.28	75.14	0.07	0.42	0.41	0.17	0.68
723	Light Duty Trucks - 2 (LDT2)	18.24	16.80	14.76	185.20	0.37	1.85	1.82	0.68	3.07
724	Medium Duty Trucks (MDV)	16.67	15.20	14.80	155.74	0.29	1.20	1.19	0.45	1.91
725	Light Heavy Duty Trucks - 1 (LHDT1)	2.44	2.24	7.24	13.67	0.04	0.65	0.65	0.27	0.50
726	Light Heavy Duty Trucks - 2 (LHDT2)	0.43	0.39	2.03	2.09	0.01	0.19	0.19	0.08	0.17
727	Medium Heavy Duty Trucks (MHDT)	1.49	1.26	19.07	10.80	0.09	0.76	0.75	0.47	1.10
728	Heavy Heavy Duty Trucks (HHDT)	2.72	1.26	44.44	14.76	0.18	1.91	1.91	0.96	2.40
750	Motorcycles (MCY)	8.28	7.88	0.84	24.07	0.00	0.03	0.03	0.01	0.01
775	Buses	2.50	0.30	3.07	25.96	0.01	0.19	0.19	0.08	0.81
780	Motor Gomes (MH)	0.38	0.36	0.56	1.16	0.01	0.04	0.04	0.02	0.03
	Total On-Road Motor Vehicles	**102.97**	**92.06**	**132.63**	**879.08**	**1.80**	**11.49**	**11.38**	**4.75**	**17.75**
Other Mobile Sources										
810	Aircraft	3.61	3.47	17.42	35.73	1.60	0.78	0.75	0.67	0.00
820	Trains	0.81	0.68	15.39	3.70	0.02	0.36	0.36	0.34	0.01
833	Ocean Going Vessels	10.95	9.37	31.49	4.32	2.03	0.69	0.69	0.63	0.02
835	Commercial Harbor Craft	0.39	0.33	5.77	1.23	0.00	0.24	0.24	0.23	0.00
840	Recreational Boats	22.05	20.56	3.77	66.58	0.01	1.35	1.21	0.92	0.01
850	Off-Road Recreational Vehicles	1.57	1.55	0.03	1.56	0.00	0.01	0.01	0.00	0.00
860	Off-Road Equipment	62.52	57.89	49.05	707.30	0.10	2.65	2.58	2.26	0.07
861	Off-Road Equipment (PERP)	0.76	0.64	6.98	4.81	0.01	0.26	0.26	0.24	0.01
870	Farm Equipment	0.39	0.35	0.71	6.05	0.00	0.05	0.05	0.04	0.00
890	Fuel Storage and Handling	7.88	7.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**110.93**	**102.72**	**130.61**	**831.28**	**3.77**	**6.39**	**6.16**	**5.33**	**0.12**
Natural Sources										
910	Biogenic Sources	226.62	221.66	6.3	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73
930	Wildfires	452.24	373.55	38.89	1920.94	14.13	197.71	190.00	160.97	19.21
	Total Natural Sources Category	**678.86**	**595.21**	**45.19**	**1920.94**	**14.13**	**197.71**	**190.00**	**160.97**	**20.94**
Total Stationary and Area Sources		1110.77	223.48	54.11	104.01	9.65	285.12	150.91	42.98	59.97
Total On-Road Vehicles		102.97	92.06	132.63	879.08	1.80	11.49	11.38	4.75	17.75
Total Other Mobile		110.93	102.72	130.61	831.28	3.77	6.39	6.16	5.33	0.12
Total Anthropogenic		**1324.66**	**418.26**	**317.36**	**1814.37**	**15.23**	**303.01**	**168.45**	**53.06**	**77.84**
Total Natural Sources		678.86	595.21	45.19	1920.94	14.13	197.71	190.00	160.97	20.94
Grand Total		**2003.52**	**1013.47**	**362.55**	**3735.31**	**29.36**	**500.71**	**358.45**	**214.03**	**98.79**

TABLE I-9

2023 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN SOUTH COAST AIR BASIN (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	3.02	0.35	0.22	4.53	0.24	0.60	0.60	0.60	0.78
20	Cogeneration	0.04	0.01	0.02	0.12	0.00	0.02	0.01	0.01	0.18
30	Oil and Gas Production (combustion)	1.23	0.14	0.67	0.66	0.01	0.10	0.10	0.10	0.21
40	Petroleum Refining (Combustion)	6.57	1.38	0.00	5.18	0.00	1.81	1.80	1.80	1.54
50	Manufacturing and Industrial	4.29	0.95	6.51	47.48	1.41	1.47	1.39	1.35	2.30
52	Food and Agricultural Processing	0.10	0.05	0.22	0.53	0.00	0.06	0.06	0.06	0.06
60	Service and Commercial	5.01	1.96	8.59	19.35	0.80	1.08	1.08	1.07	2.52
99	Other (Fuel Combustion)	0.80	0.66	2.65	1.25	0.01	0.51	0.48	0.45	0.28
	Total Fuel Combustion	**21.05**	**5.50**	**18.87**	**79.11**	**2.48**	**5.64**	**5.52**	**5.43**	**7.88**
Waste Disposal										
110	Sewage Treatment	0.40	0.28	0.00	0.01	0.00	0.02	0.00	0.00	0.21
120	Landfills	645.65	8.96	0.45	0.41	0.39	0.22	0.22	0.22	4.11
130	Incineration	0.22	0.04	1.01	0.27	0.07	0.12	0.06	0.05	0.24
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	97.35	7.83	0.01	0.01	0.00	0.00	0.00	0.00	1.97
	Total Waste Disposal	**743.63**	**17.12**	**1.46**	**0.70**	**0.47**	**0.37**	**0.29**	**0.27**	**6.52**
Cleaning and Surface Coatings										
210	Laundering	3.55	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	69.01	13.37	0.00	0.00	0.00	0.03	0.03	0.03	0.01
230	Coatings and Related Processes	19.96	19.52	0.00	0.00	0.00	1.72	1.65	1.59	0.13
240	Printing	0.81	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	5.18	4.58	0.00	0.00	0.00	0.04	0.04	0.03	0.00
299	Other (Cleaning and Surface Coatings)	0.65	0.65	0.01	0.11	0.00	0.01	0.01	0.01	0.00
	Total Cleaning and Surface Coatings	**99.16**	**39.10**	**0.01**	**0.12**	**0.00**	**1.79**	**1.72**	**1.66**	**0.19**
Petroleum Production and Marketing										
310	Oil and Gas Production	6.42	2.95	0.01	0.02	0.08	0.04	0.03	0.02	0.00
320	Petroleum Refining	6.37	4.44	0.22	2.40	0.23	1.87	1.25	0.89	0.07
330	Petroleum Marketing	54.07	12.69	0.00	0.21	0.00	0.01	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.04	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**66.91**	**20.11**	**0.24**	**2.64**	**0.31**	**1.92**	**1.28**	**0.91**	**0.07**
Industrial Processes										
410	Chemical	4.77	4.60	0.03	0.12	0.05	0.53	0.46	0.43	0.01
420	Food and Agriculture	0.57	0.54	0.00	0.01	0.01	0.31	0.14	0.06	0.00
430	Mineral Processes	0.47	0.42	0.00	0.37	0.06	9.59	3.96	1.15	0.07
440	Metal Processes	0.13	0.11	0.05	0.28	0.03	0.43	0.34	0.26	0.00
450	Wood and Paper	0.25	0.25	0.00	0.00	0.00	7.03	4.92	2.95	0.01
460	Glass and related Products	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	Electronics	0.02	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00
499	Other (Industrial Processes)	5.78	5.16	0.01	0.01	0.00	1.20	0.82	0.53	8.59
	Total Industrial Processes	**11.99**	**11.11**	**0.04**	**0.80**	**0.15**	**19.09**	**10.64**	**5.38**	**8.68**
Solvent Evaporation										
510	Consumer Products	141.38	111.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	11.24	11.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.14	1.14	0.00	0.00	0.00	0.00	0.00	0.00	1.20
540	Asphalt Paving/Roofing	1.36	1.26	0.00	0.00	0.00	0.03	0.03	0.03	0.00
	Total Solvent Evaporation	**155.12**	**125.56**	**0.00**	**0.00**	**0.00**	**0.03**	**0.03**	**0.03**	**1.20**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	5.08	2.31	11.69	14.09	0.14	2.33	2.27	2.23	0.02
620	Farming Operations	16.92	1.42	0.00	0.00	0.00	1.35	0.67	0.15	7.78
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	75.11	36.75	3.67	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	136.92	62.60	9.39	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	28.47	16.92	1.69	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.38	2.17	0.31	0.00
660	Fires	0.34	0.29	0.08	3.02	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	0.26	0.23	0.10	3.03	0.03	0.36	0.35	0.30	0.03
690	Cooking	2.82	1.12	0.00	0.00	0.00	11.79	11.79	11.79	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.90
	RECLAIM	0.00	0.00	15.05	0.00	6.10	0.00	0.00	0.00	0.00
	Total Miscellaneous Processes	**25.42**	**5.36**	**26.91**	**20.14**	**6.27**	**261.15**	**133.96**	**29.97**	**34.73**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	28.83	27.04	14.02	279.06	0.66	4.07	4.02	1.45	7.25
722	Light Duty Trucks - 1 (LDT1)	6.35	5.86	3.68	53.55	0.06	0.38	0.37	0.15	0.65
723	Light Duty Trucks - 2 (LDT2)	13.88	12.83	10.23	149.46	0.37	1.94	1.92	0.69	3.52
724	Medium Duty Trucks (MDV)	12.17	11.18	9.86	114.08	0.28	1.21	1.20	0.44	2.10
725	Light Heavy Duty Trucks - 1 (LHDT1)	1.62	1.49	4.80	9.82	0.04	0.59	0.59	0.24	0.54
726	Light Heavy Duty Trucks - 2 (LHDT2)	0.30	0.27	1.40	1.46	0.01	0.18	0.18	0.07	0.19
727	Medium Heavy Duty Trucks (MHDT)	0.89	0.72	10.92	7.73	0.09	0.51	0.51	0.22	1.46
728	Heavy Heavy Duty Trucks (HHDT)	2.07	0.71	29.22	14.24	0.19	1.75	1.74	0.74	3.03
750	Motorcycles (MCY)	7.33	6.94	0.79	22.35	0.00	0.03	0.03	0.01	0.01
775	Buses	2.48	0.21	2.06	28.84	0.01	0.17	0.17	0.07	0.84
780	Motor Gomes (MH)	0.27	0.26	0.56	0.64	0.01	0.04	0.04	0.02	0.03
	Total On-Road Motor Vehicles	**76.19**	**67.51**	**87.54**	**681.23**	**1.72**	**10.86**	**10.77**	**4.09**	**19.63**
Other Mobile Sources										
810	Aircraft	3.52	3.36	17.82	34.27	1.54	0.76	0.74	0.65	0.00
820	Trains	0.83	0.69	16.13	3.91	0.02	0.37	0.37	0.34	0.01
833	Ocean Going Vessels	11.07	9.47	31.12	4.42	2.08	0.70	0.70	0.65	0.03
835	Commercial Harbor Crafts	0.39	0.33	5.77	1.22	0.00	0.25	0.25	0.23	0.00
840	Recreational Boats	19.40	18.10	3.64	66.37	0.01	1.19	1.07	0.81	0.01
850	Off-Road Recreational Vehicles	1.42	1.41	0.03	1.60	0.00	0.01	0.01	0.00	0.00
860	Off-Road Equipment	60.47	56.06	40.65	743.80	0.10	2.27	2.20	1.91	0.07
861	Off-Road Equipment (PERP)	0.63	0.53	5.16	4.72	0.01	0.18	0.18	0.16	0.01
870	Farm Equipment	0.33	0.30	0.61	6.13	0.00	0.04	0.04	0.04	0.00
890	Fuel Storage and Handling	7.17	7.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**105.23**	**97.42**	**120.95**	**866.44**	**3.77**	**5.77**	**5.55**	**4.80**	**0.13**
Natural Sources										
910	Biogenic Sources	226.62	221.66	6.30	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73
930	Wildfires	105.86	87.44	11.53	447.52	3.78	47.38	45.53	38.57	4.48
	Total Natural Sources Category	**332.48**	**309.09**	**17.83**	**447.52**	**3.78**	**47.38**	**45.53**	**38.57**	**6.21**
Total Stationary and Area Sources		1123.26	223.87	47.55	103.50	9.68	289.99	153.43	43.66	59.28
Total On-Road Vehicles		76.19	67.51	87.54	681.23	1.72	10.86	10.77	4.09	19.63
Total Other Mobile		105.23	97.42	120.95	866.44	3.77	5.77	5.55	4.80	0.13
Total Anthropogenic		**1304.68**	**388.80**	**256.04**	**1651.17**	**15.17**	**306.62**	**169.75**	**52.55**	**79.04**
Total Natural Sources		332.48	309.09	17.83	447.52	3.78	47.38	45.53	38.57	6.21
Grand Total		**1637.16**	**697.89**	**273.87**	**2098.69**	**18.95**	**354.00**	**215.28**	**91.12**	**85.25**

TABLE I-10
2026 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN SOUTH COAST AIR BASIN (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	2.79	0.32	3.14	4.21	0.23	0.55	0.55	0.55	0.71
20	Cogeneration	0.04	0.01	0.02	0.12	0.00	0.02	0.01	0.01	0.18
30	Oil and Gas Production (Combustion)	1.36	0.16	0.87	0.72	0.01	0.11	0.11	0.11	0.23
40	Petroleum Refining (Combustion)	6.57	1.38	5.34	5.18	3.15	1.81	1.80	1.80	1.54
50	Manufacturing and Industrial	4.32	0.97	8.39	47.62	2.20	1.48	1.40	1.37	2.32
52	Food and Agricultural Processing	0.10	0.05	0.42	0.54	0.01	0.06	0.06	0.06	0.06
60	Service and Commercial	5.05	1.98	9.84	18.65	0.82	1.06	1.06	1.06	2.37
99	Other (Fuel Combustion)	0.82	0.67	2.66	1.26	0.02	0.53	0.50	0.47	0.30
	Total Fuel Combustion	**21.05**	**5.54**	**30.68**	**78.30**	**6.45**	**5.62**	**5.49**	**5.41**	**7.72**
Waste Disposal										
110	Sewage Treatment	0.40	0.29	0.00	0.01	0.00	0.02	0.00	0.00	0.22
120	Landfills	659.27	9.15	0.40	0.42	0.39	0.23	0.22	0.22	4.18
130	Incineration	0.22	0.04	1.21	0.28	0.08	0.13	0.06	0.05	0.24
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	98.63	7.93	0.01	0.01	0.00	0.00	0.00	0.00	2.10
	Total Waste Disposal	**758.53**	**17.41**	**1.63**	**0.71**	**0.47**	**0.37**	**0.29**	**0.28**	**6.73**
Cleaning and Surface Coatings										
210	Laundering	3.62	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	70.28	13.65	0.00	0.00	0.00	0.03	0.03	0.03	0.01
230	Coatings and Related Processes	20.61	20.17	0.00	0.01	0.00	1.78	1.71	1.64	0.14
240	Printing	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	5.29	4.67	0.00	0.00	0.00	0.04	0.04	0.04	0.00
299	Other (Cleaning and Surface Coatings)	0.66	0.66	0.04	0.12	0.01	0.01	0.01	0.01	0.00
	Total Cleaning and Surface Coatings	**101.31**	**40.17**	**0.04**	**0.12**	**0.01**	**1.85**	**1.78**	**1.71**	**0.20**
Petroleum Production and Marketing										
310	Oil and Gas Production	7.32	3.35	0.01	0.03	0.09	0.04	0.03	0.02	0.00
320	Petroleum Refining	6.37	4.44	0.68	2.40	1.43	1.87	1.25	0.89	0.07
330	Petroleum Marketing	52.01	12.06	0.02	0.20	0.00	0.01	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.04	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**65.74**	**19.89**	**0.72**	**2.63**	**1.52**	**1.92**	**1.28**	**0.91**	**0.07**
Industrial Processes										
410	Chemical	4.86	4.69	0.07	0.12	0.09	0.54	0.46	0.44	0.01
420	Food and Agriculture	0.59	0.56	0.03	0.01	0.01	0.32	0.15	0.06	0.00
430	Mineral Processes	0.48	0.43	0.48	0.38	0.22	9.68	4.00	1.16	0.07
440	Metal Processes	0.14	0.12	0.32	0.30	0.23	0.46	0.36	0.28	0.00
450	Wood and Paper	0.25	0.25	0.00	0.00	0.00	7.43	5.20	3.12	0.01
460	Glass and Related Products	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	Electronics	0.02	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00
499	Other (Industrial Processes)	5.84	5.22	0.03	0.01	0.00	1.21	0.83	0.54	8.59
	Total Industrial Processes	**12.18**	**11.29**	**0.94**	**0.83**	**0.55**	**19.63**	**11.01**	**5.60**	**8.68**
Solvent Evaporation										
510	Consumer Products	146.66	116.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	11.53	11.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	1.18
540	Asphalt Paving/Roofing	1.40	1.30	0.00	0.00	0.00	0.03	0.03	0.03	0.00
	Total Solvent Evaporation	**160.74**	**130.25**	**0.00**	**0.00**	**0.00**	**0.03**	**0.03**	**0.03**	**1.18**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	5.00	2.28	10.97	13.81	0.14	2.28	2.22	2.18	0.02
620	Farming Operations	16.63	1.39	0.00	0.00	0.00	1.34	0.66	0.15	7.75
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	77.18	37.76	3.77	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	139.27	63.67	9.55	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	28.46	16.92	1.69	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.27	2.12	0.30	0.00
660	Fires	0.34	0.29	0.08	3.02	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	0.26	0.22	0.10	3.03	0.03	0.36	0.35	0.30	0.03
690	Cooking	2.87	1.14	0.00	0.00	0.00	12.03	12.03	12.03	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.40
	Total Miscellaneous Processes	**25.10**	**5.32**	**11.15**	**19.86**	**0.17**	**265.64**	**136.17**	**30.40**	**35.20**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	23.99	22.70	10.76	225.23	0.59	3.88	3.84	1.35	7.37
722	Light Duty Trucks - 1 (LDT1)	4.78	4.44	2.64	39.61	0.06	0.34	0.34	0.13	0.63
723	Light Duty Trucks - 2 (LDT2)	12.26	11.43	8.05	129.39	0.36	2.00	1.99	0.71	3.89
724	Medium Duty Trucks (MDV)	10.01	9.31	6.95	90.36	0.26	1.21	1.20	0.43	2.24
725	Light Heavy Duty Trucks - 1 (LHDT1)	1.24	1.15	3.35	8.10	0.03	0.55	0.55	0.22	0.56
726	Light Heavy Duty Trucks - 2 (LHDT2)	0.24	0.22	1.01	1.20	0.01	0.17	0.17	0.07	0.21
727	Medium Heavy Duty Trucks (MHDT)	0.73	0.58	7.94	6.22	0.09	0.49	0.49	0.19	1.55
728	Heavy Heavy Duty Trucks (HHDT)	2.04	0.75	17.73	14.71	0.19	1.74	1.74	0.67	3.25
750	Motorcycles (MCY)	7.29	6.90	0.75	21.43	0.00	0.03	0.03	0.01	0.01
775	Buses	2.65	0.21	1.65	29.57	0.01	0.16	0.16	0.06	0.83
780	Motor Gomes (MH)	0.21	0.20	0.48	0.35	0.01	0.04	0.04	0.02	0.03
	Total On-Road Motor Vehicles	**65.44**	**57.87**	**61.32**	**566.18**	**1.61**	**10.62**	**10.55**	**3.86**	**20.58**
Other Mobile Sources										
810	Aircraft	3.72	3.56	20.71	35.98	1.72	0.79	0.76	0.68	0.00
820	Trains	0.83	0.70	16.69	4.13	0.02	0.37	0.37	0.34	0.01
833	Ocean Going Vessels	11.21	9.60	31.43	4.57	2.22	0.73	0.73	0.67	0.03
835	Commercial Harbor Craft	0.39	0.33	5.79	1.21	0.00	0.25	0.25	0.23	0.00
840	Recreational Boats	17.15	16.01	3.54	66.66	0.01	1.05	0.95	0.72	0.01
850	Off-Road Recreational Vehicles	1.28	1.27	0.04	1.70	0.00	0.01	0.01	0.00	0.00
860	Off-Road Equipment	50.48	46.74	34.20	683.25	0.10	1.91	1.85	1.60	0.08
861	Off-Road Equipment (PERP)	0.59	0.49	4.16	5.00	0.02	0.13	0.13	0.12	0.01
870	Farm Equipment	0.27	0.24	0.52	5.22	0.00	0.04	0.04	0.03	0.00
890	Fuel Storage and Handling	6.64	6.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**92.57**	**85.58**	**117.07**	**807.71**	**4.08**	**5.27**	**5.07**	**4.39**	**0.15**
Natural Sources										
910	Biogenic Sources	226.62	221.66	6.30	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73
930	Wildfires	105.86	87.44	11.53	447.52	3.78	47.38	45.53	38.57	4.48
	Total Natural Sources Category	**332.48**	**309.09**	**17.83**	**447.52**	**3.78**	**47.38**	**45.53**	**38.57**	**6.21**
Total Stationary and Area Sources		1144.64	229.87	45.15	102.45	9.17	295.07	156.05	44.35	59.79
Total On-Road Vehicles		65.44	57.87	61.32	566.18	1.61	10.62	10.55	3.86	20.58
Total Other Mobile		92.57	85.58	117.07	807.71	4.08	5.27	5.07	4.39	0.15
Total Anthropogenic		**1302.65**	**373.32**	**223.55**	**1476.35**	**14.87**	**310.96**	**171.67**	**52.60**	**80.51**
Total Natural Sources		332.48	309.09	17.83	447.52	3.78	47.38	45.53	38.57	6.21
Grand Total		**1635.13**	**682.42**	**241.37**	**1923.87**	**18.65**	**358.33**	**217.20**	**91.16**	**86.72**

TABLE I-11
2029 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN SOUTH COAST AIR BASIN (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	2.47	0.28	2.74	3.80	0.22	0.49	0.49	0.49	0.62
20	Cogeneration	0.04	0.01	0.02	0.12	0.00	0.02	0.01	0.01	0.18
30	Oil And Gas Production (Combustion)	1.48	0.17	0.93	0.77	0.01	0.11	0.11	0.11	0.25
40	Petroleum Refining (Combustion)	6.57	1.38	4.51	5.18	3.15	1.81	1.80	1.80	1.54
50	Manufacturing and Industrial	4.22	0.96	8.24	46.16	2.20	1.46	1.38	1.34	2.27
52	Food and Agricultural Processing	0.10	0.05	0.43	0.54	0.01	0.06	0.06	0.06	0.06
60	Service and Commercial	5.09	2.00	9.91	18.11	0.84	1.05	1.05	1.04	2.26
99	Other (Fuel Combustion)	0.84	0.68	2.66	1.27	0.02	0.54	0.51	0.48	0.30
	Total Fuel Combustion	**20.81**	**5.54**	**29.44**	**75.95**	**6.45**	**5.53**	**5.41**	**5.32**	**7.48**
Waste Disposal										
110	Sewage Treatment	0.41	0.29	0.00	0.01	0.00	0.02	0.00	0.00	0.22
120	Landfills	672.01	9.32	0.41	0.42	0.40	0.23	0.22	0.22	4.24
130	Incineration	0.23	0.04	1.23	0.28	0.08	0.13	0.06	0.05	0.24
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	99.71	8.02	0.01	0.01	0.00	0.00	0.00	0.00	2.20
	Total Waste Disposal	**772.36**	**17.68**	**1.65**	**0.72**	**0.48**	**0.38**	**0.29**	**0.28**	**6.91**
Cleaning and Surface Coatings										
210	Laundering	3.68	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	70.81	13.79	0.00	0.00	0.00	0.03	0.03	0.03	0.01
230	Coatings and Related Processes	21.03	20.58	0.00	0.01	0.00	1.81	1.74	1.67	0.14
240	Printing	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	5.33	4.71	0.00	0.00	0.00	0.04	0.04	0.04	0.00
299	Other (Cleaning and Surface Coatings)	0.67	0.66	0.04	0.12	0.01	0.01	0.01	0.01	0.00
	Total Cleaning and Surface Coatings	**102.40**	**40.79**	**0.04**	**0.12**	**0.01**	**1.89**	**1.81**	**1.74**	**0.20**
Petroleum Production and Marketing										
310	Oil and Gas Production	8.24	3.77	0.01	0.03	0.10	0.04	0.03	0.02	0.00
320	Petroleum Refining	6.37	4.44	0.61	2.40	1.43	1.87	1.25	0.89	0.07
330	Petroleum Marketing	49.71	11.61	0.02	0.19	0.00	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.05	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**64.36**	**19.86**	**0.65**	**2.62**	**1.53**	**1.92**	**1.28**	**0.91**	**0.07**
Industrial Processes										
410	Chemical	4.89	4.72	0.07	0.12	0.09	0.54	0.47	0.44	0.01
420	Food and Agriculture	0.60	0.57	0.03	0.01	0.01	0.32	0.15	0.06	0.00
430	Mineral Processes	0.49	0.44	0.48	0.39	0.22	9.72	4.03	1.18	0.07
440	Metal Processes	0.14	0.12	0.33	0.32	0.24	0.48	0.38	0.29	0.00
450	Wood and Paper	0.25	0.25	0.00	0.00	0.00	7.70	5.39	3.23	0.01
460	Glass and Related products	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	Electronics	0.02	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00
499	Other (Industrial Processes)	5.89	5.26	0.03	0.01	0.00	1.22	0.84	0.54	8.59
	Total Industrial Processes	**12.29**	**11.40**	**0.95**	**0.85**	**0.56**	**19.99**	**11.25**	**5.75**	**8.68**
Solvent Evaporation										
510	Consumer Products	151.33	120.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	11.78	11.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.16	1.16	0.00	0.00	0.00	0.00	0.00	0.00	1.17
540	Asphalt Paving/Roofing	1.44	1.33	0.00	0.00	0.00	0.03	0.03	0.03	0.00
	Total Solvent Evaporation	**165.72**	**134.38**	**0.00**	**0.00**	**0.00**	**0.03**	**0.03**	**0.03**	**1.17**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	4.93	2.25	10.28	13.53	0.13	2.23	2.16	2.13	0.02
620	Farming Operations	16.34	1.36	0.00	0.00	0.00	1.33	0.65	0.14	7.70
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	78.78	38.55	3.85	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	141.29	64.60	9.69	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	28.46	16.91	1.69	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.17	2.07	0.30	0.00
660	Fires	0.34	0.29	0.08	3.02	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	0.26	0.22	0.10	3.03	0.03	0.36	0.35	0.30	0.03
690	Cooking	2.92	1.16	0.00	0.00	0.00	12.23	12.23	12.23	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.88
	Total Miscellaneous Processes	**24.79**	**5.28**	**10.46**	**19.58**	**0.16**	**269.29**	**137.97**	**30.75**	**35.63**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	20.72	19.72	8.91	191.61	0.54	3.71	3.68	1.27	7.47
722	Light Duty Trucks - 1 (LDT1)	3.77	3.53	1.90	29.99	0.05	0.32	0.32	0.12	0.61
723	Light Duty Trucks - 2 (LDT2)	10.98	10.28	6.83	118.84	0.35	2.05	2.03	0.71	4.16
724	Medium Duty Trucks (MDV)	8.39	7.86	5.24	77.22	0.24	1.20	1.19	0.42	2.34
725	Light Heavy Duty Trucks - 1 (LHDT1)	0.95	0.88	2.38	6.85	0.03	0.52	0.52	0.20	0.55
726	Light Heavy Duty Trucks - 2 (LHDT2)	0.19	0.18	0.76	1.02	0.01	0.16	0.16	0.07	0.21
727	Medium Heavy Duty Trucks (MHDT)	0.62	0.47	6.04	5.16	0.09	0.49	0.49	0.18	1.57
728	Heavy Heavy Duty Trucks (HHDT)	1.95	0.76	14.54	14.68	0.19	1.83	1.83	0.70	3.38
750	Motorcycles (MCY)	7.27	6.89	0.73	20.80	0.00	0.03	0.03	0.01	0.01
775	Buses	2.76	0.21	1.26	28.61	0.01	0.16	0.16	0.06	0.76
780	Motor Gomes (MH)	0.15	0.15	0.42	0.17	0.01	0.03	0.03	0.02	0.03
	Total On-Road Motor Vehicles	**57.76**	**50.92**	**49.01**	**494.95**	**1.51**	**10.51**	**10.44**	**3.74**	**21.10**
Other Mobile Sources										
810	Aircraft	3.93	3.76	23.59	37.72	1.89	0.81	0.79	0.71	0.00
820	Trains	0.86	0.72	17.54	4.37	0.03	0.38	0.38	0.35	0.01
833	Ocean Going Vessels	11.33	9.70	32.22	4.76	2.31	0.76	0.76	0.70	0.03
835	Commercial Harbor Craft	0.38	0.32	5.73	1.19	0.00	0.24	0.24	0.23	0.00
840	Recreational Boats	15.30	14.29	3.46	67.51	0.01	0.95	0.85	0.64	0.01
850	Off-Road Recreational Vehicles	1.10	1.08	0.04	1.74	0.00	0.01	0.01	0.00	0.00
860	Off-Road Equipment	38.76	35.86	28.81	586.91	0.09	1.62	1.56	1.35	0.06
861	Off-Road Equipment (PERP)	0.57	0.48	3.58	5.30	0.02	0.10	0.10	0.09	0.01
870	Farm Equipment	0.22	0.20	0.44	4.25	0.00	0.03	0.03	0.03	0.00
890	Fuel Storage and Handling	6.27	6.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**78.72**	**72.69**	**115.42**	**713.76**	**4.34**	**4.90**	**4.72**	**4.10**	**0.13**
Natural Sources										
910	Biogenic Sources	226.62	221.66	6.3	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73
930	Wildfires	105.86	87.44	11.53	447.52	3.78	47.38	45.53	38.57	4.48
	Total Natural Sources Category	**332.48**	**309.09**	**17.83**	**447.52**	**3.78**	**47.38**	**45.53**	**38.57**	**6.21**
Total Stationary and Area Sources		1162.72	234.93	43.18	99.84	9.20	299.03	158.04	44.79	60.15
Total On-Road Vehicles		57.76	50.92	49.01	494.95	1.51	10.51	10.44	3.74	21.10
Total Other Mobile		78.72	72.69	115.42	713.76	4.34	4.90	4.72	4.10	0.13
Total Anthropogenic		**1299.20**	**358.54**	**207.61**	**1308.55**	**15.06**	**314.43**	**173.20**	**52.63**	**81.39**
Total Natural Sources		332.48	309.09	17.83	447.52	3.78	47.38	45.53	38.57	6.21
Grand Total		**1631.68**	**667.64**	**225.44**	**1756.08**	**18.84**	**361.81**	**218.73**	**91.19**	**87.60**

TABLE I-12
2031 SUMMER PLANNING EMISSIONS BY SOURCE CATEGORY IN SOUTH COAST AIR BASIN (TONS/DAY)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	2.34	0.27	2.59	3.64	0.21	0.46	0.46	0.46	0.58
20	Cogeneration	0.04	0.01	0.02	0.12	0.00	0.02	0.01	0.01	0.17
30	Oil And Gas Production (Combustion)	1.52	0.18	0.95	0.79	0.01	0.11	0.11	0.11	0.25
40	Petroleum Refining (Combustion)	6.57	1.38	4.19	5.18	3.15	1.81	1.80	1.80	1.54
50	Manufacturing and Industrial	4.16	0.95	8.14	45.30	2.20	1.44	1.36	1.32	2.24
52	Food and Agricultural Processing	0.10	0.05	0.42	0.54	0.01	0.06	0.06	0.06	0.06
60	Service and Commercial	5.12	2.01	9.94	17.83	0.85	1.04	1.04	1.04	2.20
99	Other (Fuel Combustion)	0.84	0.69	2.66	1.27	0.02	0.54	0.51	0.48	0.30
	Total Fuel Combustion	**20.68**	**5.53**	**28.91**	**74.67**	**6.45**	**5.49**	**5.36**	**5.28**	**7.36**
Waste Disposal										
110	Sewage Treatment	0.42	0.30	0.00	0.01	0.00	0.02	0.00	0.00	0.22
120	Landfills	679.73	9.43	0.41	0.42	0.40	0.23	0.23	0.22	4.29
130	Incineration	0.23	0.04	1.23	0.29	0.08	0.13	0.06	0.05	0.24
140	Soil Remediation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	100.24	8.06	0.01	0.01	0.00	0.00	0.00	0.00	2.25
	Total Waste Disposal	**780.62**	**17.83**	**1.66**	**0.72**	**0.48**	**0.38**	**0.30**	**0.28**	**7.00**
Cleaning and Surface Coatings										
210	Laundering	3.73	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	70.48	13.74	0.00	0.00	0.00	0.03	0.03	0.03	0.01
230	Coatings and Related Processes	21.15	20.69	0.00	0.01	0.00	1.81	1.74	1.67	0.14
240	Printing	0.88	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	5.31	4.69	0.00	0.00	0.00	0.04	0.04	0.04	0.00
299	Other (Cleaning and Surface Coatings)	0.67	0.66	0.04	0.11	0.01	0.01	0.01	0.01	0.00
	Total Cleaning and Surface Coatings	**102.21**	**40.84**	**0.04**	**0.12**	**0.01**	**1.89**	**1.81**	**1.75**	**0.20**
Petroleum Production and Marketing										
310	Oil and Gas Production	8.56	3.92	0.01	0.03	0.10	0.04	0.03	0.02	0.00
320	Petroleum Refining	6.37	4.44	0.58	2.40	1.43	1.87	1.25	0.89	0.07
330	Petroleum Marketing	48.73	11.42	0.02	0.18	0.00	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.05	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	Total Petroleum Production and Marketing	**63.70**	**19.82**	**0.62**	**2.62**	**1.53**	**1.92**	**1.28**	**0.91**	**0.07**
Industrial Processes										
410	Chemical	4.87	4.69	0.07	0.12	0.09	0.54	0.47	0.44	0.01
420	Food and Agriculture	0.60	0.58	0.03	0.01	0.01	0.32	0.15	0.06	0.00
430	Mineral Processes	0.50	0.45	0.48	0.39	0.22	9.73	4.03	1.18	0.07
440	Metal Processes	0.14	0.12	0.33	0.33	0.25	0.48	0.38	0.29	0.00
450	Wood and Paper	0.25	0.25	0.00	0.00	0.00	7.71	5.40	3.24	0.01
460	Glass and related Products	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	Electronics	0.02	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00
499	Other (Industrial Processes)	5.92	5.29	0.03	0.01	0.00	1.22	0.84	0.54	8.59
	Total Industrial Processes	**12.30**	**11.41**	**0.95**	**0.86**	**0.57**	**20.01**	**11.27**	**5.76**	**8.68**
Solvent Evaporation										
510	Consumer Products	155.63	123.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	11.96	11.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.17	1.17	0.00	0.00	0.00	0.00	0.00	0.00	1.16
540	Asphalt Paving/Roofing	1.46	1.35	0.00	0.00	0.00	0.03	0.03	0.03	0.00
	Total Solvent Evaporation	**170.21**	**138.14**	**0.00**	**0.00**	**0.00**	**0.03**	**0.03**	**0.03**	**1.16**

(Continued)

MSC	DESC	TOG	VOC	NOX	CO	SOX	PM	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	4.90	2.24	9.96	13.43	0.13	2.21	2.14	2.11	0.02
620	Farming Operations	16.17	1.34	0.00	0.00	0.00	1.32	0.65	0.14	7.66
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	79.86	39.07	3.90	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	141.21	64.56	9.69	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	28.46	16.91	1.69	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.11	2.05	0.29	0.00
660	Fires	0.34	0.29	0.08	3.02	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	0.26	0.22	0.10	3.03	0.03	0.36	0.35	0.30	0.03
690	Cooking	2.95	1.17	0.00	0.00	0.00	12.37	12.37	12.37	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.18
	Total Miscellaneous Processes	**24.62**	**5.26**	**10.14**	**19.48**	**0.16**	**270.34**	**138.54**	**30.91**	**35.89**
On-Road Motor Vehicles										
710	Light Duty Passenger (LDA)	18.98	18.11	8.13	176.70	0.51	3.63	3.61	1.22	7.54
722	Light Duty Trucks - 1 (LDT1)	3.19	3.00	1.49	24.97	0.05	0.31	0.30	0.11	0.60
723	Light Duty Trucks - 2 (LDT2)	10.42	9.78	6.33	114.94	0.34	2.08	2.06	0.71	4.31
724	Medium Duty Trucks (MDV)	7.63	7.17	4.57	72.33	0.24	1.21	1.20	0.41	2.41
725	Light Heavy Duty Trucks - 1 (LHDT1)	0.78	0.73	1.91	5.98	0.03	0.50	0.50	0.19	0.53
726	Light Heavy Duty Trucks - 2 (LHDT2)	0.17	0.16	0.64	0.93	0.01	0.16	0.16	0.06	0.20
727	Medium Heavy Duty Trucks (MHDT)	0.56	0.42	5.04	4.57	0.08	0.48	0.48	0.18	1.52
728	Heavy Heavy Duty Trucks (HHDT)	1.86	0.76	13.21	14.40	0.19	1.89	1.89	0.72	3.43
750	Motorcycles (MCY)	7.27	6.88	0.72	20.58	0.00	0.03	0.03	0.01	0.01
775	Buses	2.42	0.19	0.95	22.69	0.01	0.15	0.15	0.05	0.60
780	Motor Gomes (MH)	0.12	0.12	0.39	0.12	0.01	0.03	0.03	0.02	0.04
	Total On-Road Motor Vehicles	**53.39**	**47.31**	**43.38**	**458.21**	**1.47**	**10.46**	**10.40**	**3.68**	**21.19**
Other Mobile Sources										
810	Aircraft	4.06	3.90	25.51	38.86	2.01	0.83	0.81	0.72	0.00
820	Trains	0.85	0.72	17.78	4.54	0.03	0.38	0.38	0.35	0.01
833	Ocean Going Vessels	11.41	9.76	32.84	4.90	2.37	0.78	0.78	0.72	0.03
835	Commercial Harbor Craft	0.37	0.31	5.67	1.17	0.00	0.24	0.24	0.23	0.00
840	Recreational Boats	14.19	13.26	3.43	68.20	0.01	0.88	0.80	0.60	0.01
850	Off-Road Recreational Vehicles	0.99	0.98	0.04	1.78	0.00	0.01	0.01	0.00	0.00
860	Off-Road Equipment	33.42	30.82	26.33	510.68	0.09	1.50	1.45	1.25	0.07
861	Off-Road Equipment (PERP)	0.59	0.49	3.51	5.52	0.02	0.09	0.09	0.08	0.02
870	Farm Equipment	0.19	0.17	0.39	3.67	0.00	0.03	0.03	0.03	0.00
890	Fuel Storage and Handling	6.12	6.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Other Mobile Sources	**72.20**	**66.53**	**115.51**	**639.31**	**4.52**	**4.74**	**4.57**	**3.97**	**0.14**
Natural Sources										
910	Biogenic Sources	226.62	221.66	6.3	0.00	0.00	0.00	0.00	0.00	0.00
920	Geogenic Sources	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73
930	Wildfires	105.86	87.44	11.53	447.52	3.78	47.38	45.53	38.57	4.48
	Total Natural Sources Category	**332.48**	**309.09**	**17.83**	**447.52**	**3.78**	**47.38**	**45.53**	**38.57**	**6.21**
Total Stationary and Area Sources		1174.36	238.83	42.32	98.47	9.21	300.07	158.59	44.92	60.38
Total On-Road Vehicles		53.39	47.31	43.38	458.21	1.47	10.46	10.40	3.68	21.19
Total Other Mobile		72.20	66.53	115.51	639.31	4.52	4.74	4.57	3.97	0.14
Total Anthropogenic		**1299.94**	**352.67**	**201.20**	**1195.99**	**15.19**	**315.26**	**173.56**	**52.57**	**81.71**
Total Natural Sources		332.48	309.09	17.83	447.52	3.78	47.38	45.53	38.57	6.21
Grand Total		**1632.42**	**661.77**	**219.03**	**1643.51**	**18.98**	**362.64**	**219.09**	**91.14**	**87.92**

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

APPENDIX II: SCAG'S TRANSPORTATION CONTROL MEASURE REASONABLY AVAILABLE CONTROL MEASURES ANALYSIS

Table of Contents

Background

The Coachella Valley Planning Area is defined as the desert portion of Riverside County in the Salton Sea Air Basin (SSAB) and is part of the South Coast Air Quality Management District (South Coast AQMD) jurisdiction. The Coachella Valley is the most populated area in this desert region, which encompasses several communities, including Palm Springs, Desert Hot Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, Indio, Coachella, Thermal, and Mecca.

Ozone pollution has improved in Coachella Valley over the last several decades. Due to South Coast AQMD's stationary and mobile source emission reduction programs both in the South Coast Air Basin and in Coachella Valley, ground level ozone in the Coachella Valley has continued to decrease. However, the Coachella Valley still experiences high levels of ozone and fails to meet either the 2008 (75 ppb) or the 2015 (70 ppb) 8-hour federal and State ozone standards.[1] Most of the emissions forming ozone in the Coachella Valley comes from the South Coast Air Basin. Figure VI-A-1 illustrates the processes influencing ozone concentrations in the Coachella Valley. NOx is generated from combustion processes whereas VOCs are emitted from a wide variety of sources such as consumer products, mobile sources, and vegetation. NOx emissions from passenger cars account for about 6% of the Coachella Valley's total NOx emissions in 2031 business-as-usual condition (baseline). Wildfires generate both NOx and VOCs. However, the chemical reactions that form ozone are highly complex and depend not only on NOx and VOC levels, but also on the ratio of VOC to NOx concentrations, temperature, the amount of sunlight, and other meteorological conditions.

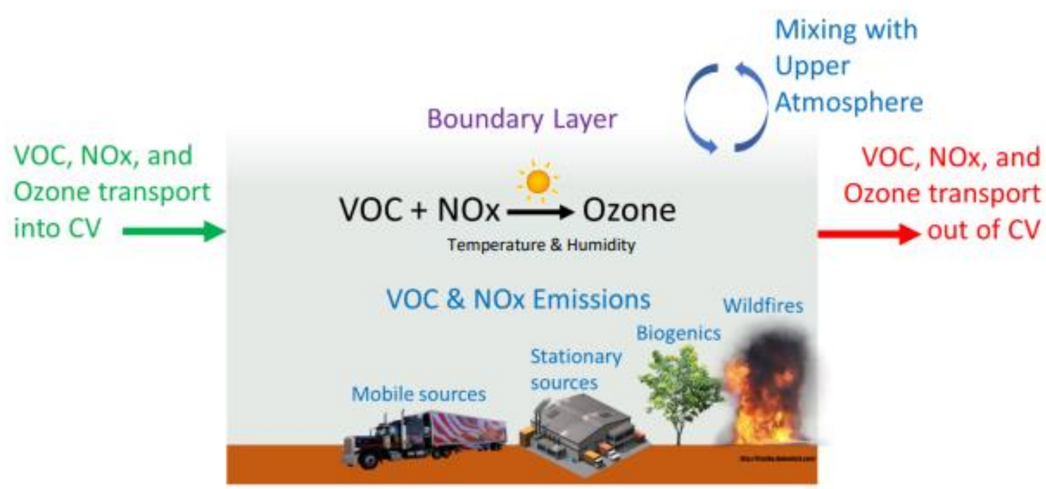


FIGURE II-1
SCHEMATIC OF PROCESSES INFLUENCING OZONE CONCENTRATIONS IN THE COACHELLA VALLEY

[1] The Coachella Valley officially attained the revoked 1-hour ozone NAAQS (120 ppb) in 2015.

Ozone is formed photochemically from NOx and VOCs and transported from the Basin to the Coachella Valley. The Basin's prevailing sea breeze causes polluted air to be transported inland. As the air is being transported inland, ozone is formed, with high concentrations occurring in the inland valleys of the Basin, extending from eastern San Fernando Valley through the San Gabriel Valley into the Riverside-San Bernardino area and the adjacent mountains. Coachella Valley's ozone depends on the ozone levels in the Basin and local emissions have limited impact on the Coachella Valley's ozone levels. The photochemical modeling system used in the attainment demonstration indicates that even if all man-made emissions from the Coachella Valley were removed, Coachella Valley is not going to attain the ozone standard without emission reductions placed in the South Coast Air Basin.

Transportation Control Measures (TCMs)

Transportation Control Measures (TCMs) are strategies that reduce motor vehicle emissions by reducing vehicle trips, vehicle use, vehicle miles traveled (VMT), vehicle idling, and traffic congestion. TCMs are either one of the types listed in CAA section 108, or any other measures for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Pursuant to U.S. EPA's Transportation Conformity Regulations, vehicle technology-based, fuel-based, and maintenance-based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs.

In the Coachella Valley, the following three categories of TCM projects and programs are developed by the Riverside County Transportation Commission (RCTC) and included in SCAG's 2020 Connect SoCal and 2023 Federal Improvement Program (FTIP):

1. Transit and non-motorized modes;
2. High Occupancy Vehicle (HOV) Lanes their pricing alternatives; and
3. Information-based Transportation Strategies.

TCM Reasonably Available Control Measure Analysis

The federal CAA requires a Reasonably Available Control Measure (RACM) analysis for TCMs during the AQMP development and must be included as part of the overall control strategy in the ozone SIP to ensure that all potential control measures are evaluated for implementation and that justification is provided for those measures that are not implemented. For TCMs to be RACM, TCMs must be both technologically and economically feasible and must advance the nonattainment area's projected attainment date of the NAAQS by at least one year.

Through an extensive project development and selection process, RCTC is the agency charged with recommending transportation projects including TCM projects within the Riverside County including the Coachella Valley for funding under SCAG's long-range Regional Transportation Plan/Sustainable Communities Strategy

(RTP/SCS). The RTP/SCS is updated every four years, and 2020 Connect SoCal is the latest federally approved RTP/SCS.

In addition, the TCM projects in the Coachella Valley are programmed and updated through and as part of SCAG's short-term FTIP development process. The FTIP is updated every two years, and the 2023 FTIP is the latest federally approved FTIP.

Therefore, the TCM RACM process relies predominantly on the respective continuous regional transportation planning and programming processes of updating and adding TCMs in the Coachella Valley by RCTC and SCAG.

For illustrative purpose, Attachment VI-A-4A is a list of completed 2023 FTIP TCM projects in the Coachella Valley and Attachment VI-A-4B is a list of TCM projects currently being implemented in the Coachella Valley.

Coachella Valley is under the South Coast AQMD's jurisdiction and thus subject to the AQMD's regulations and control measures. Coachella Valley is also within the jurisdiction of RCTC and SCAG and, as a result, TCM projects are being proposed, implemented, and updated through and as part of the continuous regional transportation planning and programming processes. Therefore, in terms of assembly and review of candidate TCM, both the process and the conclusion of determining the TCM reasonably available control measures and the reasoned justification as documented in the 2022 AQMP Appendix IV-C[2] for the South Coast Air Basin generally apply to the Coachella Valley.

CAA Section 172(c)(1) requires SIPs to provide for the implementation of all TCM RACM as "expeditiously as practicable." U.S. EPA and related court decisions have maintained that TCMs considered RACM must be measures that 1) advance the attainment date, typically by at least one year and 2) are technologically and economically feasible. Measures must pass both the advance attainment and technical/economic feasibility tests to be deemed RACM.

Based on the comprehensive review of TCMs in other Serious or worse ozone nonattainment areas under the 2008 8-hour ozone standard as documented in the 2022 AQMP Appendix IV-C for the South Coast Air Basin and the updated review of TCMs in the other Serious or worse ozone nonattainment areas under the 2015 8-hour ozone standard and developed since the 2022 AQMP listed in Table 1 on the next page, it is determined that the TCMs being implemented in the Coachella Valley are inclusive of all TCM RACMs. None of the candidate measures reviewed that have not been implemented meet the criteria for RACM implementation.

SCAG and RCTC have established a comprehensive, formal process for identifying, evaluating, and selecting TCMs. The regular RTP, FTIP, and AQMP/SIP public update processes ensure that TCM identification and implementation is a routine consideration that helps SCAG and the South Coast AQMD in the effort to demonstrate attainment of applicable NAAQS in Coachella Valley.

[2] South Coast AQMD, 2022 Air Quality Management Plan. https://www.aqmd.gov/home/air-quality/air-quality-management-plans/air-quality-mgt-plan

TABLE II-1

SERIOUS OR WORSE OZONE NONATTAINMENT AREA SIPS UNDER 2015 8-HOUR OZONE STANDARD AND DEVELOPED SINCE SOUTH COAST AQMD'S 2022 AQMP

Nonattainment Area	Designation	Applicable SIP
San Joaquin Valley, California	Extreme	2022 Plan for the 2015 Ozone Standard[3]
Western Mojave Desert	Severe 15	MDAQMD Federal 70 PPB Ozone Attainment Plan[4] AVAQMD Federal 70 PPB Ozone Attainment Plan[5]
Eastern Kern	Serious	2023 Ozone Attainment Plan for the 2008 & 2015 8-hour Ozone National Ambient Air Quality Standards (NAAQS)[6]
Western Nevada County	Serious	Ozone Attainment Plan for Western Nevada County – State Implementation Plan for the 2015 70 ppb Ozone Standard[7]
Sacramento Region	Serious	Sacramento Region 2015 NAAQS 8-hour Ozone Attainment & Reasonable Further Progress Plan[8]
Ventura County	Serious	2022 Ventura County Air Quality Management Plan[9]

[3] San Joaquin Valley APCD, 2022 Ozone Plan for the San Joaquin Valley. https://ww2.valleyair.org/rules-and-planning/air-quality-plans/ozone-plans/2022-ozone-plan-for-the-san-joaquin-valley/

[4] Mojave Desert AQMD, Federal 70 ppb Ozone Attainment Plan (Western Mojave Desert Nonattainment Area), January 2023. https://www.mdaqmd.ca.gov/home/showpublisheddocument/9589/638084392297570000

[5] Antelope Valley AQMD, Federal 70 ppb Ozone Attainment Plan (Western Mojave Desert Nonattainment Area), January 2023. https://avaqmd.ca.gov/files/020b4aec1/70+ppb+Ozone+Plan+Final+Draft+AV+01.04.2023.pdf

[6] Eastern Kern APCD, 2023 Ozone Attainment Plan for the 2008 & 2015, 8-Hour Ozone National Ambient Air Quality Standards (NAAQS). http://www.kernair.org/Documents/Rules/2023%20Attainment%20Plan/EKAPCD_2023_Ozone_Plan_Draft_3-31-23.pdf

[7] Northern Sierra AQMD, 2023 Ozone Attainment Plan for Western Nevada County. https://ww2.arb.ca.gov/resources/documents/2023-ozone-attainment-plan-western-nevada-county

[8] Sacramento Metropolitan AQMD, Sacramento Regional 2015 NAAQS 8-Hour Ozone Attainment & Reasonable Further Progress Plan, October 2023. https://www.airquality.org/ProgramCoordination/Documents/Sacramento%20Regional%202015%20NAAQS%208%20Hour%20Ozone%20Attainment%20and%20Reasonable%20Further%20Progress%20Plan.pdf

[9] Ventura County APCD, 2022 Ventura County Air Quality Management Plan. http://www.vcapcd.org/pubs/Planning/AQMP/2022/Final-2022-AQMP-without-appendices.pdf

TABLE II-2

LIST OF COMPLETED 2023 FTIP TCM PROJECTS IN COACHELLA VALLEY

LEAD AGENCY	TIP ID	PROJECT DESCRIPTION	COMPLETION DATE
COACHELLA	RIV140816	IN EASTERN RIVERSIDE COUNTY FOR THE CITY OF COACHELLA - INSTALL 8.2 MILES OF CLASS II BIKE LANES ON CITY ARTERIALS TO FACILITATE RESIDENTIAL TO COMMERCIAL CONNECTIVITY ($52.76 OF TC TO MATCH CMAQ IN FY 16/17)(PM 2.5 BENEFITS .816 KG/DAY)	3/31/2019
COACHELLA	RIV151217	IN EASTERN RIVERSIDE COUNTY IN THE CITY OF COACHELLA - WIDENING OF AVENUE 48 FROM 2 TO 6 LANES (1 LN EA DIR TO 3 LNS EA DIR) FROM JACKSON RD TO VAN BUREN ST INCLUDING TRAFFIC SIGNAL MODIFICATIONS, STREET LIGHTING, DRAINAGE IMPROVEMENTS INCLUDING SIDEWALK AND BICYCLE LANES AND LANDSCAPING	12/31/2019
COACHELLA	RIV140842	IN EASTERN RIVERSIDE COUNTY FOR THE CITY OF COACHELLA - ATP IMPOVEMENTS CYCLE 1: ADD 7 MI. OF CLASS II BIKE LANES & CLASS III BIKEWAYS W/SHARROWS, APSHALT BIKE PATH, PED XING, & CONSTRUCTION OF 2 MI. OF SIDEWALKS AT DIFFERENT LOCATIONS & LANDSCAPED MEDIANS ALONG AVE 50 & AVE 52 FROM WESTERN CITY LIMITS TO CV LINK. TC USED TO MATCH ATP	9/30/2019
DESERT HOT SPRINGS	RIV181004	IN COACHELLA VALLEY IN THE CITY OF DESERT HOT SPRINGS: PALM DR BIKE AND PED. IMPROVEMENTS: CONSTRUCT 2-MI CLASS II BIKE LANES & .65-MI SIDEWALK GAP CLOSURES ALONG PALM DR B/W CAMINO AVENTURA TO TWO BUNCH PALMS TR; INCL BUFFERED BIKE LANE STRIPING, NARROWED TRAFFIC LANES, ADA RAMPS, BUS WARNING SIGNS AND LIGHTS, REDUCED SPEED LIMIT, STREET LIGHTS, & RAISED MEDIAN (ATP-3 AUGMENTATION-STATEWIDE)	6/29/2020
INDIO	RIV140848	IN EASTERN RIVERSIDE COUNTY IN THE CITY OF INDIO: ANDREW JACKSON ELEM PED IMPROVEMENTS: ON TEN STREETS WITHIN THE ANDREW JACKSON ELEM SCHOOL COMMUNITY, INSTALL SIDEWALKS, UPGRADE PED ACCESS RAMPS AND DRIVEWAY APPROACHES, THREE ENHANCED CROSSWALKS, AND TWO SPEED FEEDBACK SIGNS. TC USED TO MATCH ATP	12/31/2019
PALM SPRINGS	RIV140818	IN CITY OF PALM SPRINGS-6.25 MI. CLASS II & III BIKE LNS ON:SAN RAFAEL DR FR PALM CYN TO SUNRISE WY;SAN RAFAEL DR FR VIRGINIA RD TO INDIAN CYN;FARRELL DR FR RAMON RD TO TAHQUITZ CYN;MESQUITE AV FR SUNRISE WY TO COMPADRE RD;LA VERNE WY FR S. PALM CYN TO E. PALM CYN;CAMINO REAL FR E. PALM CYN TO LA VERNE WY;CROSSLEY RD FR RAMON TO 341 AV;AVE CABALERROS FR ALEJOS RD TO TAHQUITZ CYN(PM2.5=.018 KG/DAY)	3/30/2019
SUNLINE TRANSIT AGENCY	RIV140822	IN COACHELLA VALLEY FOR SUNLINE TRANSIT AGENCY: PURCHASE OF TWO NEW BUSES AND OPERATIONS OF NEW BUS SERVICE THAT WILL DIRECTLY LINK DESERT HOT SPRINGS AND PALM DESERT. SERVICE TO OPERATE ON WEEKDAYS AND WILL INCLUDE FOUR TRIPS IN THE MORNING (HOURLY) FROM DESERT HOT SPRINGS TO PALM DESERT AND FOUR TRIPS IN THE AFTERNOON (HOURLY) FROM PALM DESERT TO DESERT HOT SPRINGS.	6/30/2017
SUNLINE TRANSIT AGENCY	RIV150615	IN THE COACHELLA VALLEY FOR SUNLINE TRANSIT: TRANSIT ENHANCEMENTS INCLUDING BUT NOT LIMITED TO THE PURCHASE AND INSTALLATION OF 25 SHELTERS, INCLUDING CONCRETE WORK AND OTHER IMPROVEMENTS FOR ADA COMPLIANCE AND IMPROVED SAFETY. (FY15 5307) (UZA: INCCPS)	11/2/2017

TABLE II-2

LIST OF COMPLETED 2023 FTIP TCM PROJECTS IN COACHELLA VALLEY

LEAD AGENCY	TIP ID	PROJECT DESCRIPTION	COMPLETION DATE
DESERT HOT SPRINGS	RIV210629	IN COACHELLA VALLEY IN THE CITY OF DESERT HOT SPRINGS - PALM DRIVE IMPROVEMENTS - PIERSON BLVD. TO MISSION LAKES BLVD. CONSTRUCTION OF 1 MILE OF BUFFERED CLASS II BIKE LANES, 2,700 FEET OF NEW SIDEWALK, 47 ADA CURB RAMPS, 10 HIGH-VISIBILITY CROSSWALKS, STREET LIGHTS AND RAPID FLASHING BEACONS.	5/19/2023
INDIO	RIV181008	IN COACHELLA VALLEY IN CITY OF INDIO: HERBERT HOOVER ELEM PED. IMPROVEMENTS: CONSTRUCT 5.5-MI OF SIDEWALK, CROSSWALKS AND ADA IMPROVEMENTS ALONG 14 SEGMENTS BOUNDED BY INDIO BLVD IN THE NE, MONROE ST TO THE WEST, AND REQUA AVE TO THE SOUTH AND DEGLET NOOR ST TO THE EAST TO CLOSE EXISTING SIDEWALK GAPS; INCL EDUCATIONAL OUTREACH TO STUDENTS & FAMILIES. (ATP-3 AUG STATE) TC UTILIZ FOR FY17/18, 19/20, 20/21, 22/23.	6/15/2023

TABLE II-3

LIST OF TCM PROJECTS CURRENTLY BEING IMPLEMENTED IN COACHELLA VALLEY

LEAD AGENCY	TIP ID	PROJECT DESCRIPTION	COMPLETION DATE
CATHEDRAL CITY	RIV210628	IN COACHELLA VALLEY FOR CATHEDRAL CITY - INSTALL BIKE LANES ON E PALM CNYN DR FRM WEST CITY LIMITS TO CATHEDRAL CNYN DR; BIKE LANE AND MULTI-USE PATH ON CATHEDRAL CNYN DR FROM DINAH SHORE DR TO CANYON SHORES DR; BIKE LANE ON DATE PALM DR FROM PEREZ RD TO E PALM CANYON DR; ADDITIONALLY HIGH-VISIBILITY CROSSWALKS, PEDESTRIAN HYBRID BEACON, MID-BLOCK CROSSING, ADA CURB RAMPS, AND BRIDGE WIDENING WILL BE INSTALLED. OVERALL TOTAL OUTPUT: BIKE LNS 18,760 FT; SIDEWALK 4,330 FT; MULTI-USE PATH 3,450 FT.	2/15/2027
COACHELLA	RIV030901A	IN COACHELLA VALLEY IN THE CITY OF COACHELLA: EXTEND AVE 50 FROM FILLMORE STREET TO INTERSTATE 10 INTERCHANGE PROJECT (FTIP ID: RIV030901). EXTEND AVE 50 BY ADDING 6 LANES AND CONSTRUCT BRIDGE OVER AMERICAN CANAL.	6/1/2029
COACHELLA	RIV210635	IN THE COACHELLA VALLEY IN THE CITY OF COACHELLA: WIDEN AVE 50 FROM TYLER STREET TO FILLMORE STREET. WIDEN FROM 2-6 LANES. INCLUDES TRAFFIC SIGNALS AND TURNING LANES AT POLK STREET AND FILLMORE STREET INTERSECTIONS.	12/31/2030
COACHELLA VALLEY ASSOC OF GOVERNMENTS	RIV140820	IN EASTERN RIVERSIDE COUNTY FOR CVAG: REGIONAL SIGNAL SYCHRONIZATION PROGRAM THROUGH THE COACHELLA VALLEY (HIGHWAY 111, WASHINGTON ST, RAMON RD) INCLUDING BUT NOT LIMITED TO SIGNAL UPGRADES, COMMUNICATION SYSTEMS, HARDWARE AND SOFTWARE. (PM 2.5 BENEFITS)	12/31/2024
COACHELLA VALLEY ASSOC OF GOVERNMENTS	RIV131005C	IN EAST RIVERSIDE CO. FOR CVAG: CONSTRUCT SEGMENT 2, 6, AND 7, A 13.72 MILE OF CVLINK PH 1. CVLINK IS A NEW BICYCLE, PED AND LOW SPEED ELECTRICAL VEHICLE PATH ROUGHLY ALONG THE WHITEWATER RIVER.	12/31/2025
COACHELLA VALLEY ASSOC OF GOVERNMENTS	RIV211101	IN EAST RIVERSIDE COUNTY FOR CVAG WITHIN THE CITIES OF INDIO, LA QUINTA, COACHELLA, AND THE COUNTY: CONSTRUCTION OF THE COACHELLA VALLEY ARTS AND MUSIC LINE - NEARLY 9 MILES OF PROTECTED BICYCLE FACILITIES PRIMARILY ALONG AVENUE 48, AND DILLON RD. AND VARIOUS SPUR CONNECTIONS TO SCHOOLS AND OTHER RECREATION FACILITIES WITH A BIKE TO SCHOOL PROGRAM.	4/30/2027
COACHELLA VALLEY ASSOC OF GOVERNMENTS	RIV131005A	IN EAST RIVERSIDE CO. FOR CVAG: CONSTRUCT SEGMENT 1, A 13.47 MILE OF CVLINK PH 1. CVLINK IS A NEW BICYCLE, PED AND LOW SPEED ELECTRICAL VEHICLE PATH ROUGHLY ALONG THE WHITEWATER RIVER. (PPNO 1226). TC FY 19/20 ATP & STIP CON.	12/31/2024
COACHELLA VALLEY ASSOC OF GOVERNMENTS	RIV131005B2	IN EAST RIVERSIDE CO FOR CVAG: CONSTRUCT SEGMENT 4 OF CVLINK PH 1. CVLINK IS A BICYCLE, PED AND LOW SPEED ELECTRICAL VEHICLE PATH ROUGHLY ALONG THE WHITEWATER RIVER.	12/31/2025
COACHELLA VALLEY ASSOC OF GOVERNMENTS	RIV131005	IN EAST RIVERSIDE CO. FOR CVAG: CONSTRUCT IN SEGMENTS PHASE 1 OF CVLINK, A 41.11 MILE MULTI PURPOSE TRAIL CONSISTING OF NEW BICYCLE, PED AND LOW SPEED ELECTRICAL VEHICLE PATH FROM PALM SPRINGS TO COACHELLA (PPNO 1019). SEGMENT 1: RIV131005A. SEGMENTS 3, 4 & 5: RIV131005B. SEGMENTS: 2, 6 & 7: RIV131005C.	12/31/2025

TABLE II-3

LIST OF TCM PROJECTS CURRENTLY BEING IMPLEMENTED IN COACHELLA VALLEY

LEAD AGENCY	TIP ID	PROJECT DESCRIPTION	COMPLETION DATE
COACHELLA VALLEY ASSOC OF GOVERNMENTS	RIV131005B3	IN EAST RIVERSIDE CO FOR CVAG: CONSTRUCT SEGMENT 5 OF CVLINK PH 1. CVLINK IS A BICYCLE, PED AND LOW SPEED ELECTRICAL VEHICLE PATH ROUGHLY ALONG THE WHITEWATER RIVER.	12/31/2025
COACHELLA VALLEY ASSOC OF GOVERNMENTS	RIV131005B1	IN EAST RIVERSIDE CO FOR CVAG: CONSTRUCT SEGMENT 3 OF CVLINK PH 1. CVLINK IS A BICYCLE, PED AND LOW SPEED ELECTRICAL VEHICLE PATH ROUGHLY ALONG THE WHITEWATER RIVER.	12/31/2025
COACHELLA VALLEY ASSOC OF GOVERNMENTS	RIV140820A	IN EASTERN RIVERSIDE COUNTY FOR CVAG: REGIONAL SIGNAL SYNC PH II ON 18 CORRIDORS (MONTEREY, COOK, PALM DR, BOB HOPE, FRED WARING, DINAH SHORE, GENE AUTRY, DATE PALM, INDIO BLVD, JEFFERSON, PALM CANYON, VISTA CHINO, COUNTRY CLUB, MONROE, AVE 48, SUNRISE, INDIAN CYN, JACKSON) TO INCLUDE SIGNAL UPGRADES, COMMUNICATION SYSTEMS, HARDWARE AND SOFTWARE.	12/31/2026
DESERT HOT SPRINGS	RIV200709	IN COACHELLA VALLEY IN THE CITY OF DESERT HOT SPRINGS - HACIENDA AVE. SRTS IMPROVEMENTS: CONSTRUCT NEW SIDEWALKS, BIKE LANES, ADA RAMPS, AND STREET LIGHTS ALONG HACIENDA AVE FROM WEST DRIVE TO FOXDALE AVENUE.	1/30/2026
DESERT HOT SPRINGS	RIV230303	IN THE CITY OF DESERT HOT SPRINGS: ON PALM DRIVE BETWEEN CAMINO AVENTURA AND I-10 CONSTRUCT BUFFERED NEW TRAFFIC SIGNAL, MEDIANS, SIDEWALKS, CROSSWALKS, STREETLIGHTS, ADA CURB RAMPS, CURB AND GUTTERS, CLASS II BIKE LANE, AND FLASHING BEACONS AT BUS STOPS.	2/25/2026
DESERT HOT SPRINGS	RIV230302	IN THE CITY OF DESERT HOT SPRINGS: CONSTRUCTION OF NEW SIDEWALKS, BUFFERED CLASS II BIKE LANES, RAISED CENTER MEDIANS, ADA CURB RAMPS, CROSSWALKS & STREET LIGHTS ALONG HACIENDA AVE FROM TAMAR DR TO LONG CANYON RD.	3/11/2026
INDIO	RIV210623	IN COACHELLA VALLEY IN THE CITY OF INDIO, WIDEN AVENUE 50 FROM MONROE STREET TO JACKSON STREET FROM 3 TO 4 LANES INCLUDING A CENTER MEDIAN/LEFT TURN LANE. THE IMPROVEMENTS INCLUDE INSTALLING A NEW SIDEWALK ALONG THE SOUTHSIDE AND BIKE LANES ALONG THE BOTH SIDES OF AVENUE 50.	12/30/2030
INDIO	RIV210622	IN COACHELLA VALLEY IN THE CITY OF INDIO: WIDEN AVENUE 50 FROM MADISON STREET TO MONROE STREET FROM 2 TO 4 LANES INCLUDING A CENTER MEDIAN/LEFT TURN LANE. THE IMPROVEMENTS INCLUDE INSTALLING A NEW SIDEWALK AND BIKE LANE ALONG AVENUE 50.	12/30/2030
INDIO	RIV210621	IN COACHELLA VALLEY IN THE CITY OF INDIO: WIDEN JACKSON STREET FROM APPROX. 0.5 MILES N/O AVENUE 50 TO APPROX. 0.25 MILES S/O AVENUE 52 FROM 3 TO 4 LANES. IMPROVEMENTS INCLUDE ADDING SIDEWALK ALONG THE EAST SIDE OF JACKSON STREET AND BIKE LANES ALONG BOTH SIDES. NEW TRAFFIC SIGNALS WILL BE INSTALLED AT AVENUE 50, AVENUE 51, AND AVENUE 52.	12/31/2025

TABLE II-3

LIST OF TCM PROJECTS CURRENTLY BEING IMPLEMENTED IN COACHELLA VALLEY

LEAD AGENCY	TIP ID	PROJECT DESCRIPTION	COMPLETION DATE
INDIO	RIV210620	IN COACHELLA VALLEY IN THE CITY OF INDIO: WIDEN THE NORTHSIDE OF AVENUE 50 FROM JEFFERSON TO MADISON STREET FROM 1 TO 2 LANES INCLUDING A CENTER MEDIAN/LEFT TURN LANE. THE IMPROVEMENTS INCLUDE INSTALLING A NEW SIDEWALK AND BIKE LANE ALONG THE NORTHSIDE OF AVENUE 50.	12/30/2030
LA QUINTA	RIV210624	IN COACHELLA VALLEY, IN THE CITY OF LA QUINTA: WIDEN THE SOUTHSIDE OF AVENUE 50 FROM 1 TO 2 LANES BETWEEN VERANO DRIVE TO MADISON STREET, INCLUDING CLASS II BIKE LANES AND SIDEWALK BETWEEN JEFFERSON STREET TO VERANO DRIVE.	12/31/2030
RANCHO MIRAGE	RIV221002	IN THE CITY OF RANCHO MIRAGE - TRAFFIC SIGNAL INTERCONNECT AND CONTROLLER CABINET UPGRADES AT 18 INTERSECTIONS: RAMON RD, DA VALL DR, RATTLER RD, LOS ALAMOS RD, DINAH SHORE DR, MISSION HILLS DR (NORTH), MISSION HILLS DRIVE/LINCOLN PL, WESTIN MISSION HILLS RESORT, BOB HOPE DR, DEAN MARTIN DR, GINGER ROGERS DR, INVERNESS DR/LOS ALAMOS DR, VICTORIA FALLS DR, VERSAILLES DR, GERALD FORD DR, MORNINGSIDE DR/THOMPSON DR, AND FRANK SINATRA DR.	10/1/2028
RIVERSIDE COUNTY	RIV200701	IN EASTERN RIVERSIDE CO. FOR THE UNINCORPORATED COMMUNITIES OF THERMAL AND OASIS: INSTALLATION OF APPROX. 62,304 LF OF MULTI-MODAL TRAILS (10 FOOT WIDE PATH), 12,144 LF OF PEDESTRIAN INFRASTRUCTURE (5 FOOT CONCRETE SIDEWALK WITH CURB AND GUTTER) AND 10 BENCHES. TC TO MATCH ATP. (SB1 FOR ENG AND FEDERAL FUNDS FOR CON).	12/30/2024
SUNLINE TRANSIT AGENCY	RIV190606	IN THE COACHELLA VALLEY FOR SUNLINE TRANSIT AGENCY - NEW OPERATING SERVICE FOR QUICK BUS (ROUTE 1) LIMITED STOP SERVICE THAT WILL OPERATE EVERY 60-MIN IN TWO MAJOR SEGMENTS: B/W PALM CANYON AT STEVENS IN PALM SPRINGS AND THE SUNLINE TRANSIT HUB AT TOWN CTR IN PALM DESERT; AND B/W THE TOWN CTR IN PALM DESERT & THE TRANSIT CTR AT 5TH & VINE STREETS IN COACHELLA.	12/31/2025
SUNLINE TRANSIT AGENCY	RIV190607	IN THE COACHELLA VALLEY FOR SUNLINE TRANSIT AGENCY - NEW 'SUNRIDE' RIDESHARE PROGRAM TO INCLUDE PURCHASE OF 4 VANS AND OPERATING ASSISTANCE TO PROVIDE FIRST AND LAST MILE CONNECTIONS.	12/31/2023

Draft Final Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

APPENDIX III: MODEL PERFORMANCE EVALUATION

Table of Contents

Introduction

This appendix provides information on the performance of the meteorological and photochemical transport models used in the Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard (Plan). Modeling performances are provided for both the Coachella Vally and its upwind South Coast Air Basin. The first section discusses the performance of the meteorological model in the Coachella Valley. Meteorological model evaluation for stations in the South Coast Air Basin was presented in Appendix II of the 2012 Annual PM2.5 Standard (PM2.5 Plan).[1] After this section, the air quality model performance are presented as follows: (1) model performance statistics for 8-hour and hourly ozone; (2) CMAQ model performance timeseries for daily max 8-hour ozone, and daily NOx and NOy to show a comparison between modeled values and observations; (3) CMAQ model performance of diurnal variation of ozone, NOx and NOy compared to observations; and (4) Comparison of modeled selected volatile organic compounds (VOC) with observations.

Meteorological Model Performance Statistics in the Coachella Valley

This section analyzes the performance of the meteorological model in the Coachella Valley. The Weather Research and Forecasting (WRF) model was used to generate meteorological fields that are used for air quality modeling. The model configuration, input database, and initial and boundary values used in this Plan are the same as those in the PM2.5 Plan.[2] Model evaluation for stations in the South Coast Air Basin is presented in Appendix II of the PM2.5 Plan. This section includes modeling performance for the Coachella Valley, which was not included in the PM2.5 Plan.

[1] https://www.aqmd.gov/home/air-quality/air-quality-management-plans/other-state-implementation-plan-(sip)-revisions/2012-annual-pm2-5-plan

[2] https://www.aqmd.gov/home/air-quality/air-quality-management-plans/other-state-implementation-plan-(sip)-revisions/2012-annual-pm2-5-plan

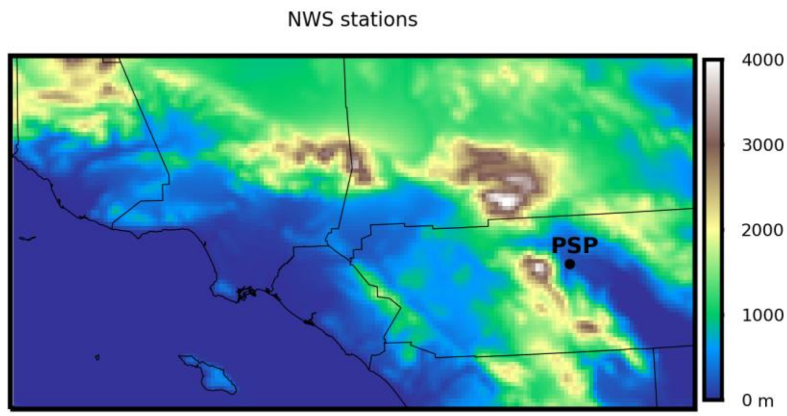


FIGURE III-1

LOCATION OF PALM SPRINGS INTERNATIONAL AIRPORT (PSP) WEATHER STATION DISPLAYED OVER A TOPOGRAPHIC MAP

The performance evaluation of the WRF model simulations is based on a comparison with meteorological data from the Palm Springs International Airport (PSP). The analysis focuses on hourly temperature, water mixing ratio, and wind speed for the entire ozone season, from May 1st through September 30th 2018, with results presented in Table III-1.

Overall, WRF simulations for the summer ozone season provided representative meteorological fields that accurately characterized the observed conditions. The model's performance was evaluated on a monthly basis at the PSP airport station from May to September 2018. For simplicity, detailed results for July are shown in Figure III-2.

WRF simulations successfully represented diurnal variations in temperature (T), humidity (Q), and surface wind speed (WS). The model accurately captured both daily maximum and minimum temperatures for most days in July, although there was an underestimation of temperatures around July 6-8, 2018. Since temperature is a key factor for atmospheric photochemical reactions, with high temperatures favoring ozone formation, this is a critical aspect of the model's performance. Compared to observations, the model underestimated daily maximum wind speeds at the PSP station in July 2018. However, the WRF simulations yielded water vapor mixing ratios that were comparable to observed values for the same period.

TABLE III-1

WRF PERFORMANCE STATISTICS AT PALM SPRINGS INTERNATIONAL AIRPORT

	Statistic	Value
T	T Mean Observation (K)	306.1
	T Mean Simulation (K)	303.9
	T Bias (K)	-2.2
	T Gross Error (K)	2.6
	T RMSE (K)	3.2
Q	Q Mean Observation (kg/kg)	8.1
	Q Mean Simulation (kg/kg)	7.7
	Q Bias (kg/kg)	-0.4
	Q Gross Error (kg/kg)	1.8
	Q RMSE (kg/kg)	2.4
WS	WS Mean Observation (m/s)	3.5
	WS Mean Simulation (m/s)	1.5
	WS Bias (m/s)	-2
	WS Gross Error (m/s)	2.5
	WS RMSE (m/s)	3.3

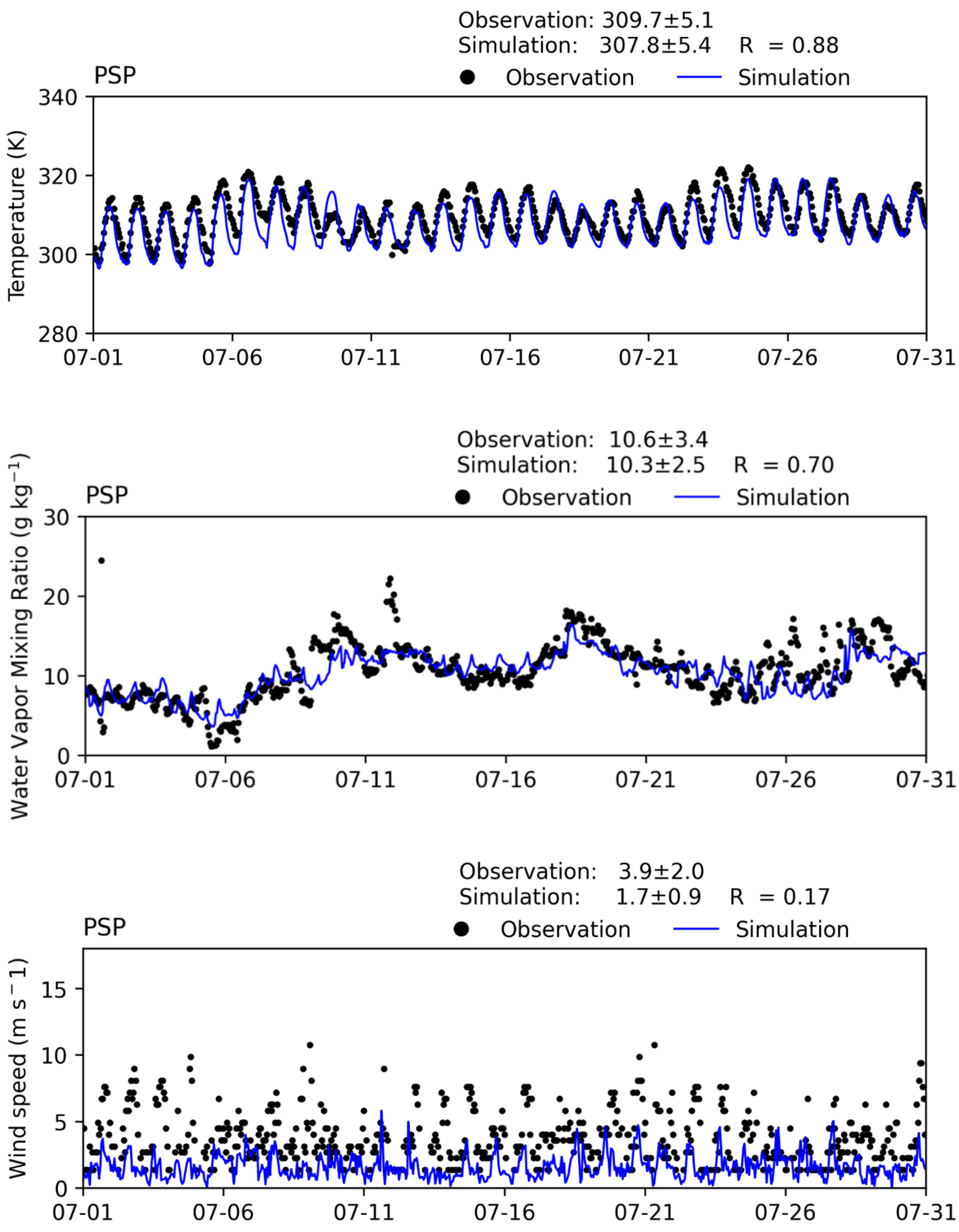


FIGURE III-2

TIME SERIES OF HOURLY TEMPERATURE, WIND SPEED AND WATER VAPOR MIXING RATIO FROM MEASUREMENTS AND WRF SIMULATIONS AT PALM SPRINGS INTERNATIONAL AIRPORT FOR JULY 2018

Comparisons of simulated and measured monthly average diurnal temperature and water vapor mixing ratio variations at the PSP station are shown in Figure III-3. The diurnal patterns were well reproduced in the WRF simulation. For example, daily temperatures in both observed and simulated diurnal profiles show the daily minimum (~302 K) occurs around 5:00 local time during summer, and the peak values (~313 K) are around 14:00 – 16:00 local time. Water vapor mixing ratios in July did not exhibit distinct diurnal variation in either observed or simulated data.

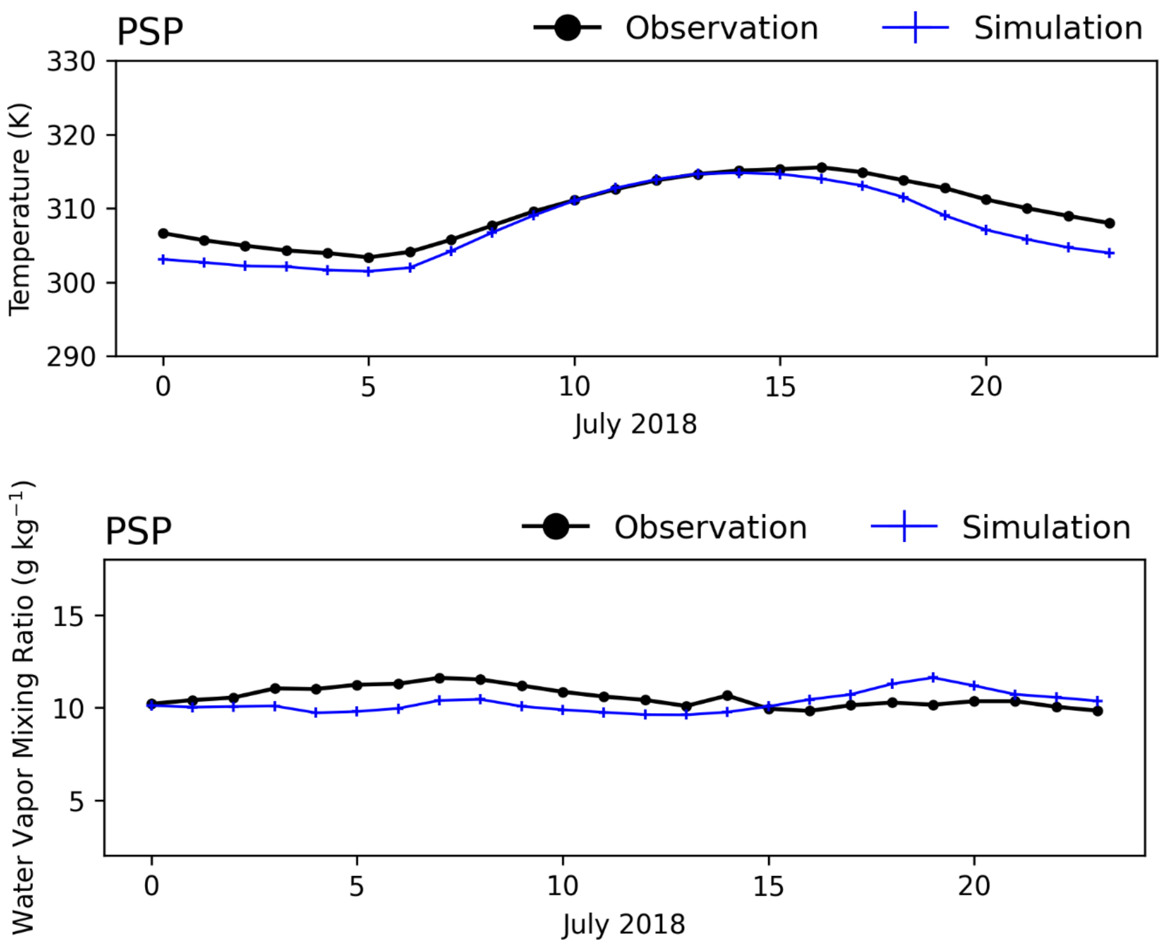


FIGURE III-3

MEASURED VS. SIMULATED COMPOSITE DIURNAL TEMPERATURE AND WATER VAPOR MIXING RATIO VARIATION AT PALM SPRINGS INTERNATIONAL AIRPORT (PSP) FOR JULY 2018

The measured and WRF simulated wind rose at PSP station for the ozone season period are shown in Figure III-4. The observations show north-westerly wind as the dominant wind direction, while the WRF simulations show weaker wind speed with prevailing wind direction come from north-westerly and westerly. The WRF model misses the prevailing direction of the wind, which could be attributed to the characteristics of the terrain near Palm Springs. The narrow Banning pass that is located upwind from

Palm Springs is likely characterized poorly in the modeling framework, which uses a model grid resolution of 4 km by 4 km that is too coarse to resolve the sharp gradients along that pass. Despite the limitation of the model to simulate the wind direction, air quality modeling driven by the meteorological model yields modeled ozone concentrations in good agreement with observations.

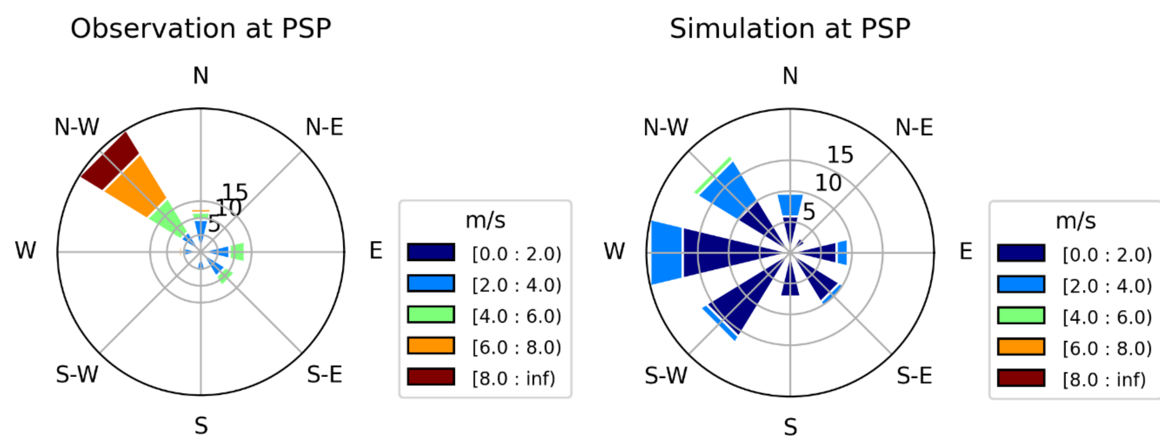


FIGURE III-4

WIND ROSE FROM MEASUREMENT AND WRF SIMULATION AT PALM SPRINGS INTERNATIONAL AIRPORT IN MAY-SEPTEMBER OF 2018

Air Quality Model Performance Statistics

The ozone levels in the Coachella Valley are closely tied with those of the South Coast Air Basin. Therefore, modeling performance evaluation was conducted for both the South Coast Air Basin and the Coachella Valley. Unlike meteorological modeling analysis, ozone modeling performance for the South Coast Air Basin using the modeling platform employed in this Plan was not presented in the PM2.5 Plan or any other previous plans. Therefore, model performance evaluation for ozone and some of its precursors in the South Coast Air Basin is included here. The Community Multiscale Air Quality (CMAQ) model, version 5.3.1, was employed to simulate the ozone season that spanned from May 1 through September 30, 2018. Model performance was evaluated against the measured ozone concentrations, NOx concentrations and NOy concentrations. The observations are from the EPA's Air Quality System (AQS) database. Statistics for monitoring sites are grouped into performance evaluation zones, shown in Figure III-5. The ozone monitoring stations in the South Coast Air Basin and the Coachella Valley are listed in Table III-2, along with their corresponding evaluation zone. Statistics for the daily maximum 8-hour average (MDA8) for each evaluation zone are presented in Table III-3 through Table III-14. For each evaluation zone, statistics are presented for pairs with regional MDA8 above 60 ppb, and for all MDA8 values. In general, the model prediction shows good agreement with measurements, with a tendency to underestimate the peak ozone days during the May to September ozone season. Because of the tendency of underestimate peak values, the model bias for pairs above 60 ppb tends to be lower (or more negative), and the model error tends to be slightly larger than the model bias calculated using all the values. Overall, the model performance shown here is comparable to the performance shown in the 2022 AQMP.[3] Table III-15 through Table III-26 presents similar statistics for hourly ozone.

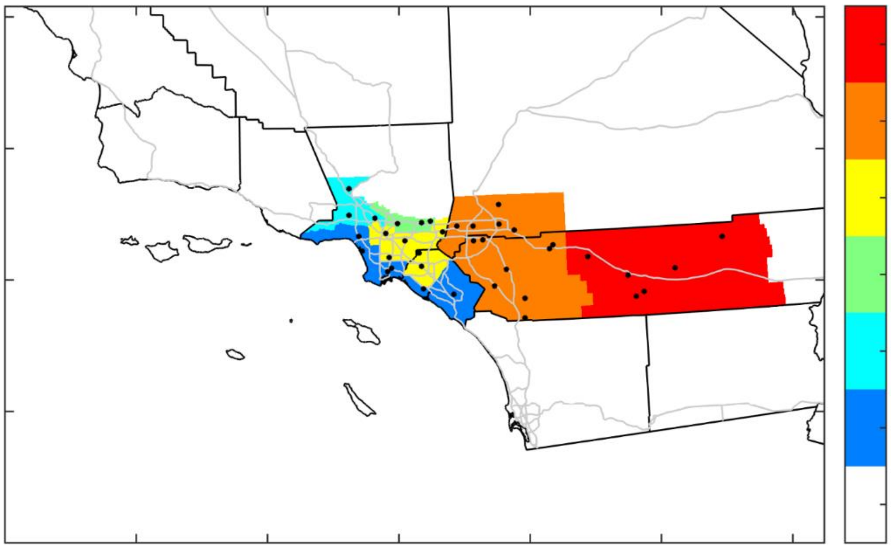


FIGURE III-5
PERFORMANCE EVALUATION ZONES

[3] 2022 Air Quality Management Plan: https://www.aqmd.gov/home/air-quality/air-quality-management-plans/air-quality-mgt-plan

TABLE III-2
LIST OF OZONE MONITORING STATIONS IN THE SOUTH COAST AIR BASIN AND THE COACHELLA VALLEY

Station	Abbreviation	Performance Evaluation Zone
Los Angeles International Airport (LAX)	LAXH	Coastal
Long Beach	LGBH	Coastal
Mission Viejo	MSVJ	Coastal
West Los Angeles	WSLA	Coastal
Reseda	RESE	SanFernando
Santa Clarita	SCLR	SanFernando
Azusa	AZUS	Foothills
Glendora	GLEN	Foothills
Pasadena	PASA	Foothills
Anaheim	ANAH	UrbanSource
Central Los Angeles	CELA	UrbanSource
Compton	CMPT	UrbanSource
La Habra	LAHB	UrbanSource
Pico Rivera	PICO	UrbanSource
Pomona	POMA	UrbanSource
Banning	BNAP	UrbanReceptor
Crestline	CRES	UrbanReceptor
Fontana	FONT	UrbanReceptor
Lake Elsinore	ELSI	UrbanReceptor
Mira Loma	MRLM	UrbanReceptor
Perris	PERI	UrbanReceptor
Redlands	RDLD	UrbanReceptor
Riverside	RIVR	UrbanReceptor
San Bernardino	SBNO	UrbanReceptor
Temecula	TMCA	UrbanReceptor
Upland	UPLA	UrbanReceptor
Indio	INDI	CoachellaValley
Palm Springs	PLSP	CoachellaValley

TABLE III-3
2018 BASE YEAR MDA8 OZONE PERFORMANCE FOR DAYS WHEN REGIONAL MDA8 ≥ 60 PPB IN THE COASTAL REGION

Month	Num. of Obs. with MDA8 >= 60 ppb	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	4	63.24	62.42	65.25	-2.01	-2.83	3.47	3.48	-3.08	-4.34	5.32	5.33	3.80
Jun	4	54.81	54.78	66.25	-11.44	-11.47	11.44	11.47	-17.27	-17.32	17.27	17.32	-27.82
Jul	6	65.20	64.45	69.83	-4.63	-5.39	12.25	11.50	-6.64	-7.71	17.54	16.46	-6.96
Aug	2	57.26	55.87	69.00	-11.74	-13.13	11.74	13.13	-17.01	-19.02	17.01	19.02	-27.46
Sep	8	58.58	57.35	70.00	-11.42	-12.65	11.85	12.65	-16.31	-18.07	16.93	18.07	-20.15

TABLE III-4
2018 BASE YEAR MDA8 OZONE PERFORMANCE IN THE COASTAL REGION

Month	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	45.86	44.77	44.23	1.63	0.54	3.63	3.46	3.69	1.23	8.22	7.83	3.80
Jun	44.60	43.54	45.13	-0.52	-1.58	4.86	5.09	-1.16	-3.51	10.77	11.29	-13.25
Jul	44.07	43.30	39.11	4.96	4.19	7.72	7.26	12.68	10.71	19.73	18.56	-6.96
Aug	44.00	43.21	40.88	3.12	2.33	7.51	7.31	7.64	5.69	18.38	17.88	-5.02
Sep	48.78	47.85	47.79	0.99	0.07	6.13	6.02	2.07	0.14	12.82	12.60	-19.09

TABLE III-5
2018 BASE YEAR MDA8 OZONE PERFORMANCE FOR DAYS WHEN REGIONAL MDA8 ≥ 60 PPB IN THE SAN FERNANDO REGION

Month	Num. of Obs. with MDA8 >= 60 ppb	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	16	64.74	63.48	70.75	-6.01	-7.27	9.06	9.91	-8.49	-10.28	12.81	14.01	-18.93
Jun	48	63.53	62.66	71.42	-7.88	-8.75	10.26	10.88	-11.04	-12.26	14.37	15.24	-14.81
Jul	40	69.25	68.56	74.68	-5.42	-6.11	9.78	10.34	-7.26	-8.18	13.10	13.85	-2.24
Aug	45	60.84	60.21	73.27	-12.43	-13.06	13.94	14.31	-16.96	-17.82	19.03	19.53	-28.89
Sep	43	64.69	64.48	70.21	-5.52	-5.73	7.64	7.77	-7.86	-8.16	10.88	11.07	-0.63

TABLE III-6
2018 BASE YEAR MDA8 OZONE PERFORMANCE IN THE SAN FERNANDO REGION

Month	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	55.61	54.35	54.03	1.58	0.32	7.23	7.21	2.93	0.59	13.37	13.35	-18.93
Jun	61.03	60.19	67.33	-6.31	-7.14	8.82	9.35	-9.37	-10.60	13.10	13.89	-14.81
Jul	63.78	63.07	67.11	-3.33	-4.05	9.10	9.31	-4.96	-6.03	13.56	13.88	-2.24
Aug	58.90	58.23	67.69	-8.80	-9.47	12.33	12.53	-13.00	-13.99	18.21	18.51	-28.89
Sep	63.35	63.04	65.67	-2.32	-2.62	7.52	7.50	-3.53	-4.00	11.45	11.42	-0.63

TABLE III-7

2018 BASE YEAR MDA8 OZONE PERFORMANCE FOR DAYS WHEN REGIONAL MDA8 ≥ 60 PPB IN THE FOOTHILLS REGION

Month	Num. of Obs. with MDA8 >= 60 ppb	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	18	62.05	61.50	68.78	-6.73	-7.27	7.63	8.12	-9.79	-10.58	11.10	11.81	-1.55
Jun	48	60.07	59.75	70.50	-10.43	-10.75	11.32	11.53	-14.80	-15.25	16.06	16.35	-30.56
Jul	55	71.30	70.70	72.95	-1.64	-2.24	10.57	10.56	-2.25	-3.07	14.49	14.47	7.82
Aug	58	65.50	65.23	73.19	-7.69	-7.96	11.26	11.37	-10.50	-10.88	15.38	15.53	-11.86
Sep	50	65.18	64.79	68.48	-3.30	-3.69	5.88	6.12	-4.82	-5.39	8.58	8.93	-2.94

TABLE III-8

2018 BASE YEAR MDA8 OZONE PERFORMANCE IN THE FOOTHILLS REGION

Month	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	53.18	51.29	48.94	4.24	2.35	7.82	7.07	8.66	4.80	15.99	14.44	-1.55
Jun	57.53	57.15	62.13	-4.59	-4.98	8.38	8.46	-7.39	-8.01	13.49	13.61	-30.56
Jul	65.76	65.13	65.67	0.09	-0.54	9.58	9.49	0.13	-0.83	14.60	14.45	7.82
Aug	61.59	61.08	65.21	-3.62	-4.13	9.36	9.20	-5.56	-6.33	14.35	14.10	-11.86
Sep	61.22	60.78	62.19	-0.97	-1.42	5.92	6.07	-1.56	-2.28	9.52	9.76	-2.94

TABLE III-9
2018 BASE YEAR MDA8 OZONE PERFORMANCE FOR DAYS WHEN REGIONAL MDA8 ≥ 60 PPB IN THE URBAN SOURCE REGION

Month	Num. of Obs. with MDA8 >= 60 ppb	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	8	64.21	63.60	62.25	1.96	1.35	5.47	5.39	3.14	2.17	8.79	8.66	15.39
Jun	19	59.26	58.92	64.32	-5.06	-5.40	10.07	10.22	-7.86	-8.40	15.65	15.89	-1.50
Jul	31	72.86	72.49	67.97	4.89	4.52	11.81	11.77	7.19	6.66	17.38	17.32	10.21
Aug	28	62.99	62.84	67.86	-4.87	-5.01	8.28	8.42	-7.18	-7.39	12.20	12.41	-7.26
Sep	19	65.89	65.34	67.37	-1.48	-2.03	5.71	5.95	-2.20	-3.01	8.47	8.84	3.80

TABLE III-10
2018 BASE YEAR MDA8 OZONE PERFORMANCE IN THE URBAN SOURCE REGION

Month	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	50.08	49.19	44.01	6.07	5.17	7.25	6.70	13.78	11.75	16.48	15.23	15.39
Jun	52.03	51.50	50.35	1.68	1.15	6.49	6.31	3.33	2.29	12.89	12.54	3.29
Jul	55.71	55.27	50.36	5.35	4.91	9.59	9.48	10.61	9.76	19.05	18.83	10.21
Aug	53.48	53.19	50.70	2.78	2.49	8.17	8.01	5.49	4.91	16.11	15.80	-1.75
Sep	55.58	55.20	52.20	3.38	3.00	6.89	6.77	6.47	5.74	13.19	12.97	3.80

TABLE III-11

2018 BASE YEAR MDA8 OZONE PERFORMANCE FOR DAYS WHEN REGIONAL MDA8 ≥ 60 PPB IN THE URBAN RECEPTOR REGION

Month	Num. of Obs. with MDA8 >= 60 ppb	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	112	71.73	70.79	72.89	-1.16	-2.11	5.46	5.84	-1.60	-2.89	7.49	8.01	-16.24
Jun	238	73.57	73.09	79.33	-5.76	-6.24	7.78	8.08	-7.26	-7.87	9.80	10.19	-33.71
Jul	278	77.57	76.57	77.15	0.41	-0.59	8.81	9.00	0.53	-0.76	11.42	11.66	-1.75
Aug	254	72.49	71.81	74.86	-2.37	-3.06	8.08	8.23	-3.16	-4.08	10.80	10.99	-12.95
Sep	225	71.35	70.60	70.83	0.52	-0.23	7.97	8.03	0.74	-0.33	11.25	11.33	-6.96

TABLE III-12

2018 BASE YEAR MDA8 OZONE PERFORMANCE IN THE URBAN RECEPTOR REGION

Month	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	62.33	61.37	57.66	4.67	3.71	7.57	7.27	8.10	6.43	13.13	12.61	-16.24
Jun	69.95	69.39	74.03	-4.08	-4.64	7.09	7.28	-5.51	-6.27	9.58	9.83	-33.71
Jul	76.51	75.50	75.56	0.95	-0.06	8.86	8.98	1.26	-0.08	11.73	11.89	-1.75
Aug	71.16	70.49	71.98	-0.82	-1.49	8.55	8.63	-1.14	-2.07	11.88	11.99	-12.95
Sep	69.55	68.68	66.23	3.32	2.44	9.21	9.12	5.02	3.69	13.91	13.76	-6.96

TABLE III-13

2018 BASE YEAR MDA8 OZONE PERFORMANCE FOR DAYS WHEN REGIONAL MDA8 ≥ 60 PPB IN THE COACHELLA VALLEY REGION

Month	Num. of Obs. with MDA8 >= 60 ppb	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	37	68.23	67.31	71.19	-2.96	-3.88	4.94	5.48	-4.16	-5.45	6.94	7.70	-17.07
Jun	51	70.46	68.02	75.92	-5.46	-7.90	8.89	10.27	-7.19	-10.41	11.71	13.53	-6.67
Jul	34	66.51	64.78	69.35	-2.84	-4.58	7.64	8.18	-4.09	-6.60	11.01	11.80	-3.47
Aug	46	63.22	60.24	69.09	-5.87	-8.85	8.74	10.71	-8.50	-12.81	12.65	15.50	0.88
Sep	14	59.12	57.64	68.29	-9.17	-10.64	9.52	10.76	-13.42	-15.59	13.95	15.76	-22.29

TABLE III-14

2018 BASE YEAR MDA8 OZONE PERFORMANCE IN THE COACHELLA VALLEY REGION

Month	MDA8 Mean Model Unpaired [ppb]	MDA8 Mean Model Paired [ppb]	MDA8 Mean Obs. [ppb]	MDA8 Mean Bias Unpaired [ppb]	MDA8 Mean Bias Paired [ppb]	MDA8 Mean Error Unpaired [ppb]	MDA8 Mean Error Paired [ppb]	Norm MDA8 Mean Bias Unpaired [%]	Norm MDA8 Mean Bias Paired [%]	Norm MDA8 Mean Error Unpaired [%]	Norm MDA8 Mean Error Paired [%]	Peak Prediction Accuracy Unpaired [%]
May	64.64	63.44	64.86	-0.23	-1.42	4.90	4.85	-0.35	-2.19	7.55	7.48	-17.07
Jun	68.56	66.33	73.41	-4.85	-7.08	8.66	9.92	-6.61	-9.64	11.79	13.51	-6.67
Jul	64.60	62.09	62.30	2.31	-0.21	8.92	8.40	3.71	-0.34	14.33	13.48	-3.47
Aug	62.83	59.84	65.03	-2.20	-5.19	9.30	10.17	-3.39	-7.98	14.30	15.63	2.29
Sep	60.63	56.76	54.16	6.48	2.61	11.52	11.06	11.97	4.82	21.27	20.43	-1.19

TABLE III-15

2018 BASE YEAR 1-HOUR OZONE PERFORMANCE FOR DAYS WHEN REGIONAL HOURLY OZONE ≥ 60 PPB IN THE COASTAL REGION

Month	Num. of Obs. with Hourly Ozone>= 60 ppb	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	46	60.79	67.20	-6.40	10.32	-9.53	15.36	-0.60
Jun	70	53.12	65.49	-12.36	13.40	-18.88	20.46	-18.78
Jul	58	61.60	69.78	-8.18	14.82	-11.72	21.23	-3.12
Aug	42	51.02	66.74	-15.72	16.24	-23.55	24.33	-16.32
Sep	110	57.94	68.87	-10.94	13.89	-15.88	20.17	-17.44

TABLE III-16

2018 BASE YEAR 1-HOUR OZONE PERFORMANCE IN THE COASTAL REGION

Month	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	36.28	35.60	0.68	6.55	1.91	18.41	-0.60
Jun	33.58	35.30	-1.73	7.04	-4.90	19.95	-16.34
Jul	32.99	28.12	4.87	8.52	17.31	30.30	-3.12
Aug	33.77	29.83	3.94	8.32	13.21	27.90	-1.07
Sep	36.32	34.71	1.61	7.98	4.65	23.00	-17.44

TABLE III-17

2018 BASE YEAR 1-HOUR OZONE PERFORMANCE FOR DAYS WHEN REGIONAL HOURLY OZONE ≥ 60 PPB IN THE SAN FERNANDO REGION

Month	Num. of Obs. with Hourly Ozone>= 60 ppb	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	142	62.82	71.11	-8.30	11.18	-11.67	15.72	-21.04
Jun	348	63.00	74.16	-11.16	13.85	-15.05	18.68	-14.81
Jul	330	68.32	75.83	-7.51	13.55	-9.90	17.87	4.89
Aug	338	59.94	75.78	-15.84	17.73	-20.90	23.40	-6.53
Sep	325	66.14	72.93	-6.80	10.50	-9.32	14.40	-0.99

TABLE III-18

2018 BASE YEAR 1-HOUR OZONE PERFORMANCE IN THE SAN FERNANDO REGION

Month	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	40.88	38.57	2.31	8.78	5.99	22.77	-21.04
Jun	42.36	43.11	-0.74	9.72	-1.72	22.55	-14.81
Jul	42.66	41.26	1.40	9.64	3.39	23.36	4.89
Aug	39.58	39.93	-0.34	11.43	-0.86	28.62	-6.53
Sep	43.21	39.92	3.29	10.74	8.23	26.90	-0.99

TABLE III-19

2018 BASE YEAR 1-HOUR OZONE PERFORMANCE FOR DAYS WHEN REGIONAL HOURLY OZONE ≥ 60 PPB IN THE FOOTHILLS REGION

Month	Num. of Obs. with Hourly Ozone>= 60 ppb	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	144	64.06	71.73	-7.67	8.93	-10.69	12.45	-1.29
Jun	387	62.95	72.82	-9.87	12.14	-13.55	16.67	-28.16
Jul	435	73.19	76.09	-2.90	12.94	-3.82	17.00	4.53
Aug	435	67.12	76.93	-9.80	12.86	-12.75	16.72	-9.64
Sep	371	67.84	73.42	-5.58	9.04	-7.60	12.31	10.16

TABLE III-20

2018 BASE YEAR 1-HOUR OZONE PERFORMANCE IN THE FOOTHILLS REGION

Month	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	37.94	34.21	3.72	8.63	10.88	25.22	-1.29
Jun	36.89	37.55	-0.66	7.87	-1.76	20.97	-28.16
Jul	39.70	34.82	4.88	10.26	14.01	29.45	4.53
Aug	36.91	34.70	2.21	9.64	6.37	27.78	-7.56
Sep	37.81	34.00	3.80	8.92	11.19	26.22	10.16

TABLE III-21
2018 BASE YEAR 1-HOUR OZONE PERFORMANCE FOR DAYS WHEN REGIONAL HOURLY OZONE ≥ 60 PPB IN THE URBAN SOURCE REGION

Month	Num. of Obs. with Hourly Ozone>= 60 ppb	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	76	65.30	66.03	-0.73	9.26	-1.10	14.03	17.56
Jun	210	60.96	67.13	-6.17	11.72	-9.18	17.46	1.69
Jul	275	72.59	71.77	0.81	13.39	1.13	18.65	1.64
Aug	298	65.15	69.80	-4.65	11.08	-6.66	15.88	-2.23
Sep	301	66.02	68.76	-2.73	9.30	-3.98	13.53	-1.02

TABLE III-22
2018 BASE YEAR 1-HOUR OZONE PERFORMANCE IN THE URBAN SOURCE REGION

Month	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	36.66	31.99	4.66	7.89	14.58	24.66	17.56
Jun	35.56	33.95	1.61	7.47	4.75	21.99	1.69
Jul	36.74	29.97	6.77	10.15	22.61	33.89	1.64
Aug	35.30	29.89	5.41	9.35	18.09	31.27	-2.23
Sep	36.59	31.49	5.11	9.01	16.22	28.63	-1.02

TABLE III-23

2018 BASE YEAR 1-HOUR OZONE PERFORMANCE FOR DAYS WHEN REGIONAL HOURLY OZONE ≥ 60 PPB IN THE URBAN RECEPTOR REGION

Month	Num. of Obs. with Hourly Ozone>= 60 ppb	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	1071	70.04	72.72	-2.68	8.17	-3.68	11.24	-10.79
Jun	2234	70.92	78.12	-7.21	9.90	-9.23	12.67	-10.27
Jul	2204	76.21	78.55	-2.34	11.48	-2.98	14.62	6.93
Aug	2043	71.72	77.34	-5.62	11.59	-7.27	14.99	-4.95
Sep	1708	71.41	73.89	-2.48	10.68	-3.36	14.46	1.36

TABLE III-24

2018 BASE YEAR 1-HOUR OZONE PERFORMANCE IN THE URBAN RECEPTOR REGION

Month	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	45.56	40.39	5.17	8.91	12.80	22.07	-10.79
Jun	47.50	46.14	1.36	8.87	2.96	19.23	-10.27
Jul	49.36	43.39	5.97	12.00	13.77	27.65	6.93
Aug	45.45	41.46	3.99	10.79	9.62	26.02	-4.95
Sep	46.52	38.83	7.69	12.42	19.80	31.99	1.36

TABLE III-25

2018 BASE YEAR HOURLY OZONE PERFORMANCE FOR DAYS WHEN REGIONAL HOURLY OZONE ≥ 60 PPB IN THE COACHELLA VALLEY REGION

Month	Num. of Obs. with Hourly Ozone>= 60 ppb	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	475	64.91	69.51	-4.61	7.18	-6.63	10.33	-12.41
Jun	772	64.20	72.99	-8.79	11.33	-12.05	15.52	-12.32
Jul	422	62.32	68.67	-6.35	9.76	-9.25	14.21	-9.77
Aug	519	59.53	68.99	-9.46	11.51	-13.72	16.69	-10.27
Sep	210	56.46	67.86	-11.40	12.82	-16.80	18.89	-8.05

TABLE III-26

2018 BASE YEAR HOURLY OZONE PERFORMANCE IN THE COACHELLA VALLEY REGION

Month	Hourly Ozone Mean Model [ppb]	Hourly Ozone Mean Obs. [ppb]	Hourly Ozone Mean Bias [ppb]	Hourly Ozone Mean Error [ppb]	Norm Hourly Ozone Mean Bias [%]	Norm Hourly Ozone Mean Error [%]	Peak Prediction Accuracy [%]
May	55.45	54.49	0.96	6.68	1.76	12.26	-12.41
Jun	58.14	61.31	-3.17	10.18	-5.17	16.60	-12.32
Jul	55.35	51.58	3.77	10.58	7.31	20.51	-9.77
Aug	52.83	52.21	0.62	10.93	1.19	20.93	-2.35
Sep	51.17	44.53	6.64	12.95	14.91	29.07	-5.60

CMAQ Model Performance Time Series

Figures III-A1-A30 present the comparison of CMAQ modeling and observations for the MDA8 ozone at 26 stations in the South Coast Air Basin, 2 stations in the Coachella Valley, and 2 stations situated near the border with Mexico in Imperial County. In general, the model prediction shows good agreement with measurements. Although some peak ozone days and very low ozone days are missed by the model. The model captures the regional differences in the MDA8 observations, showing lower ozone concentrations in coastal regions, like in West Los Angeles, Los Angeles International Airport (LAX) and Long Beach, and higher concentrations in monitors at the foothills, like Azusa and Glendora, and over urban receptor areas, like in Upland and Crestline. The timeseries for Calexico and El Centro show a greater discrepancy between observations and modeled MDA8, with the model overestimating concentrations, partly due to the uncertainty in the boundary conditions that are close to the monitors.

Out of the 30 monitors that report ozone observations, 22 monitors also measure NOx concentrations. Figures III-B1-B22 show the comparison of CMAQ predictions and observations for the daily average NOx. For stations in the Urban Source region and along the coast, the model prediction shows good agreement with measurements. For example, the time series at the stations in Central Los Angeles, Anaheim and Compton show that the model captures several high NOx episodes and reproduces the lower NOx value days as well. However, the model tends to underestimate NOx in monitors located downwind from central Los Angeles and in the eastern portion of the basin, like Pomona, Riverside, Fontana and San Bernardino. Different from other stations, LAX is the one station that shows slightly overestimation from the model.

Figures III-C1-C2 depict the comparison of CMAQ modeling and observations for the daily average NOy at the station of Central Los Angeles and Riverside. The model reproduces the daily NOy at Central Los Angeles better than the NOy at Riverside. The model is able to capture the higher values (>20 ppbv) of daily NOy at the station of Central Los Angeles. While the model underpredicts higher NOy days at the station in Riverside.

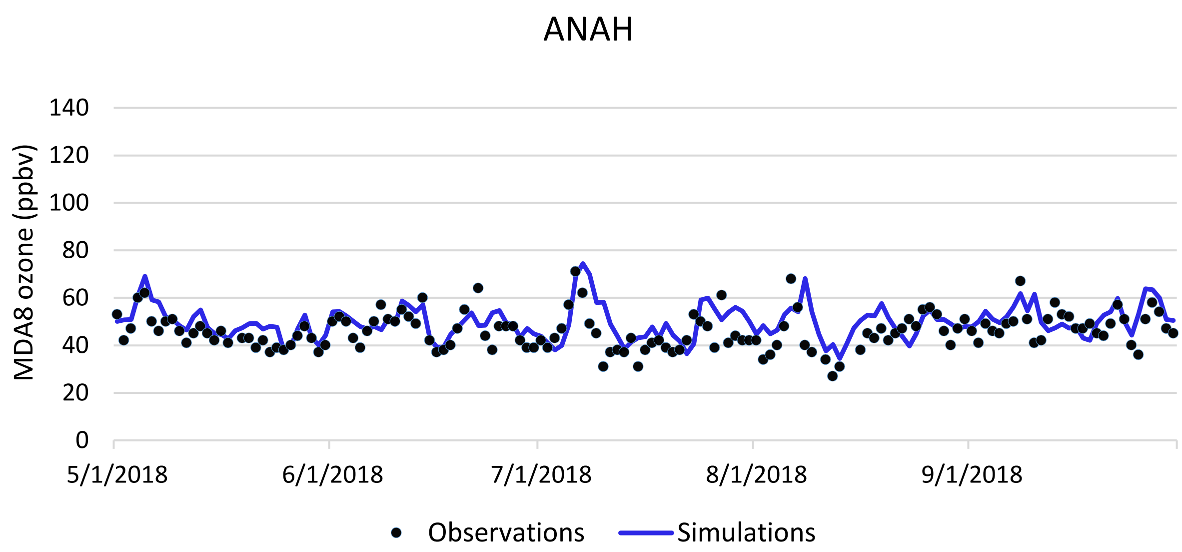


FIGURE III-A-1
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT ANAHEIM

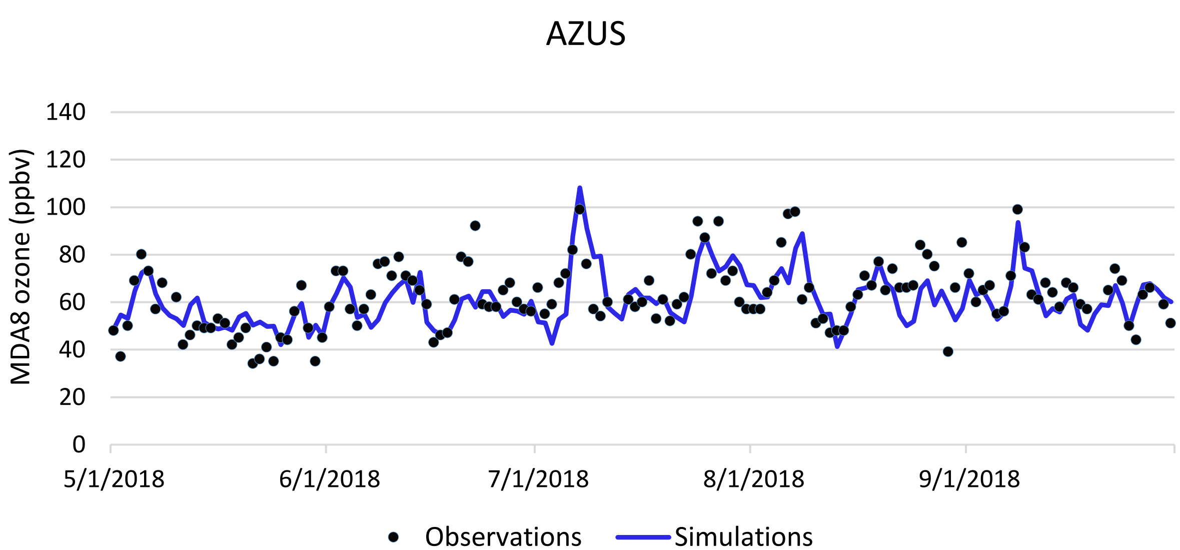


FIGURE III-A-2
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT AZUSA

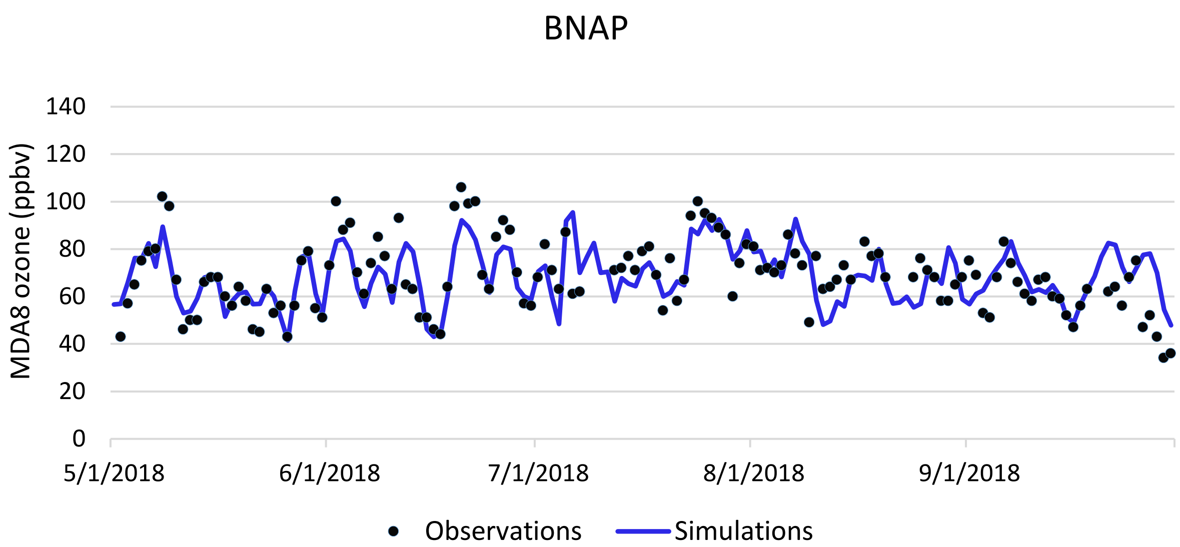


FIGURE III-A-3
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT BANNING

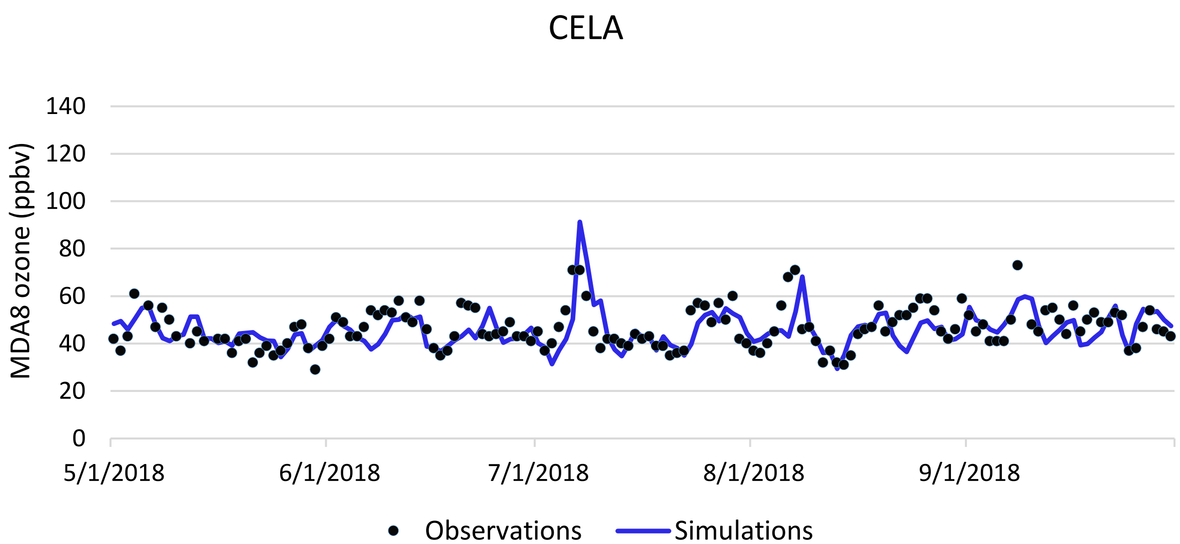


FIGURE III-A-4
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT CENTRAL LOS ANGELES

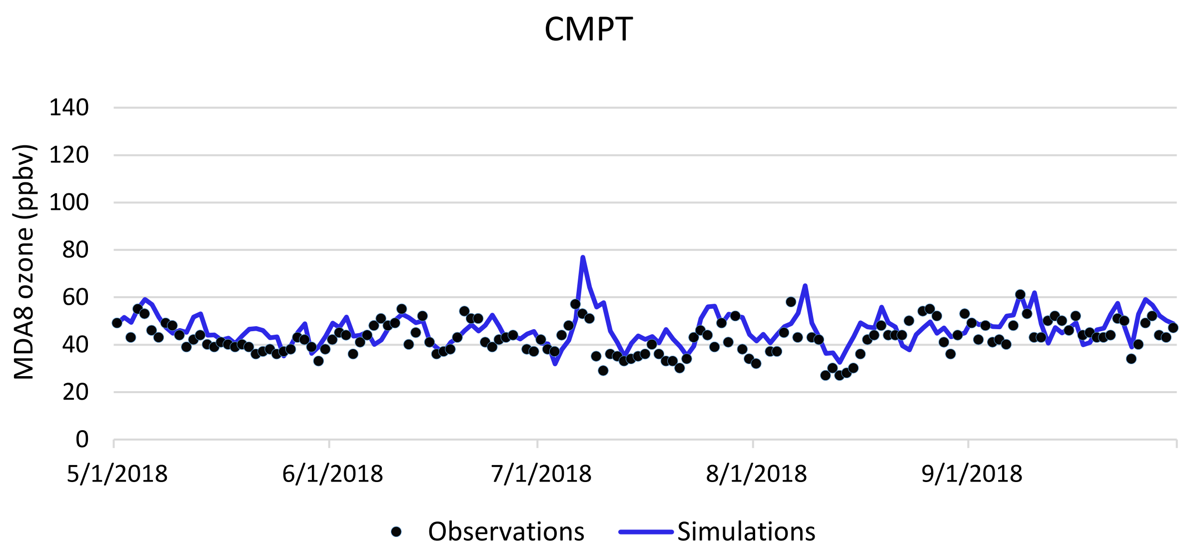


FIGURE III-A-5

2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT COMPTON

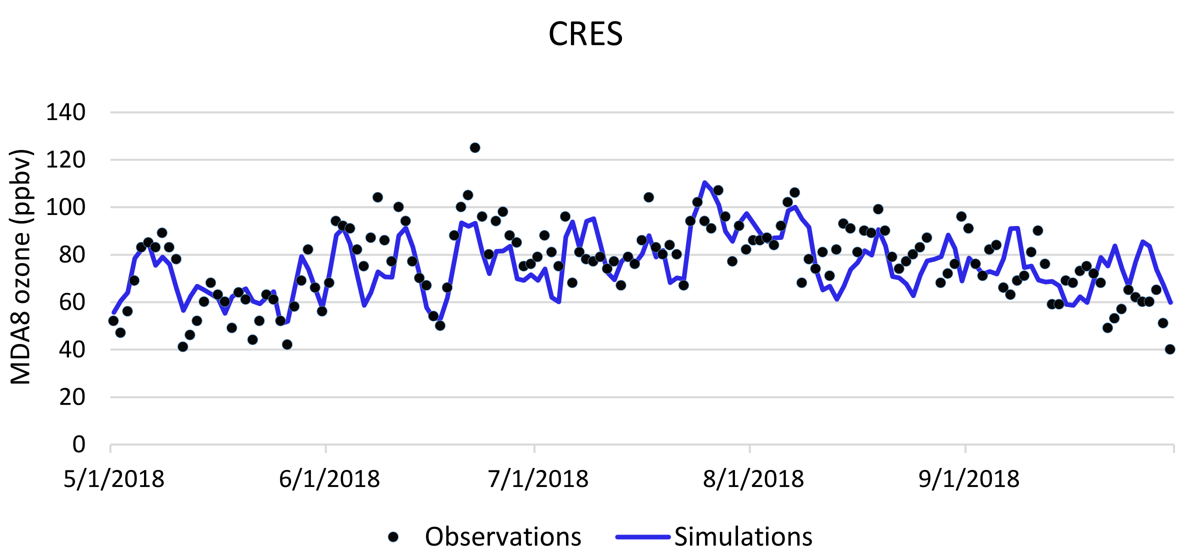


FIGURE III-A-6

2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT CRESTLINE

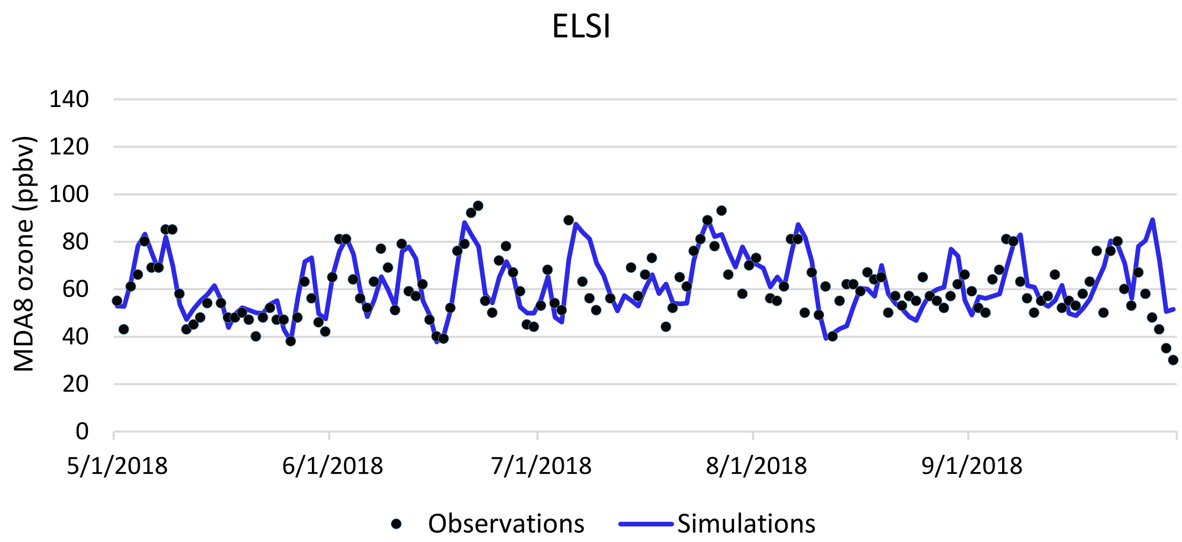


FIGURE III-A-7
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT LAKE ELSINORE

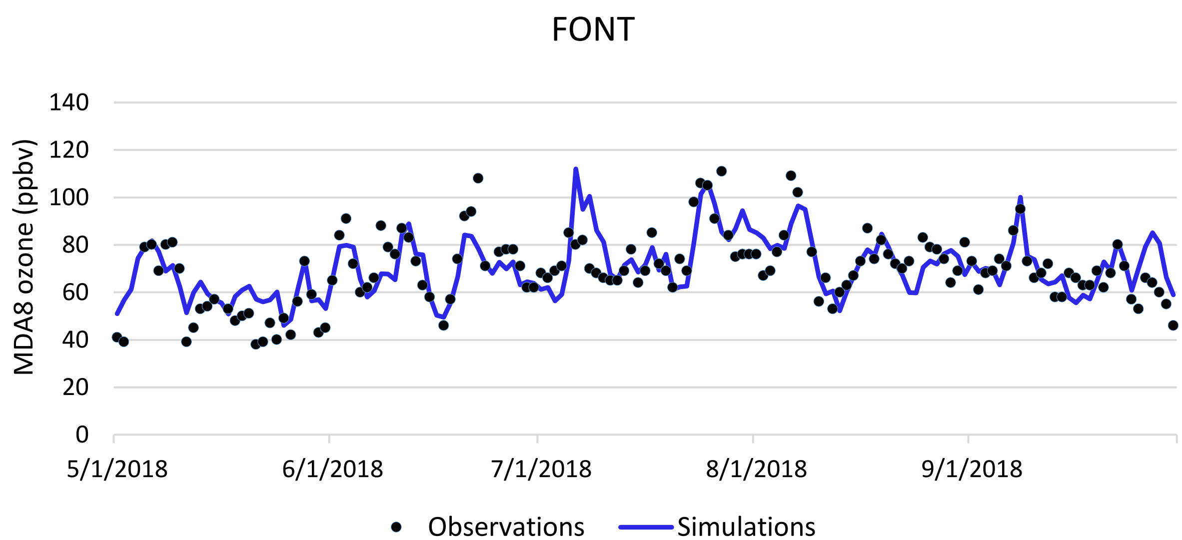


FIGURE III-A-8
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT FONTANA

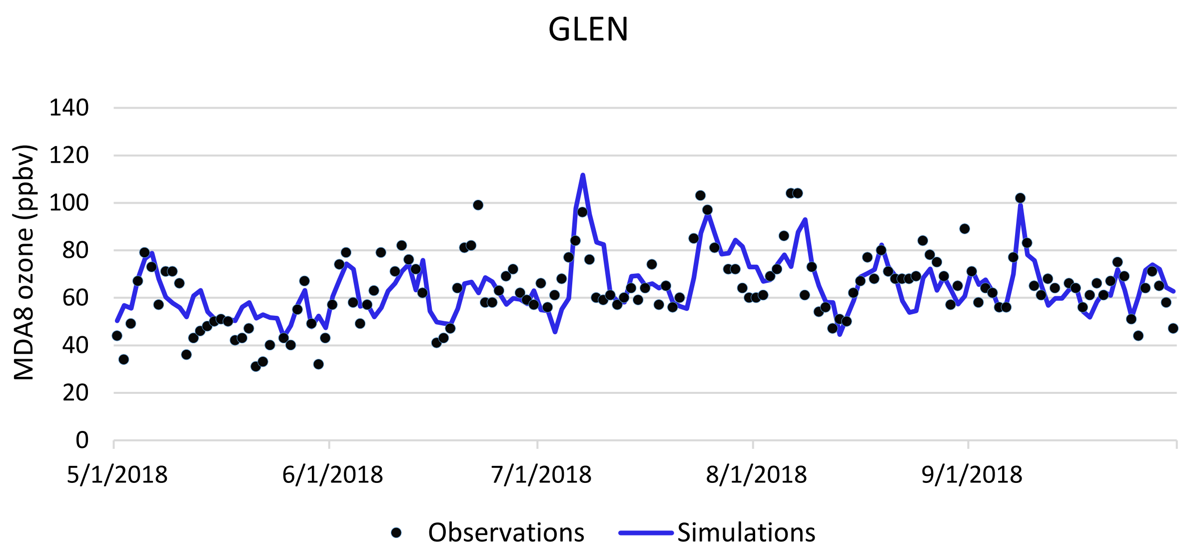


FIGURE III-A-9

2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT GLENDORA

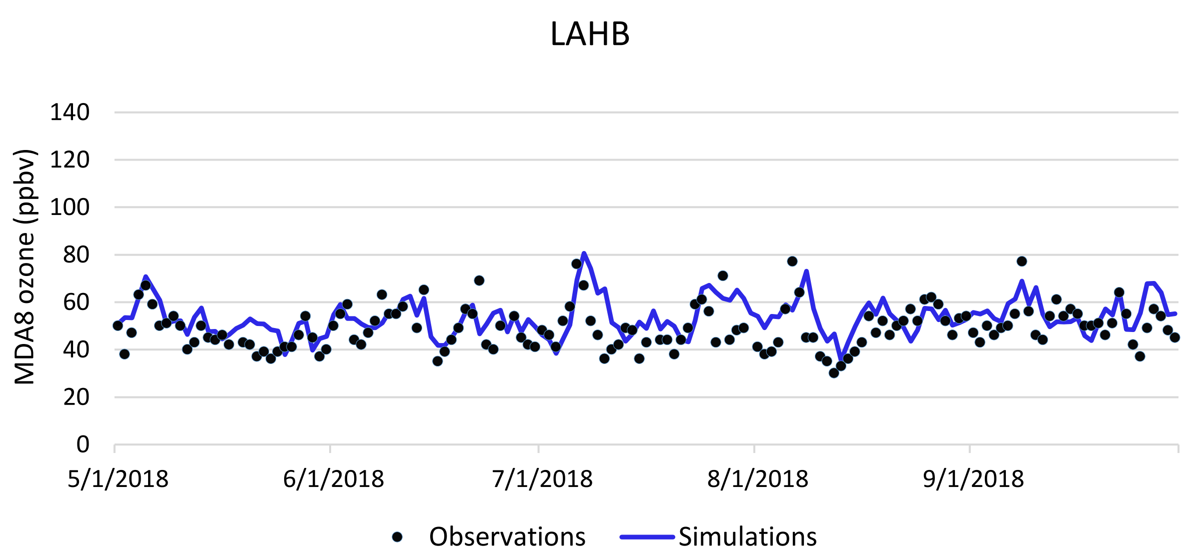


FIGURE III-A-10

2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT LA HABRA

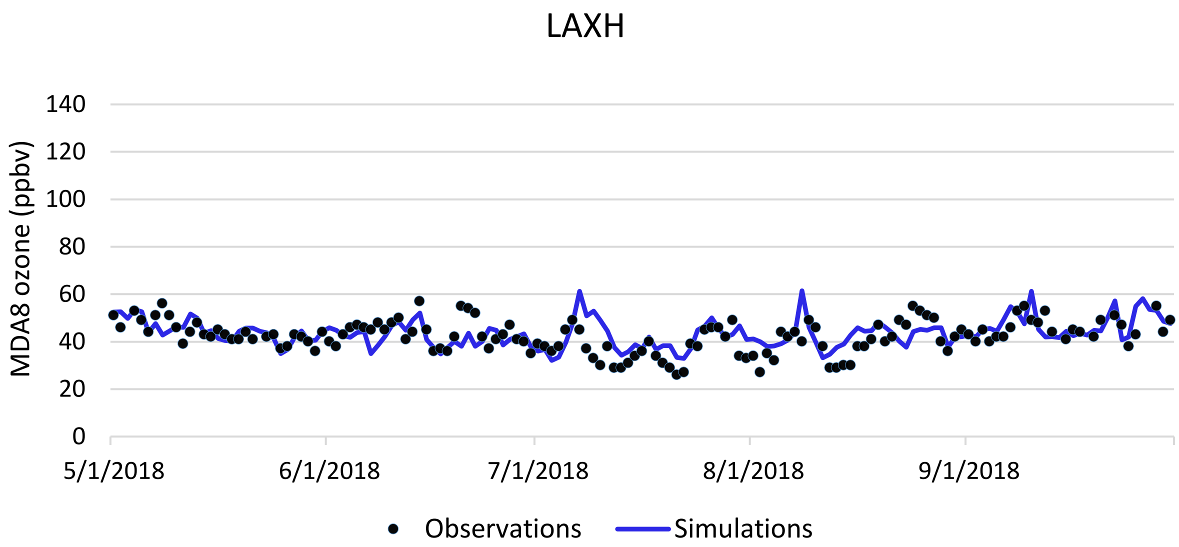


FIGURE III-A-11
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT LAX

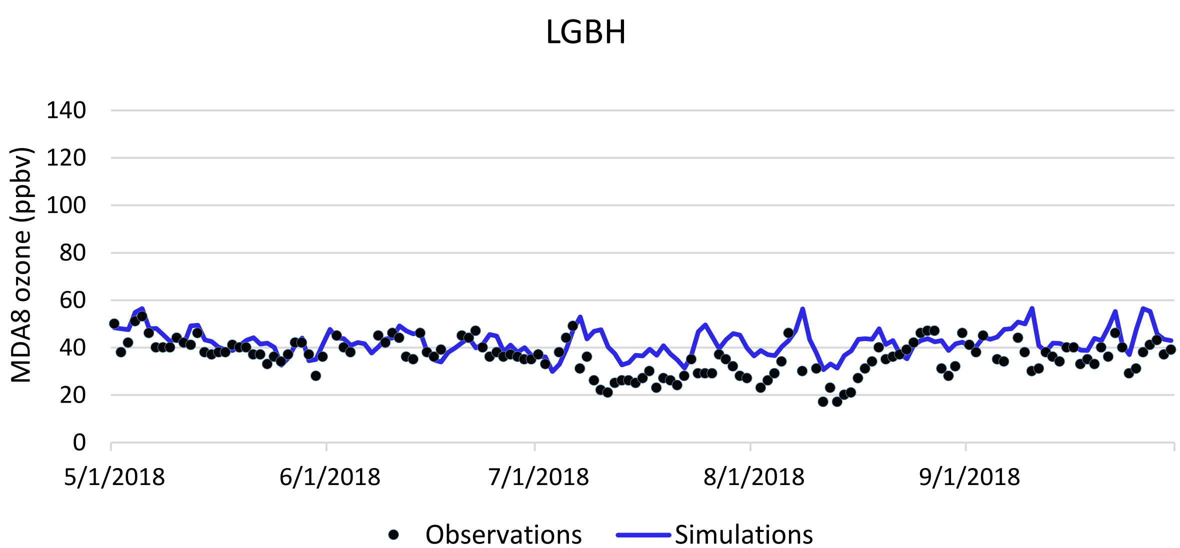


FIGURE III-A-12
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT LONG BEACH HUDSON

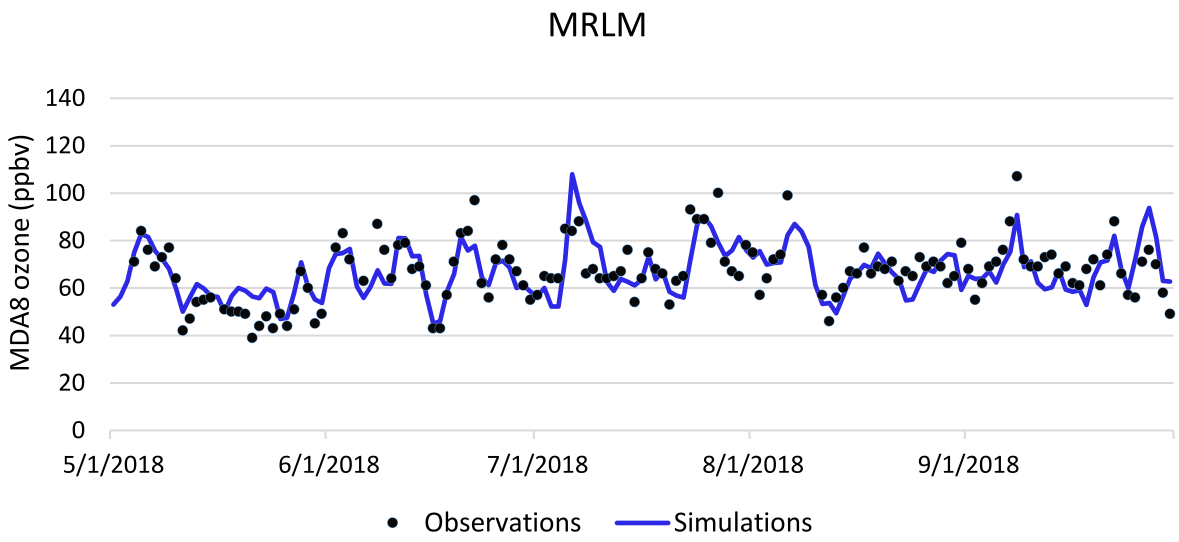


FIGURE III-A-13
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT MIRA LOMA

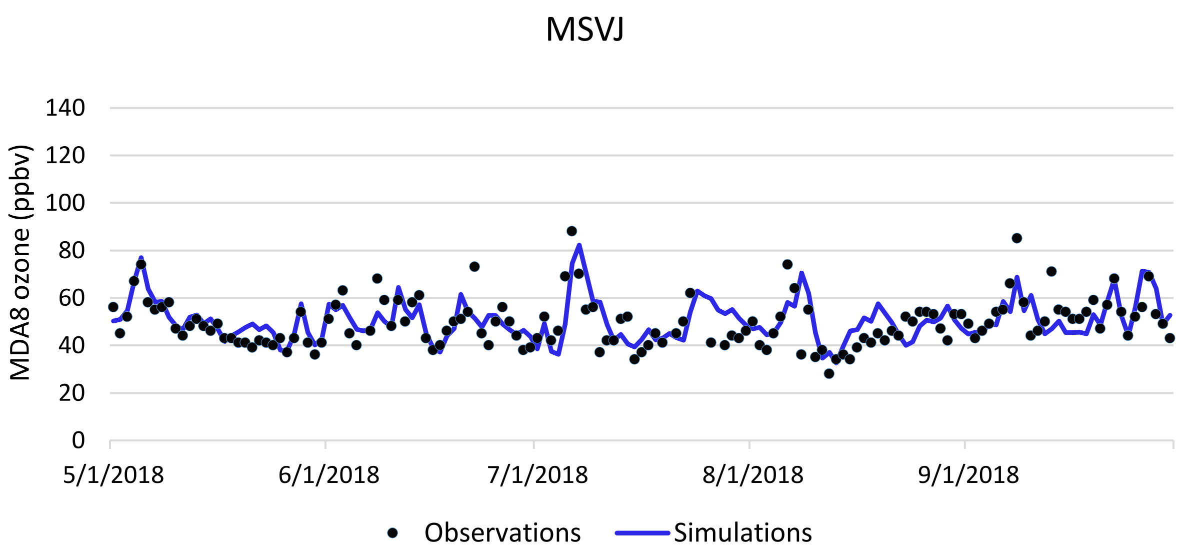


FIGURE III-A-14
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT MISSION VIEJO

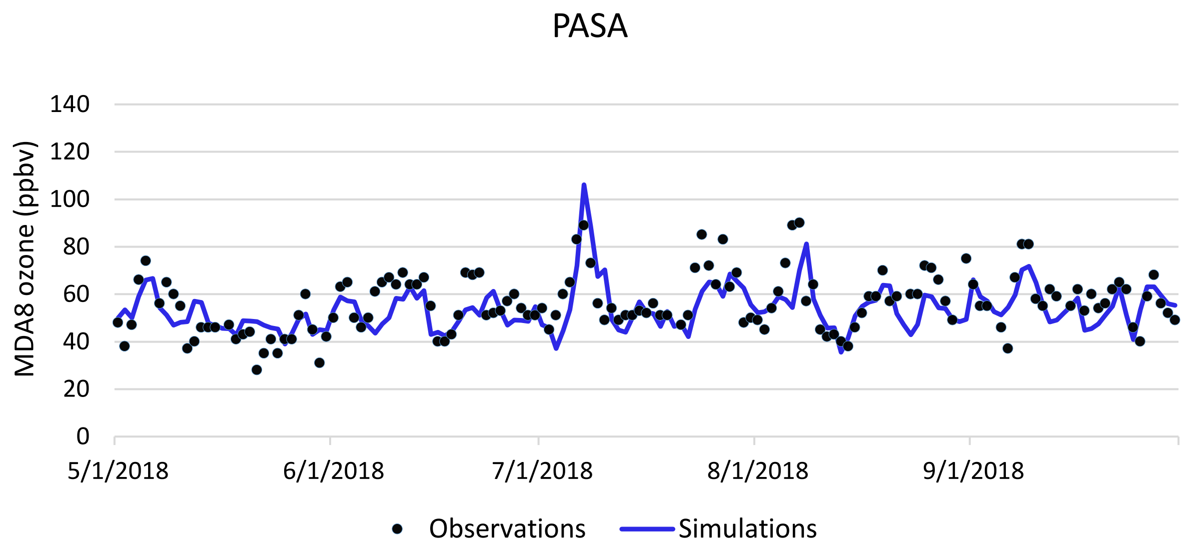


FIGURE III-A-15
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT PASADENA

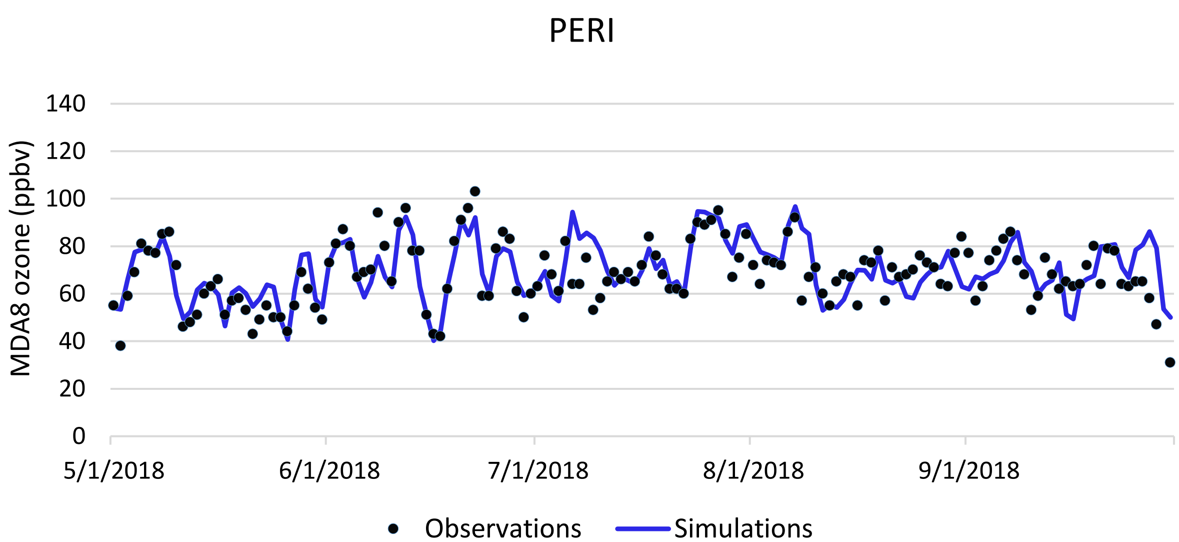


FIGURE III-A-16
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT PERRIS

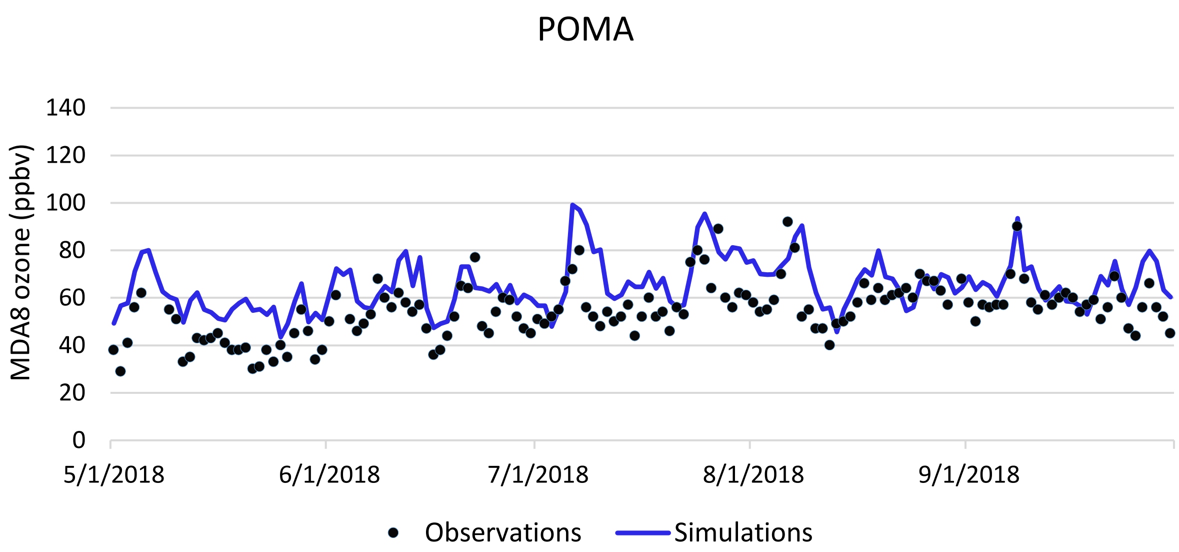


FIGURE III-A-17

2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT POMONA

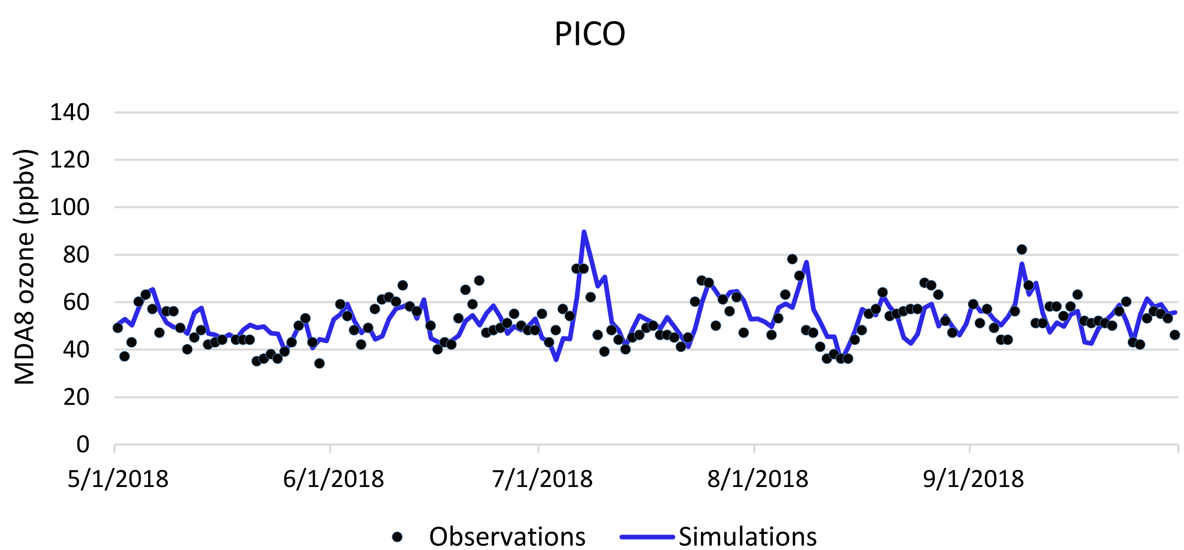


FIGURE III-A-18

2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT PICO RIVERA

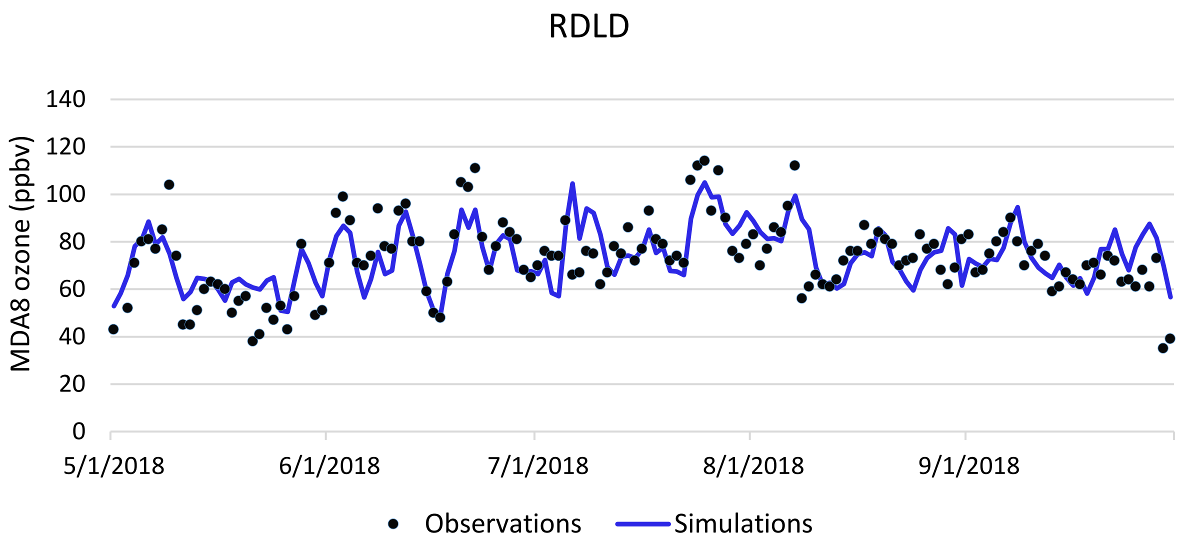


FIGURE III-A-19
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT REDLANDS

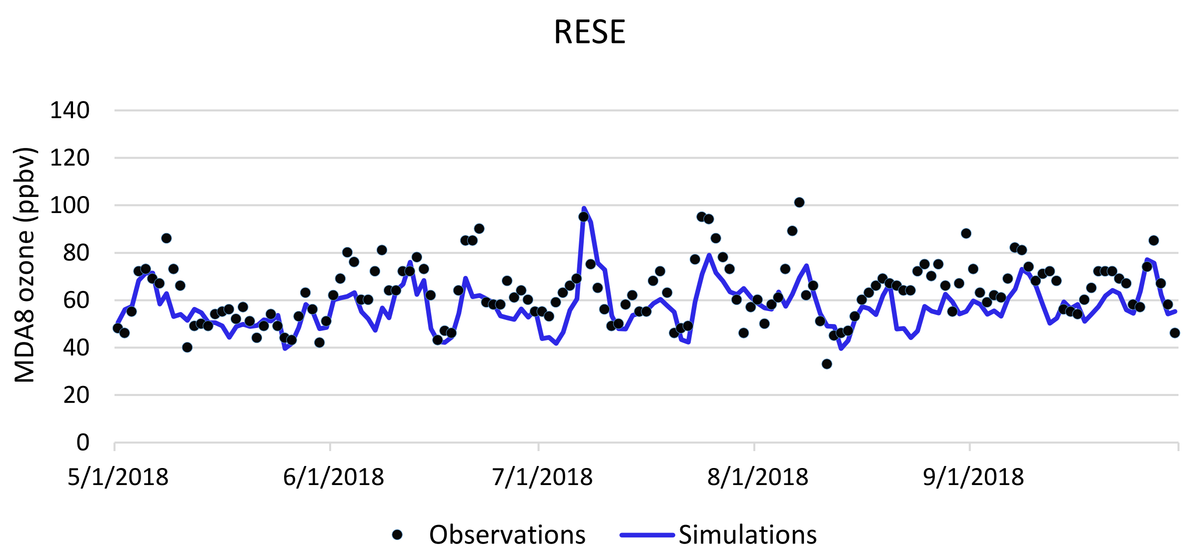


FIGURE III-A-20
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT RESEDA

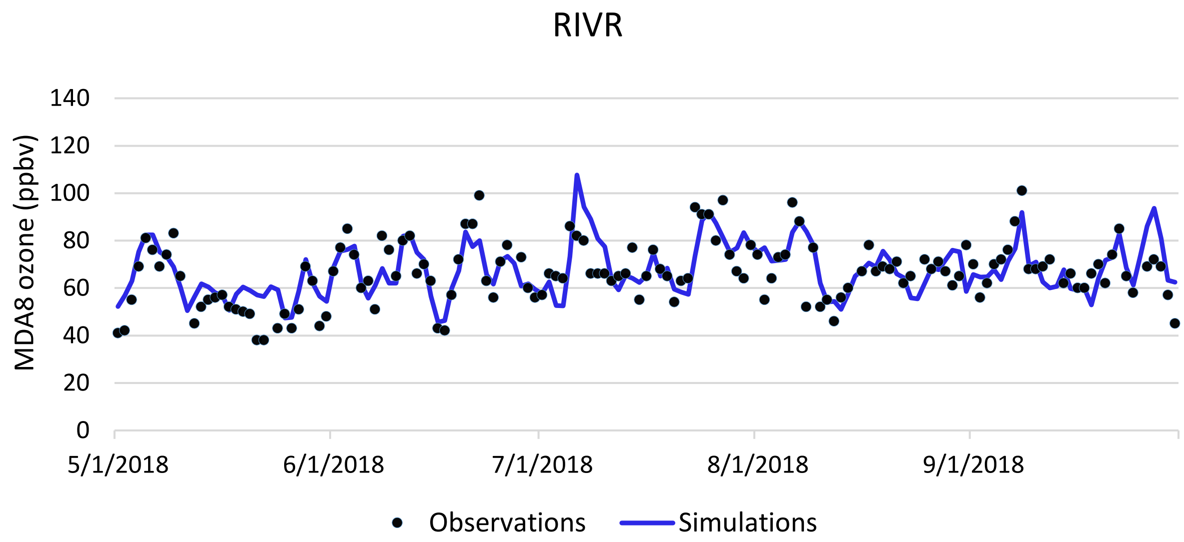


FIGURE III-A-21
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT RIVERSIDE

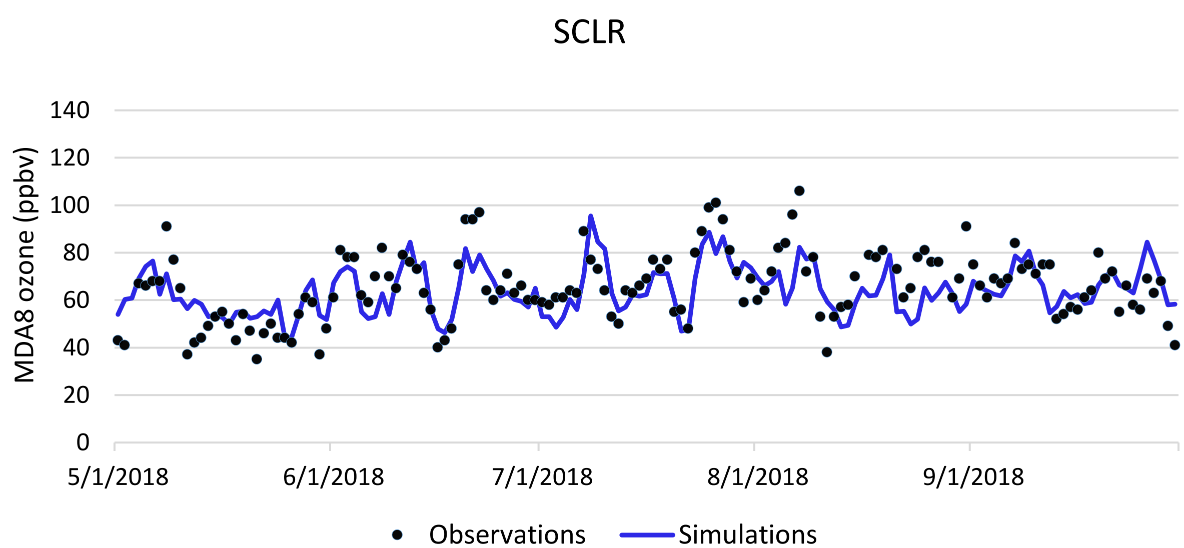


FIGURE III-A-22
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT SANTA CLARITA

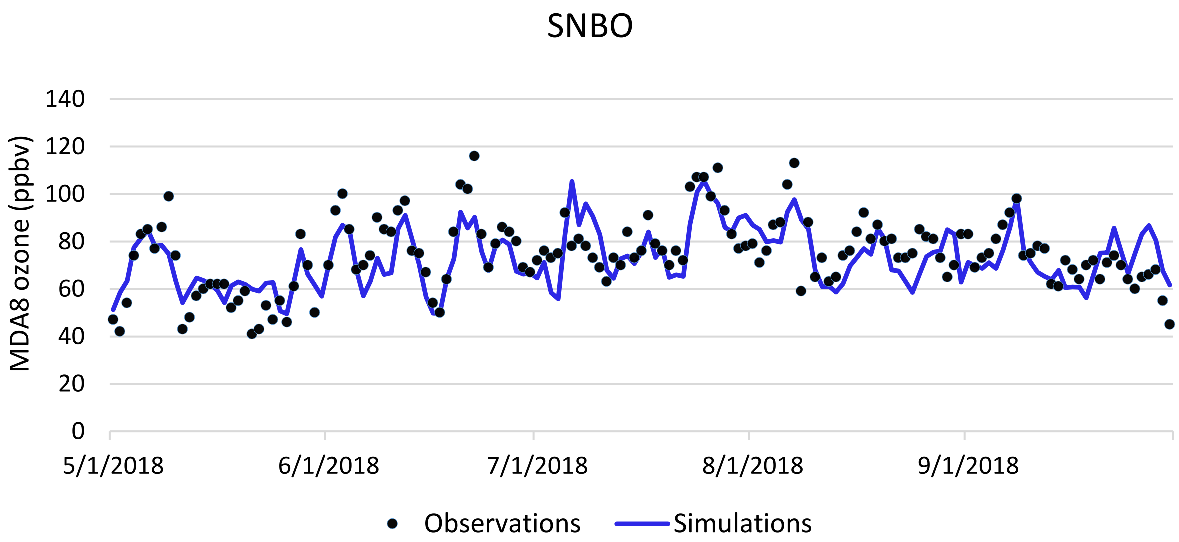


FIGURE III-A-23
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT SAN BERNARDINO

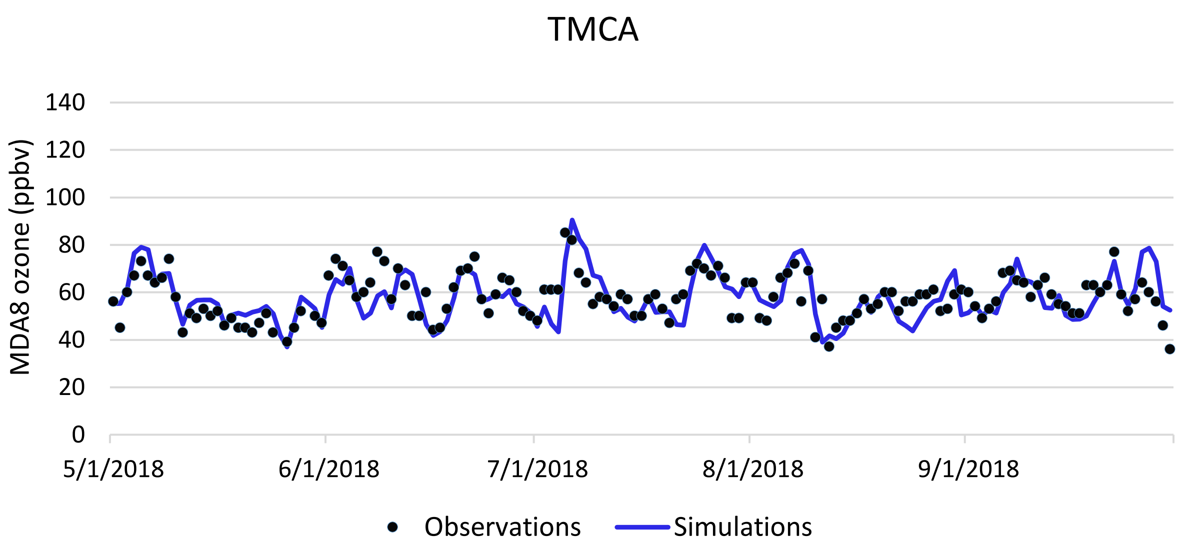


FIGURE III-A-24
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT TEMECULA

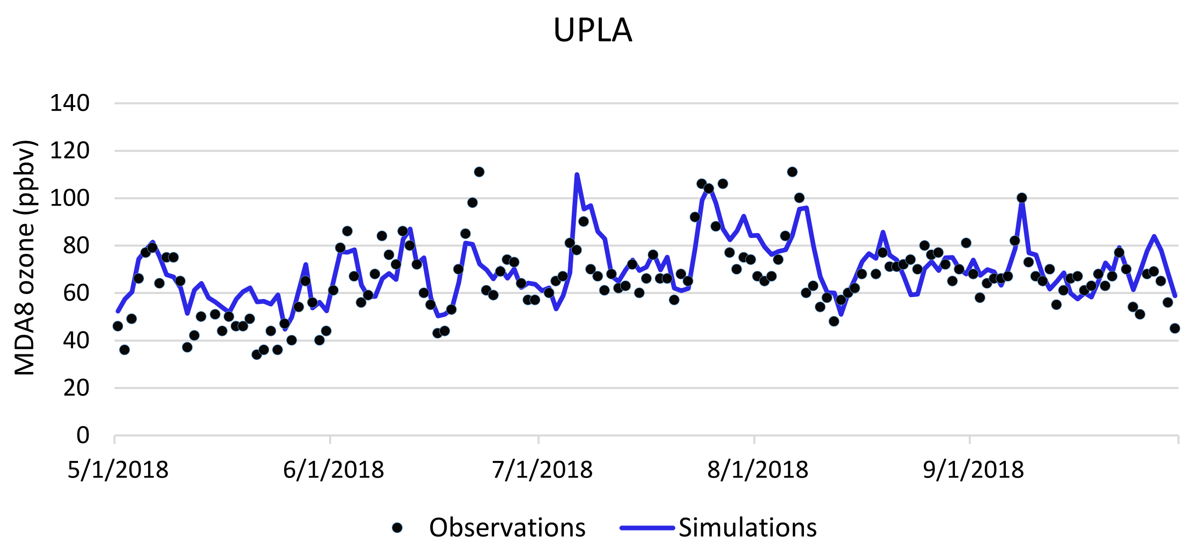


FIGURE III-A-25
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT UPLAND

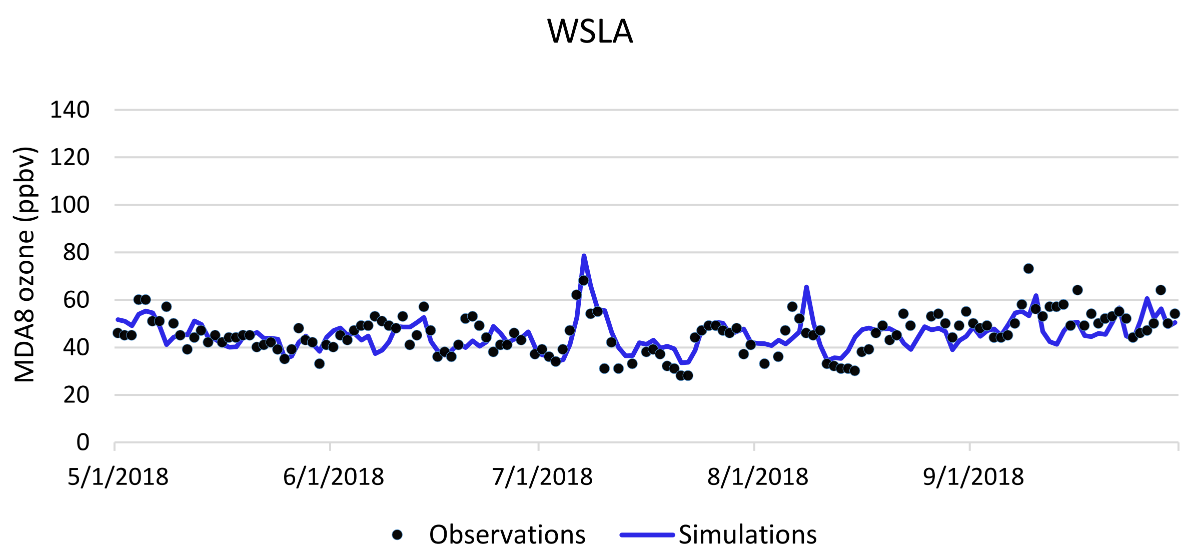


FIGURE III-A-26
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT WEST LOS ANGELES

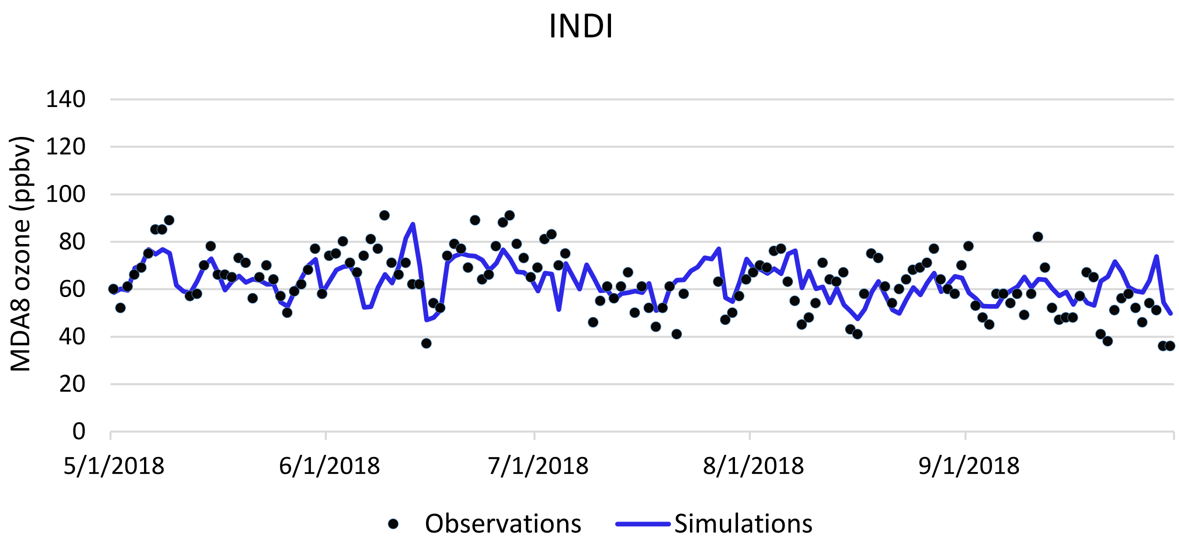


FIGURE III-A-27
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT INDIO

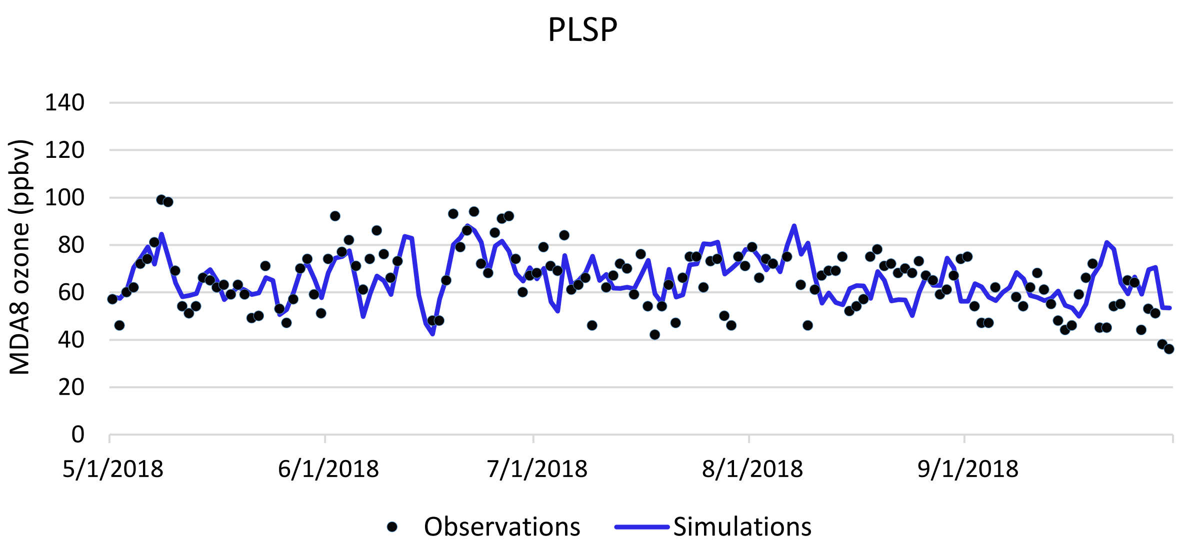


FIGURE III-A-28
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT PALM SPRINGS

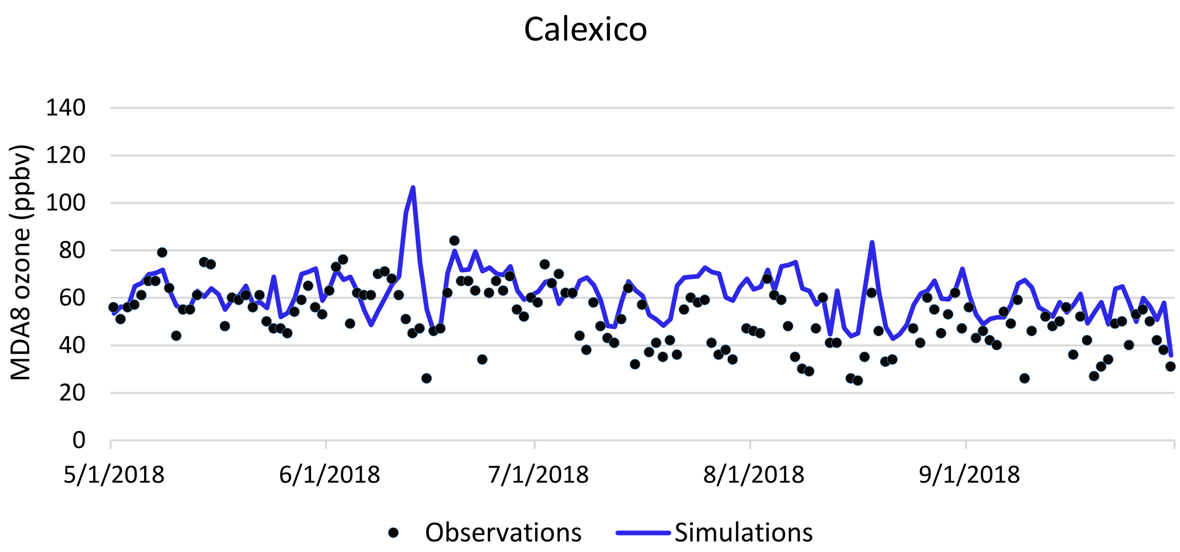


FIGURE III-A-29
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT CALEXICO

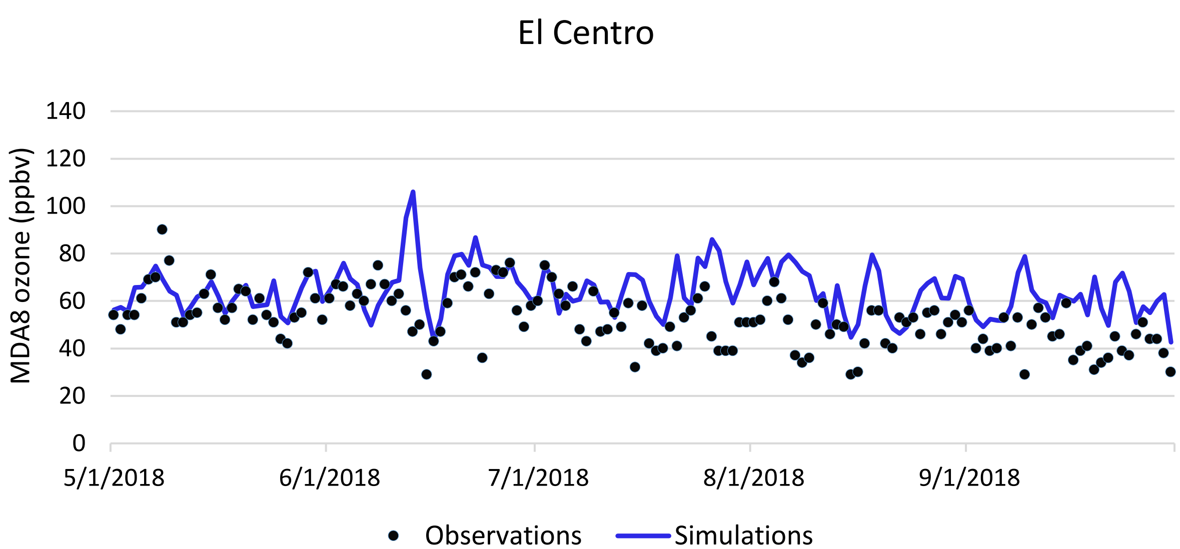


FIGURE III-A-30
2018 MDA8 OZONE MODEL PREDICTION AND MEASUREMENT COMPARISON AT EL CENTRO

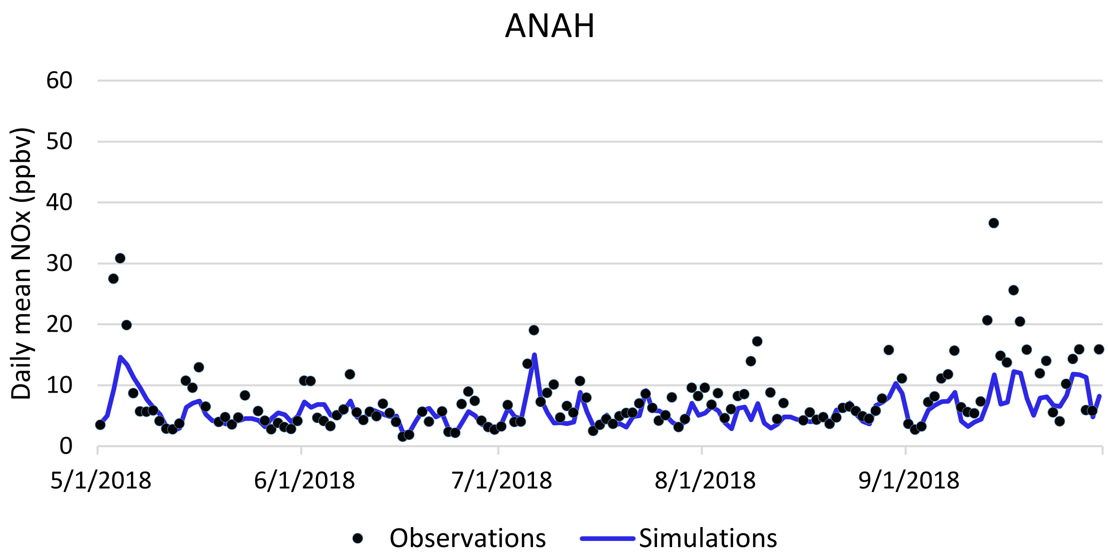


FIGURE III-B-1
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT ANAHEIM

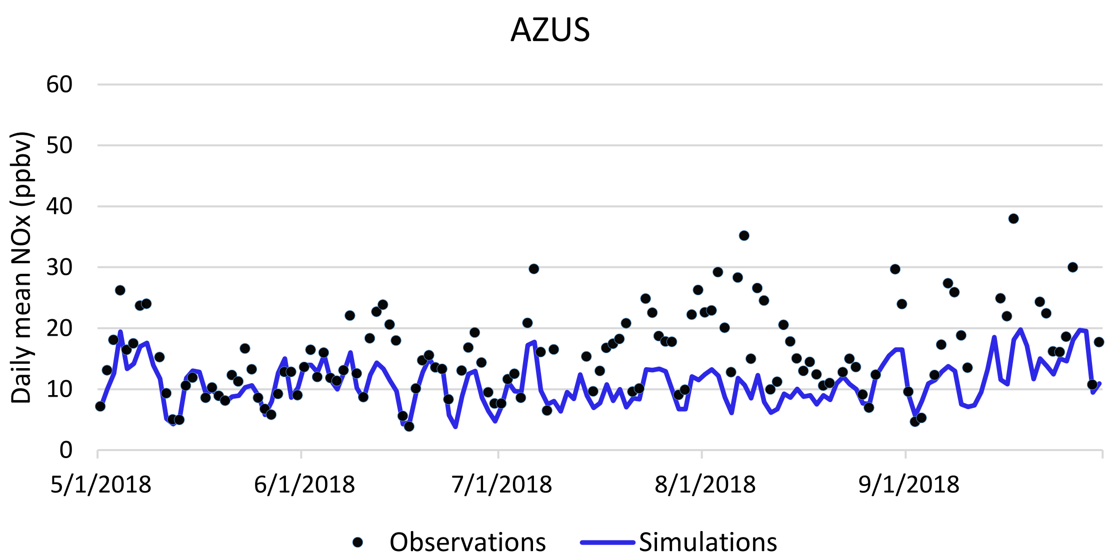


FIGURE III-B-2
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT AZUSA

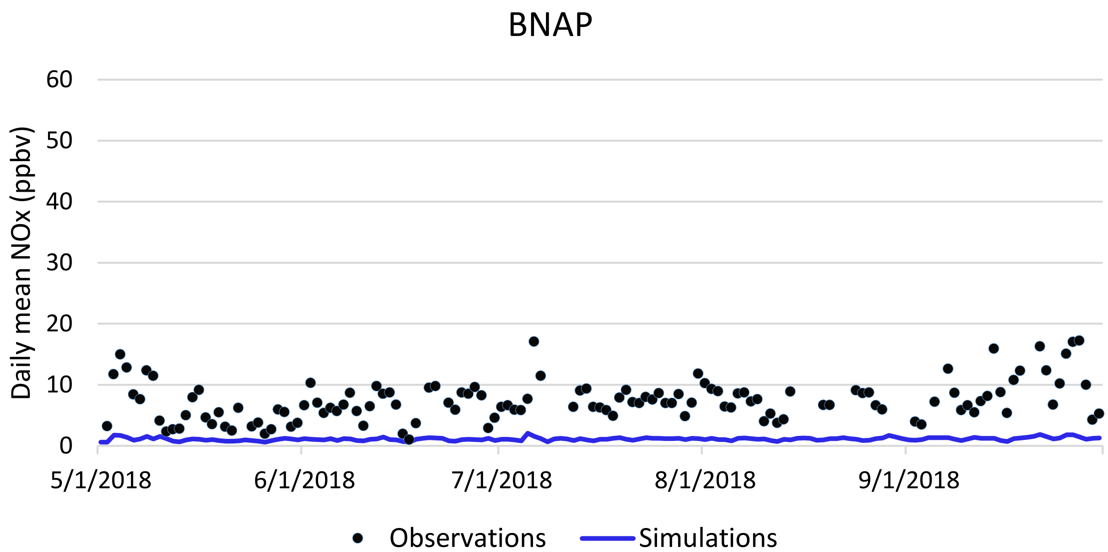


FIGURE III-B-3
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT BANNING

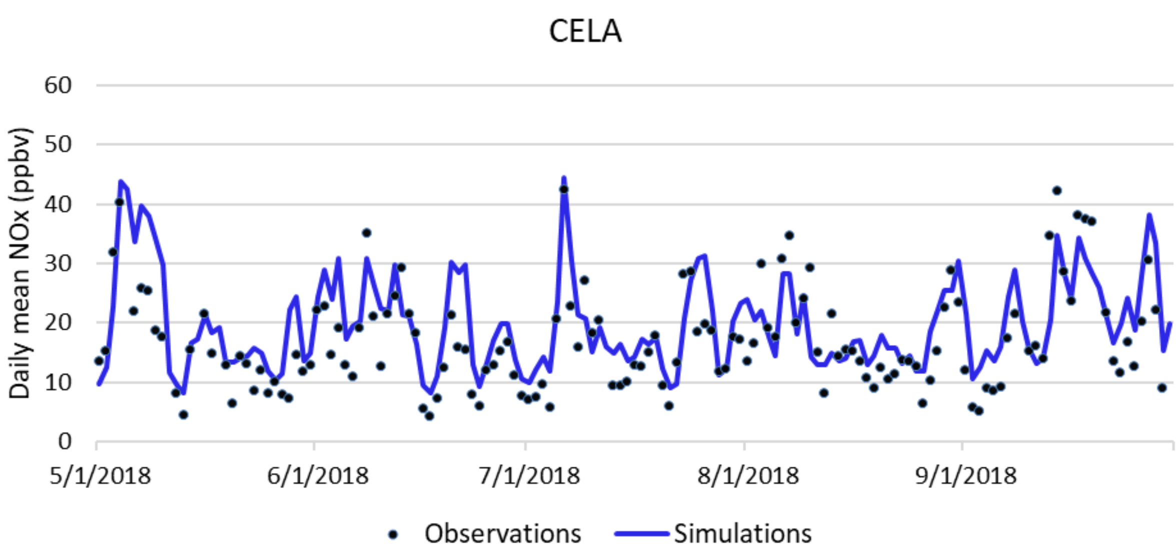


FIGURE III-B-4
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT CENTRAL LOS ANGELES

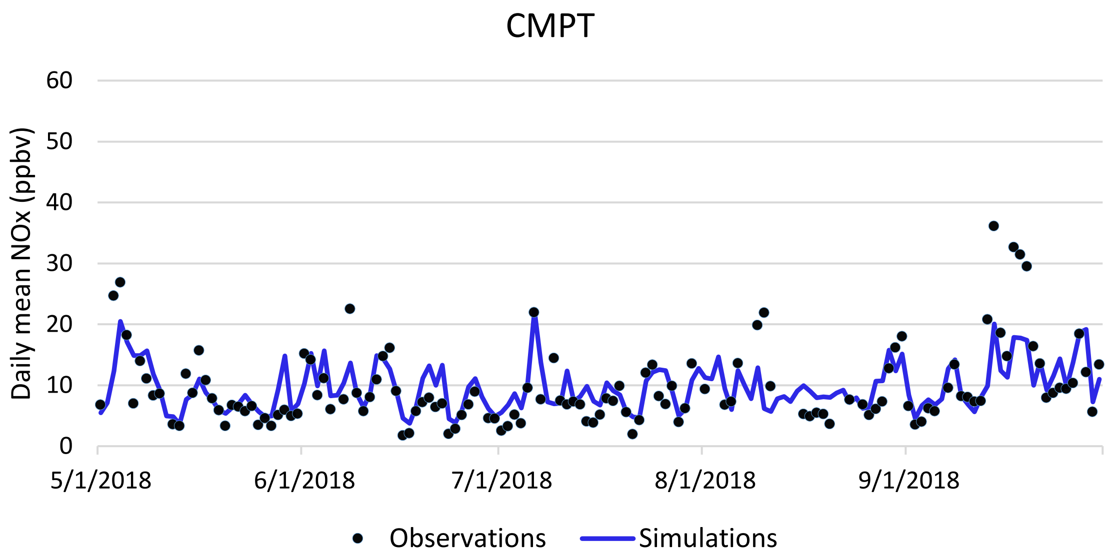


FIGURE III-B-5
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT COMPTON

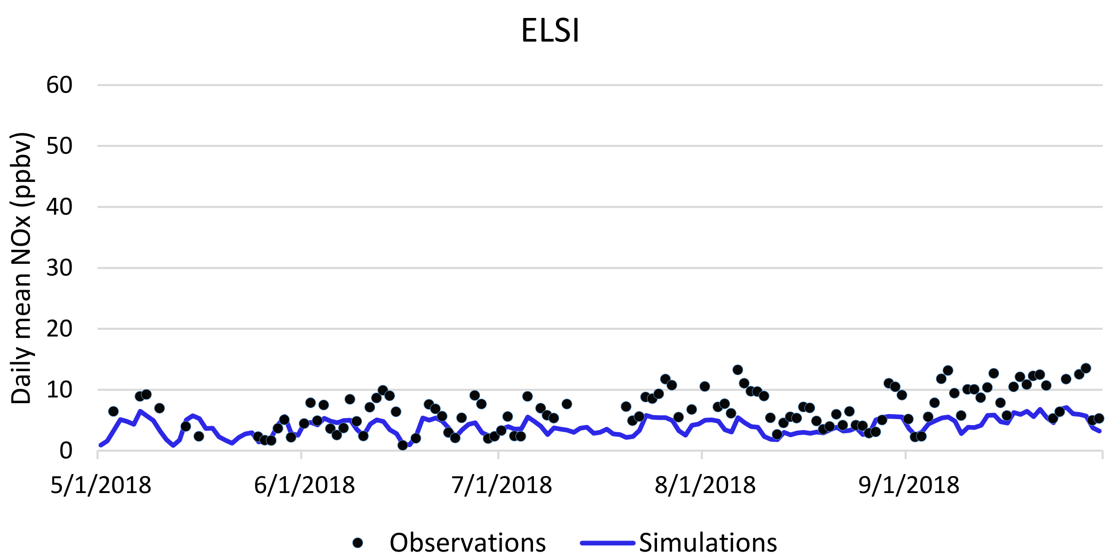


FIGURE III-B-6
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT LAKE ELSINORE

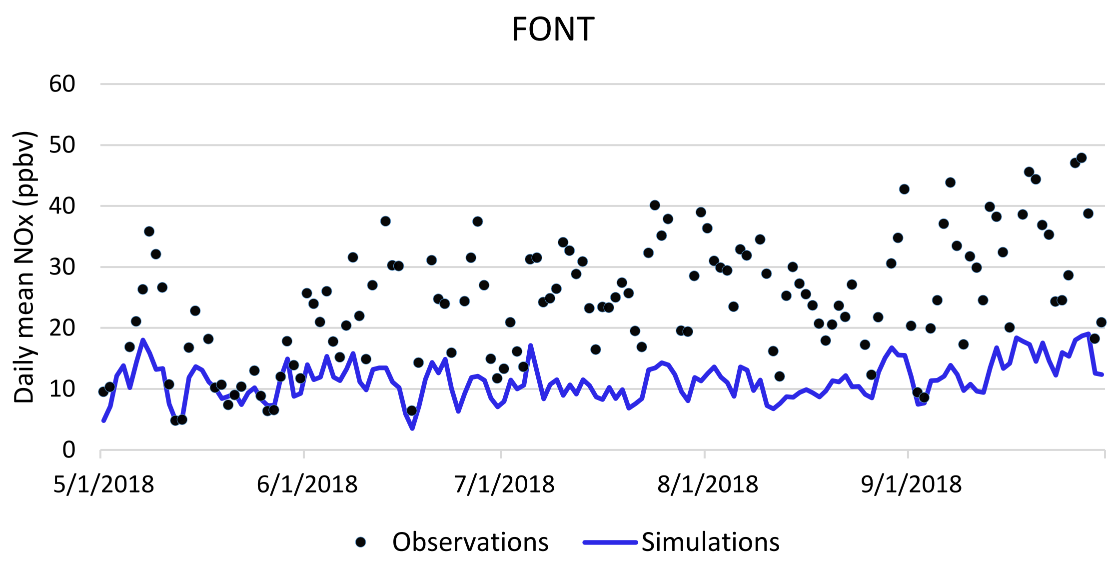


FIGURE III-B-7
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT FONTANA

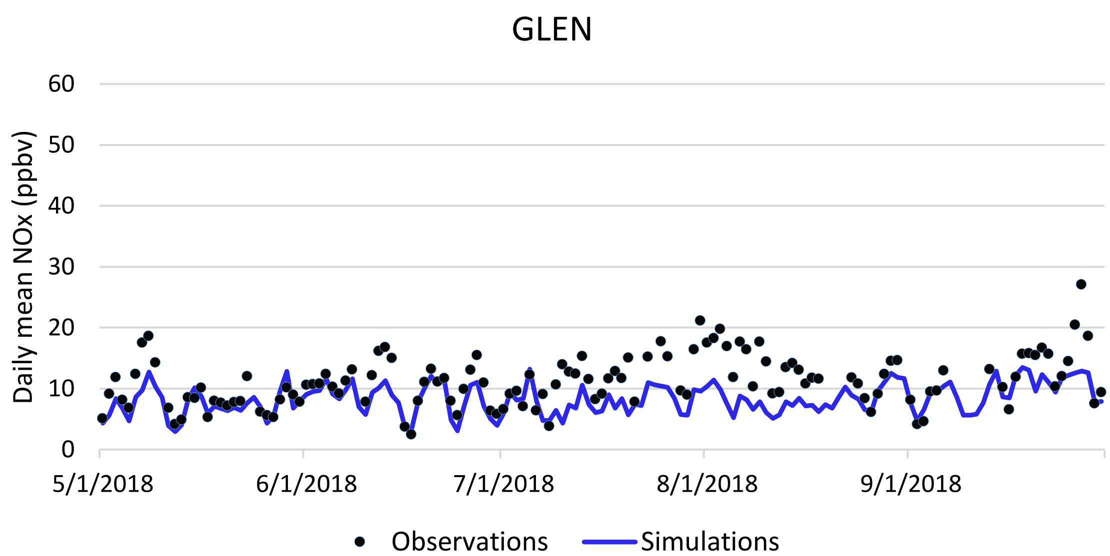


FIGURE III-B-8
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT GLENDORA

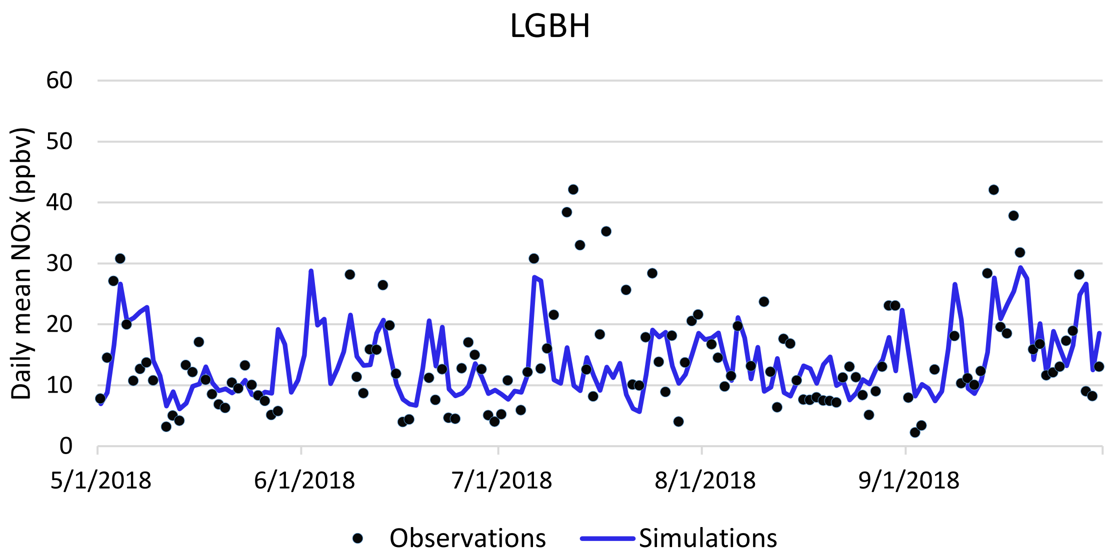


FIGURE III-B-9
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT LONG BEACH (HUDSON)

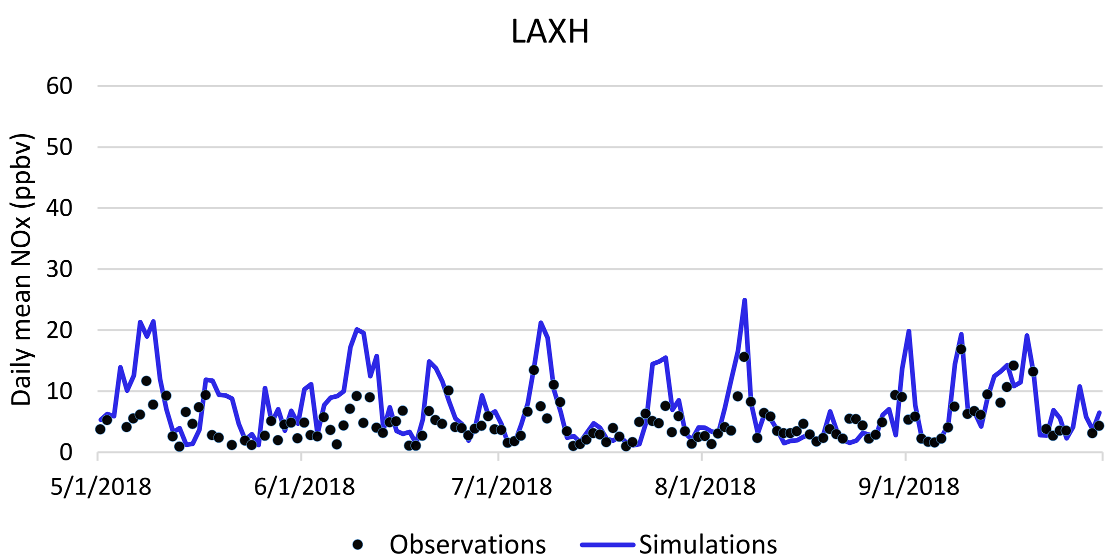


FIGURE III-B-10
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT LAX

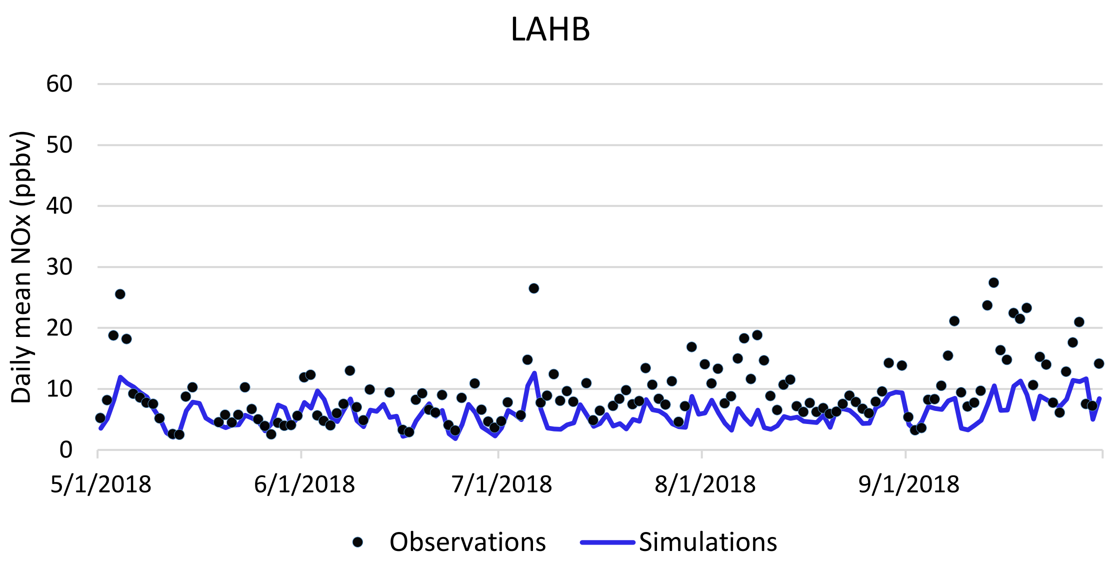


FIGURE III-B-11
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT LA HABRA

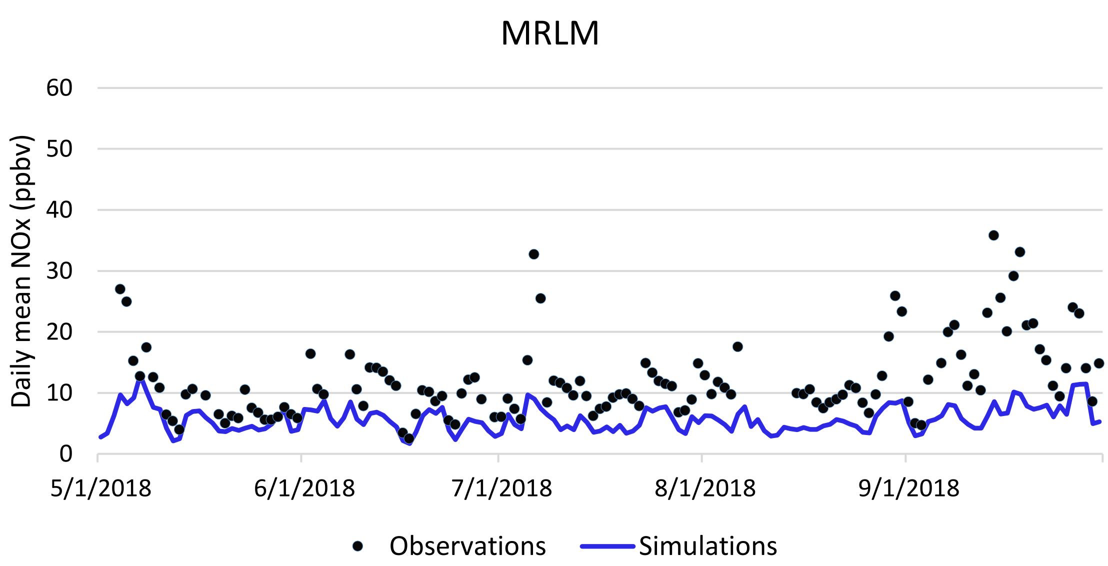


FIGURE III-B-12
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT MIRA LOMA VAN BUREN

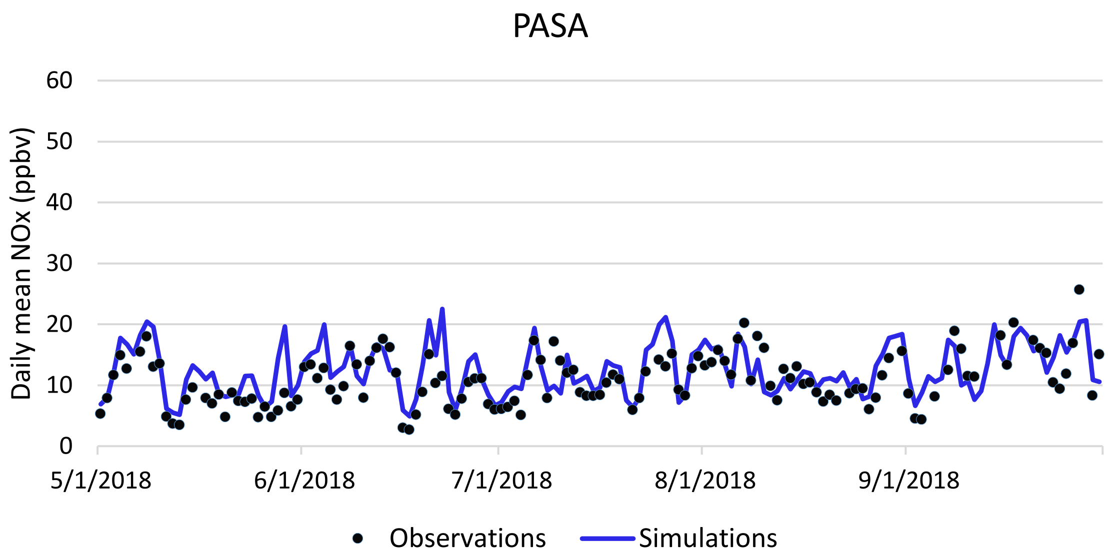


FIGURE III-B-13

2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT PASADENA

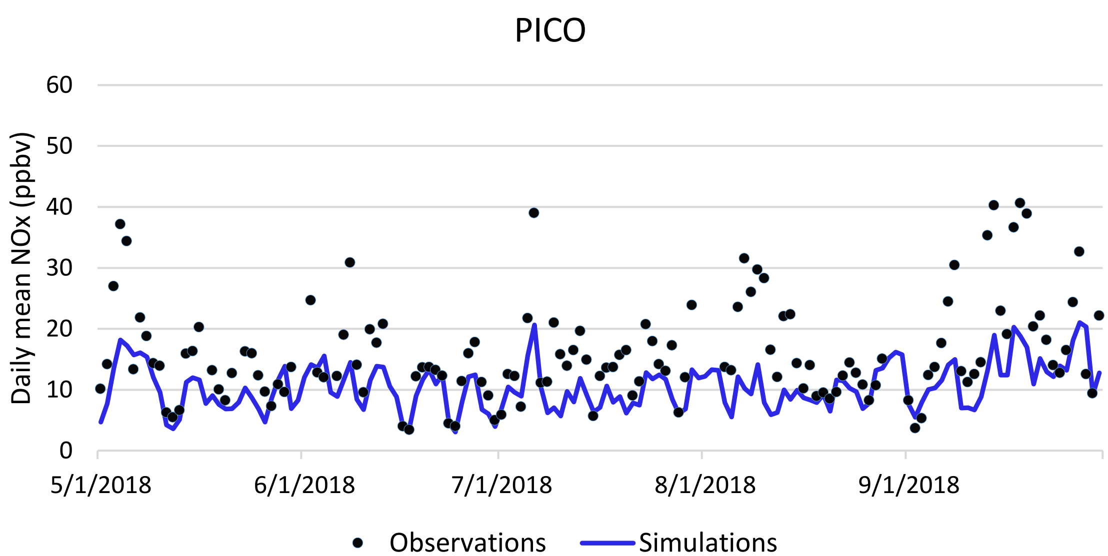


FIGURE III-B-14

2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT PICO RIVERA

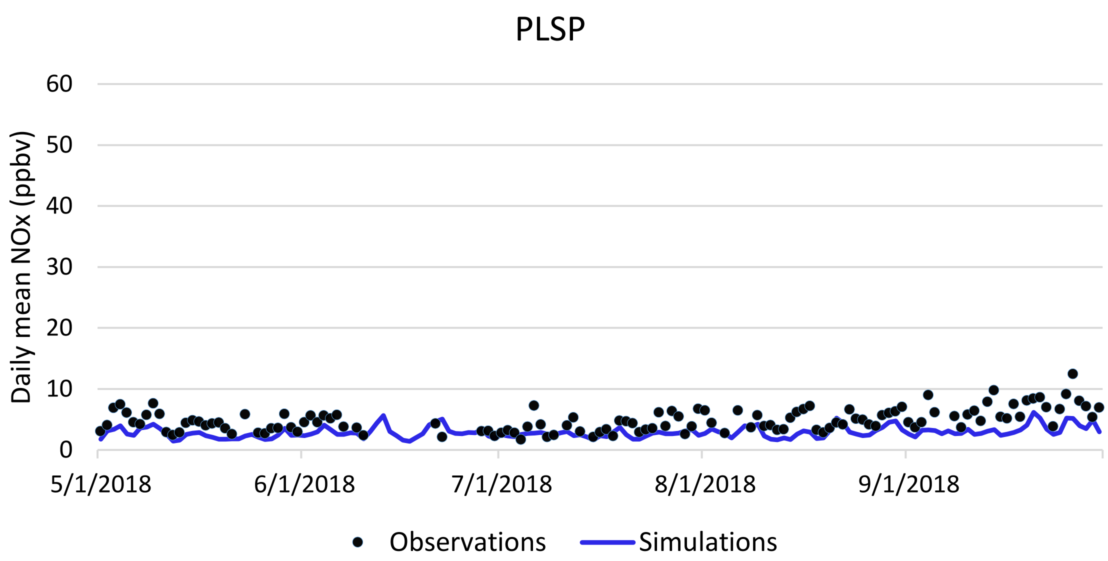


FIGURE III-B-15
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT PALM SPRINGS

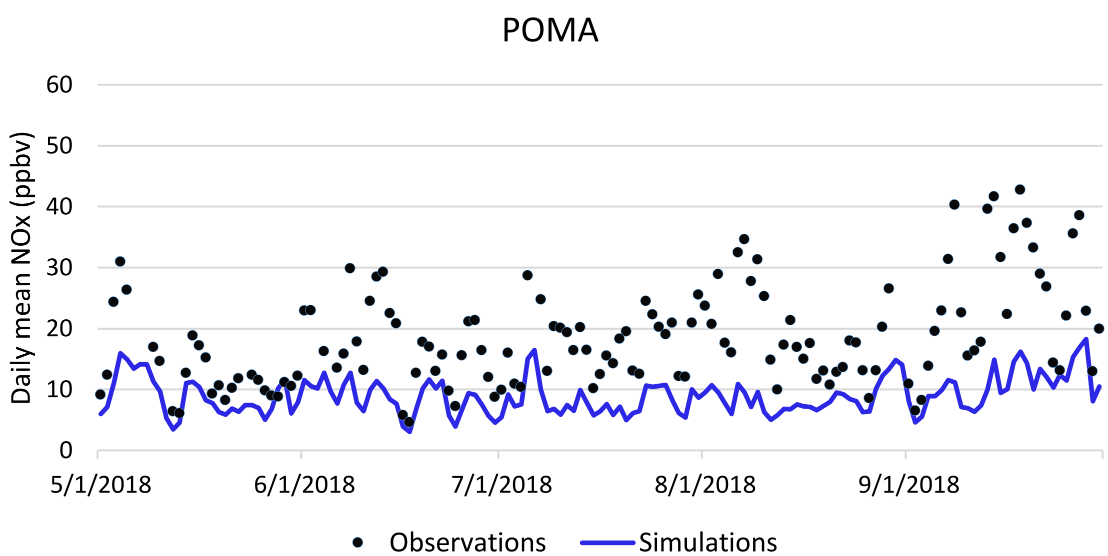


FIGURE III-B-16
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT POMONA

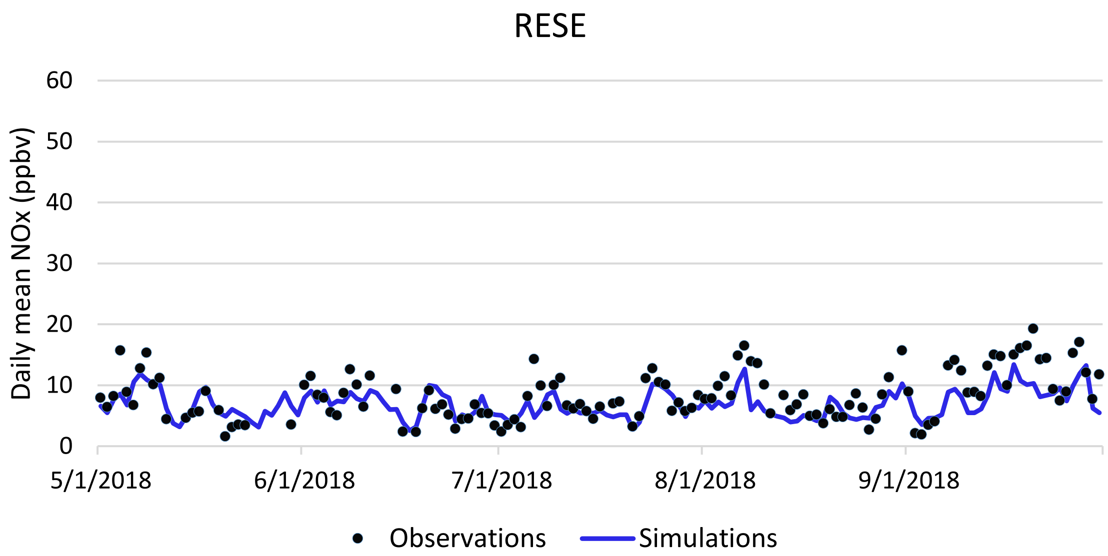


FIGURE III-B-17
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT RESEDA

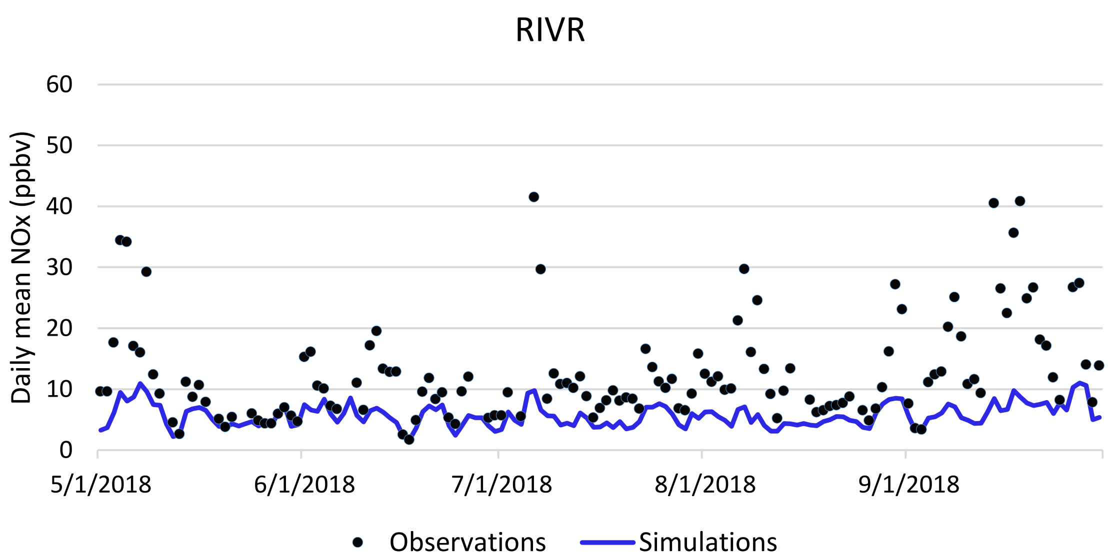


FIGURE III-B-18
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT RIVERSIDE

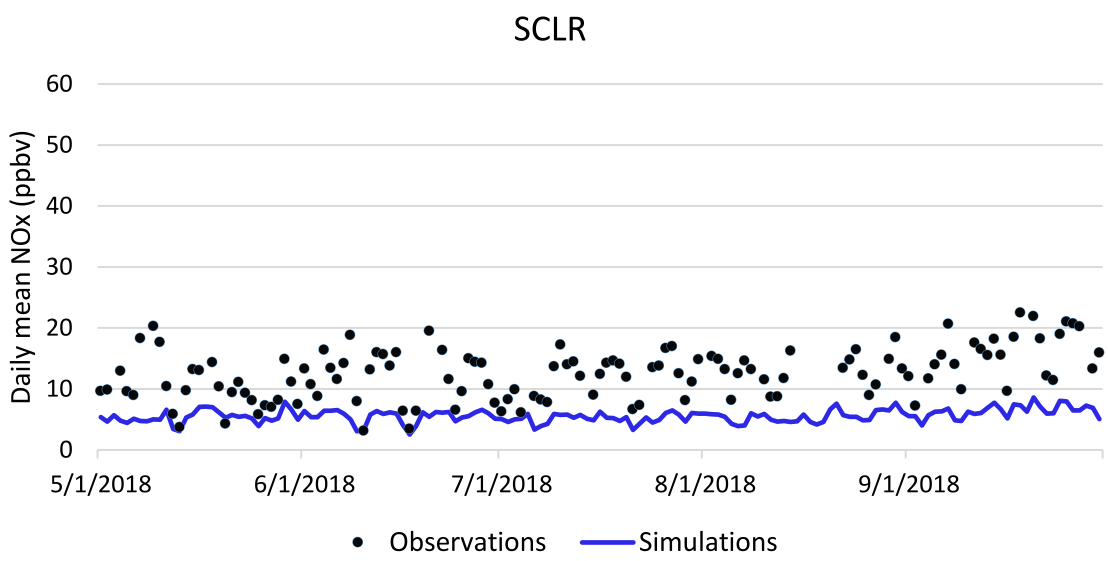


FIGURE III-B-19
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT SANTA CLARITA

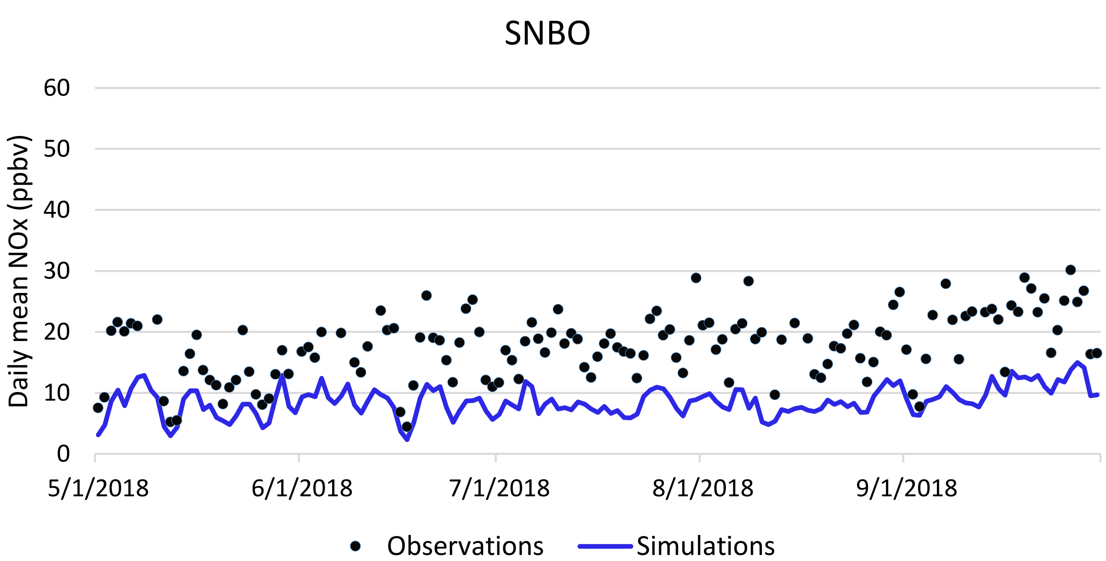


FIGURE III-B-20
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT SAN BERNARDINO

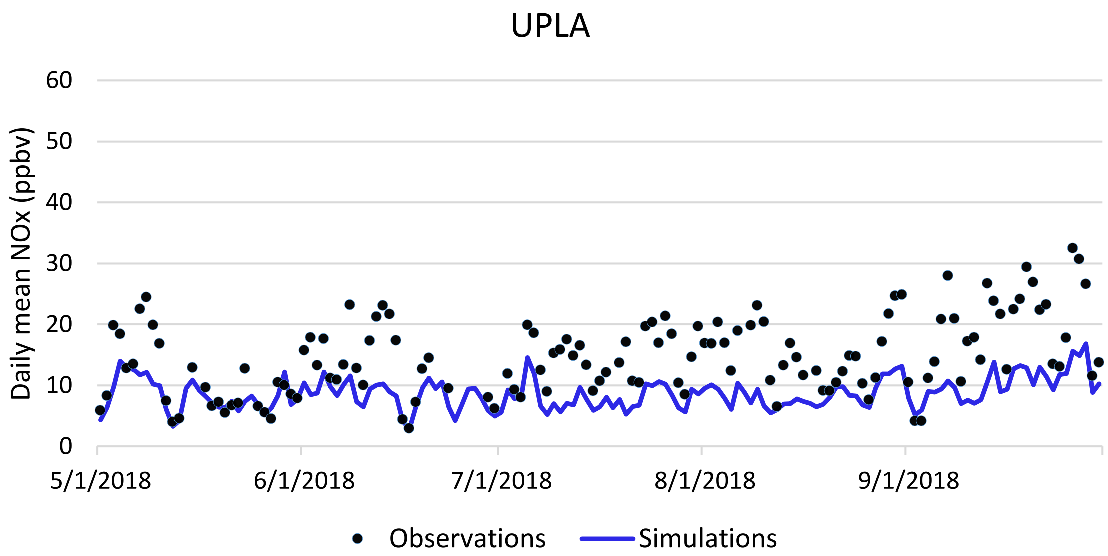


FIGURE III-B-21
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT UPLAND

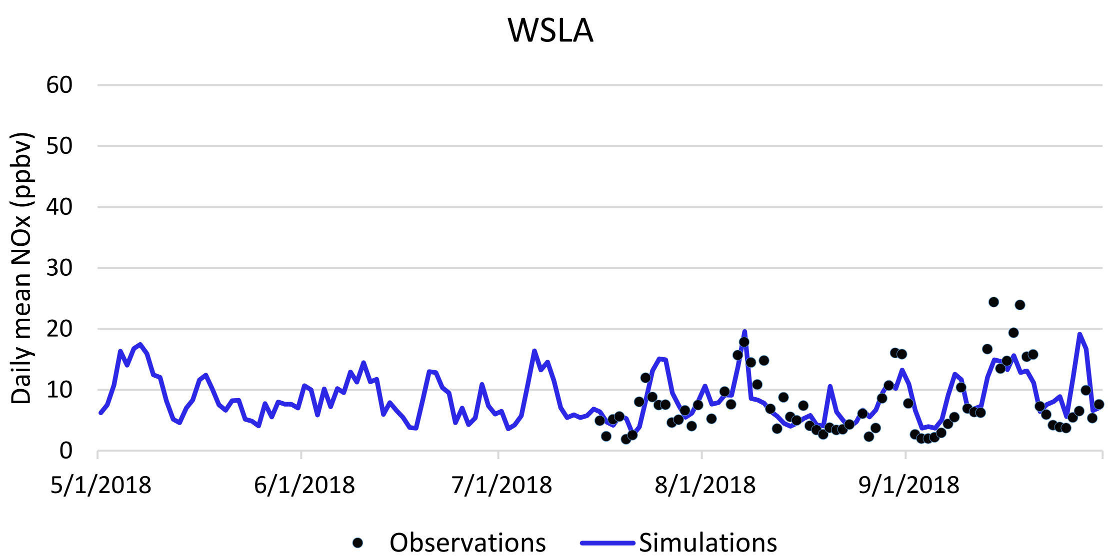


FIGURE III-B-22
2018 DAILY AVERAGED NOX MODEL PREDICTION AND MEASUREMENT COMPARISON AT WEST LOS ANGELES

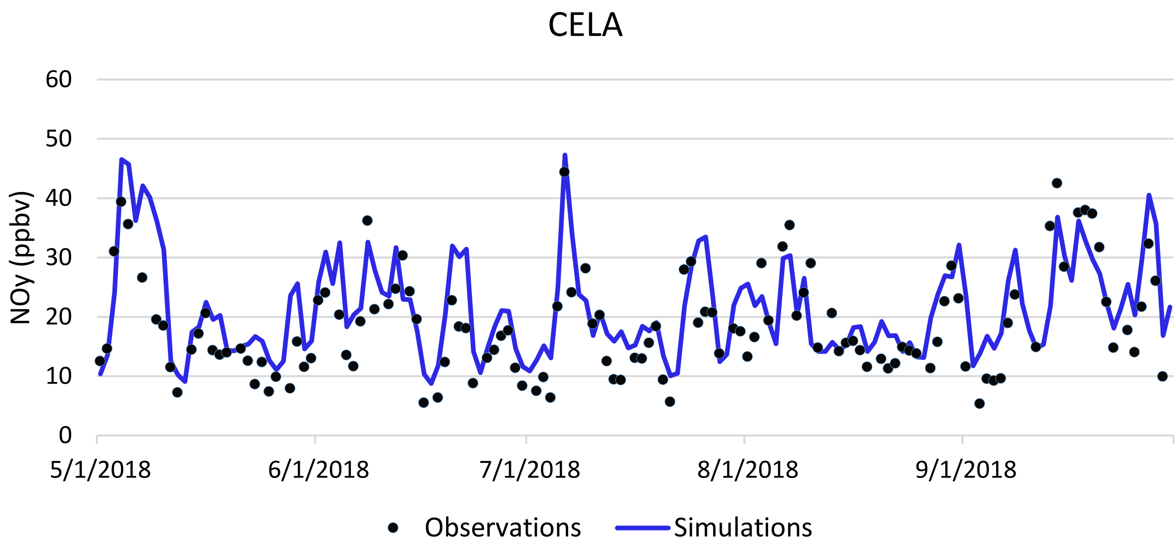


FIGURE III-C-1
2018 DAILY AVERAGED NOY MODEL PREDICTION AND MEASUREMENT COMPARISON AT CENTRAL LOS ANGELES

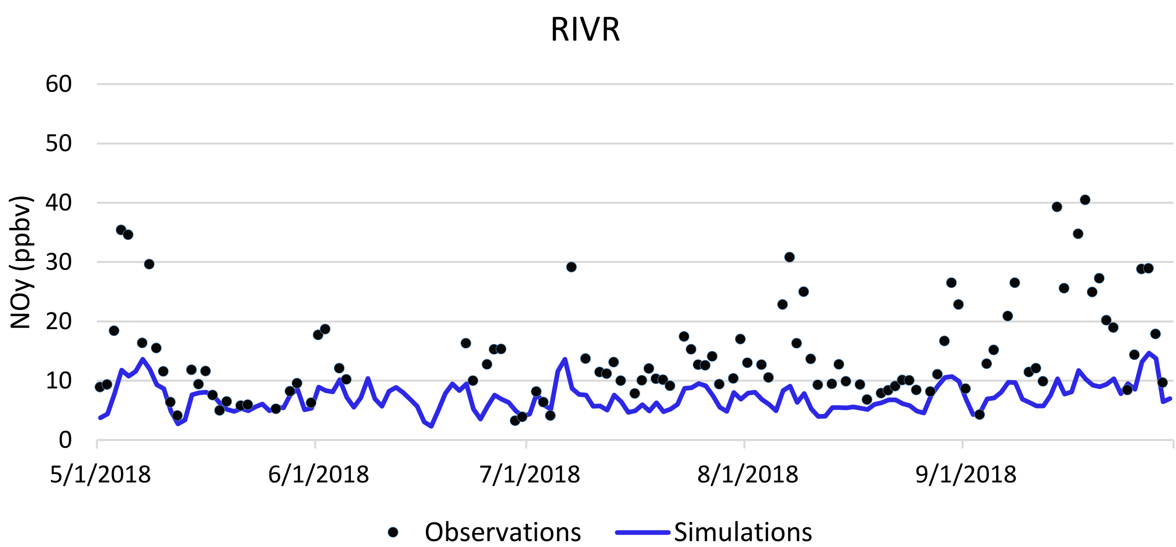


FIGURE III-C-2
2018 DAILY AVERAGED NOY MODEL PREDICTION AND MEASUREMENT COMPARISON AT RIVERSIDE

CMAQ Model Performance – Diurnal Variation

Figures III-D1 to III-D28 show the hourly boxplots for the seasonal composed 1-Hour ozone concentrations for 28 stations. These plots are called Tukey boxplots. The box is drawn between the 25th (Q1) and 75th (Q3) percentiles, with a horizontal line drawn in the middle indicating the median. The whiskers extend above and below the box to the most extreme data points that are within a distance to the box equal to 1.5 times the interquartile range, i.e. 1.5×(Q3 - Q1). Points outside the whiskers' ranges indicating outliers are plotted too. The diurnal variation of 1-Hour ozone for each station is reproduced by the model generally well. The peak values of hourly ozone usually appear between 12:00 to 16:00 PST. The model is also able to capture the differences in peak times across the basin, with stations in the western part of the basin peaking earlier, like Central Los Angeles and Anaheim, and stations in the eastern part of the basin and Coachella Valley peaking later in the day.

Figures III-E1 to III-E22 show the hourly boxplots for seasonal composed 1-Hour NOx concentrations for 22 stations. Both model and observations display similar diurnal variations for the 1-Hour NOx concentrations. Mostly the higher values of NOx observed between 05:00 – 9:00 PST, and the lower values of NOx observed between 14:00 – 16:00 PST are well reproduced by the model. However, the model underestimates the high NOx peaks during the morning rush hours in many stations.

Figures III-F1 to III-F2 represent the seasonal composed 1-Hour NOy for the two stations – Central Los Angeles and Riverside. The daily maximum values appear in the early morning (5:00 – 7:00 PST) and the minimum values appear in the afternoon (14:00 – 17:00 PST). The contrast between the higher NOy concentration over Central Los Angeles – representative of an urban emission source area – and the lower NOy concentration over Riverside – representative of an urban emission receptor area – are well predicted by the model, although the model underestimates the concentration of NOy in Riverside during the morning rush hours.

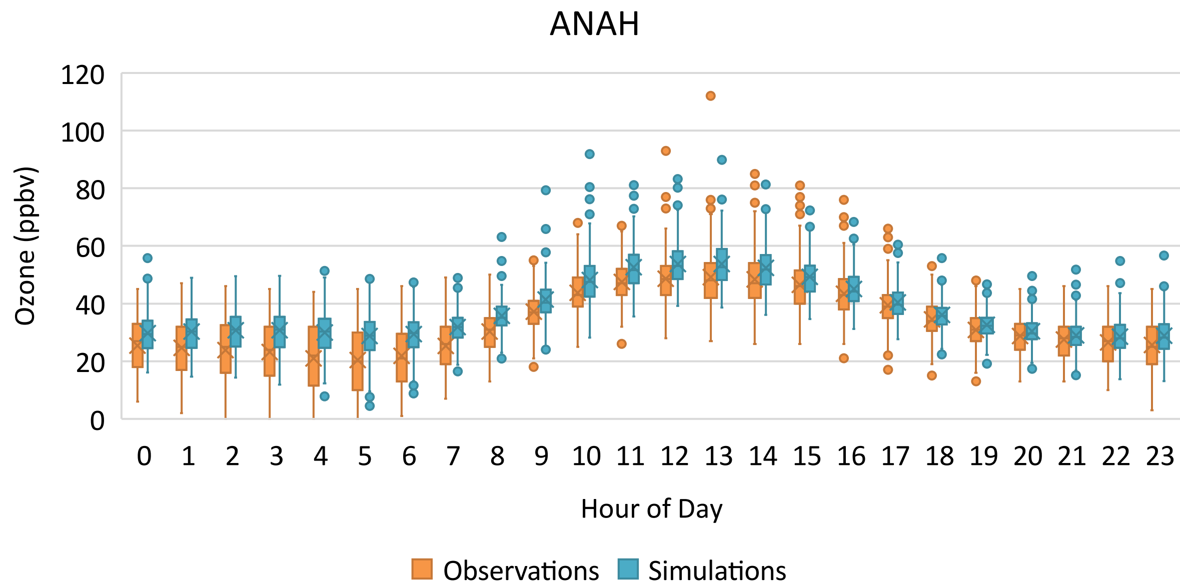


FIGURE III-D-1

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ANAHEIM. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

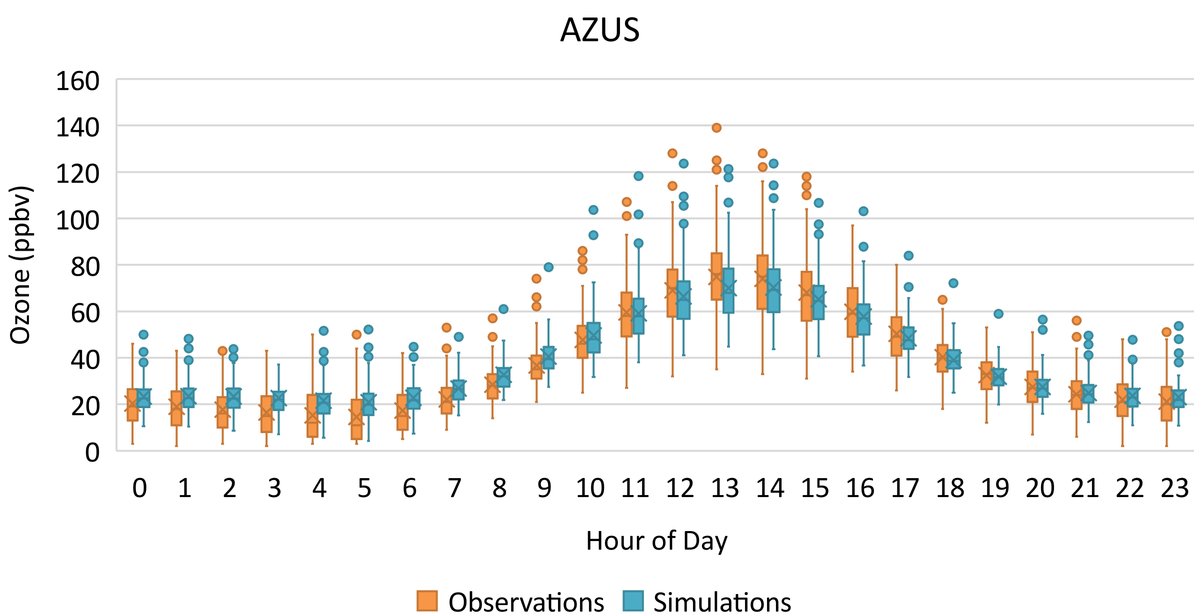


FIGURE III-D-2

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT AZUSA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

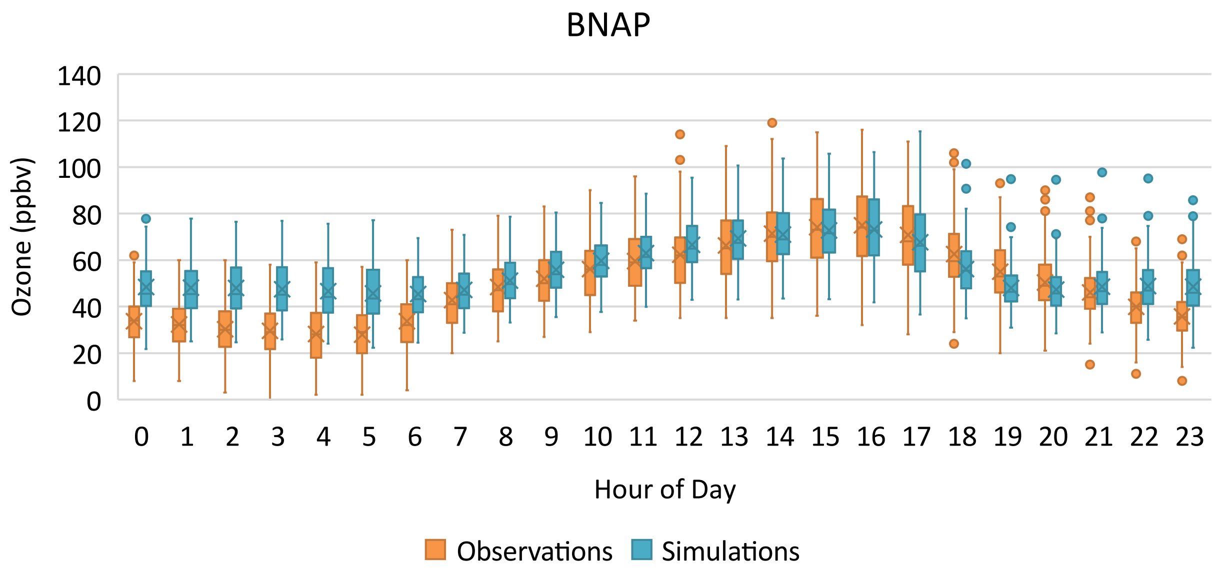


FIGURE III-D-3

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT BANNING. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

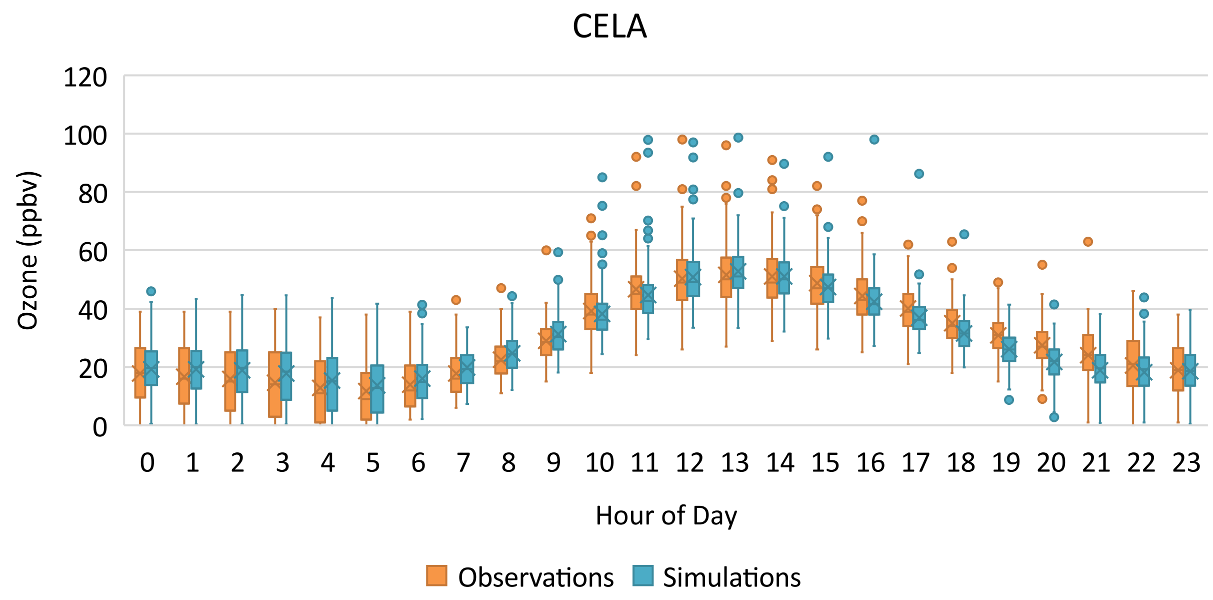


FIGURE III-D-4

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT CENTRAL LOS ANGELES. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

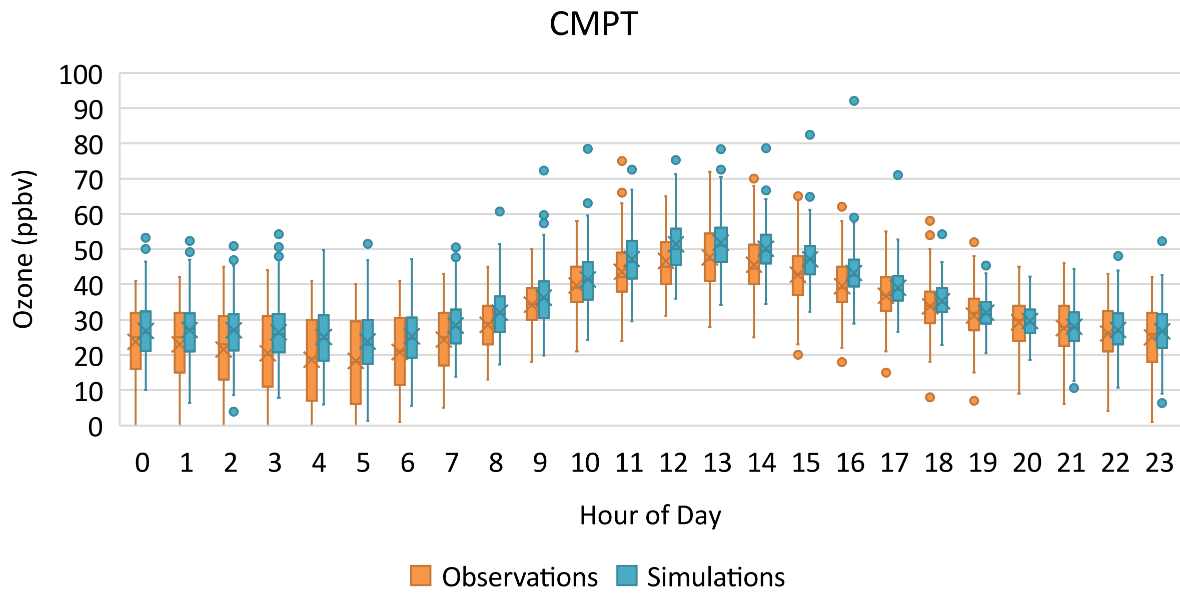


FIGURE III-D-5

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT COMPTON. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

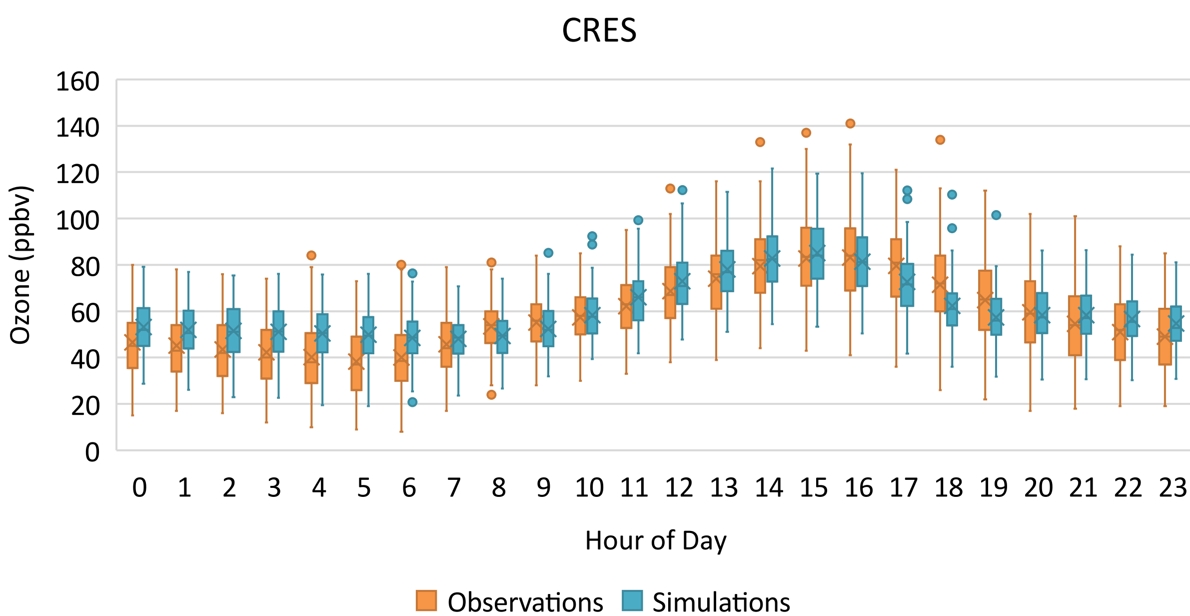


FIGURE III-D-6

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT CRESTLINE. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

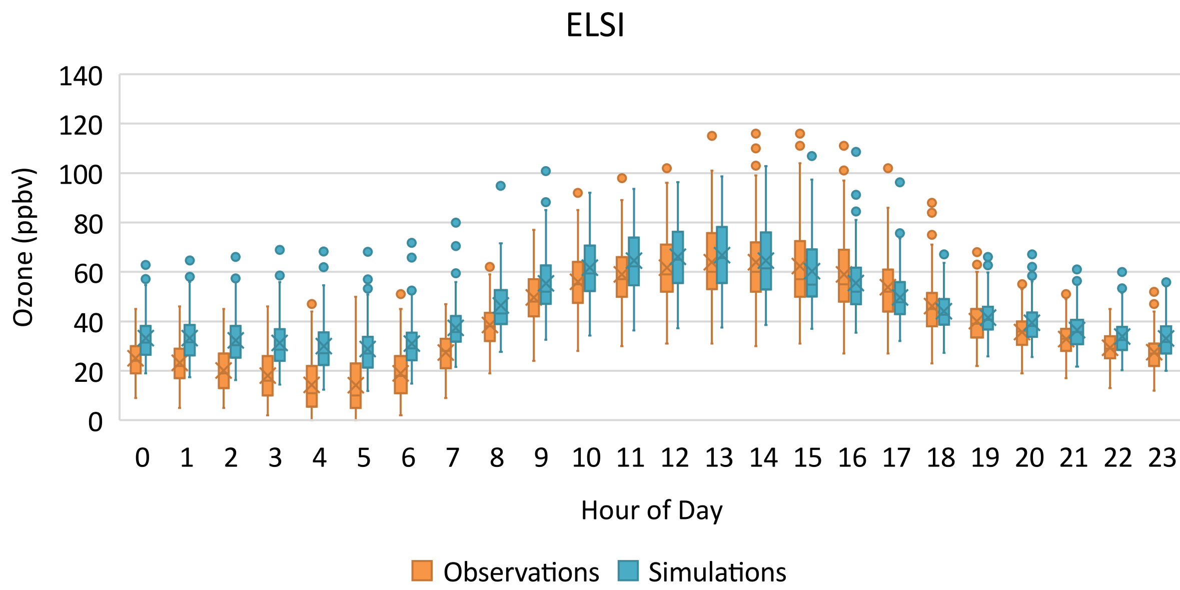


FIGURE III-D-7

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT LAKE ELSINORE. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

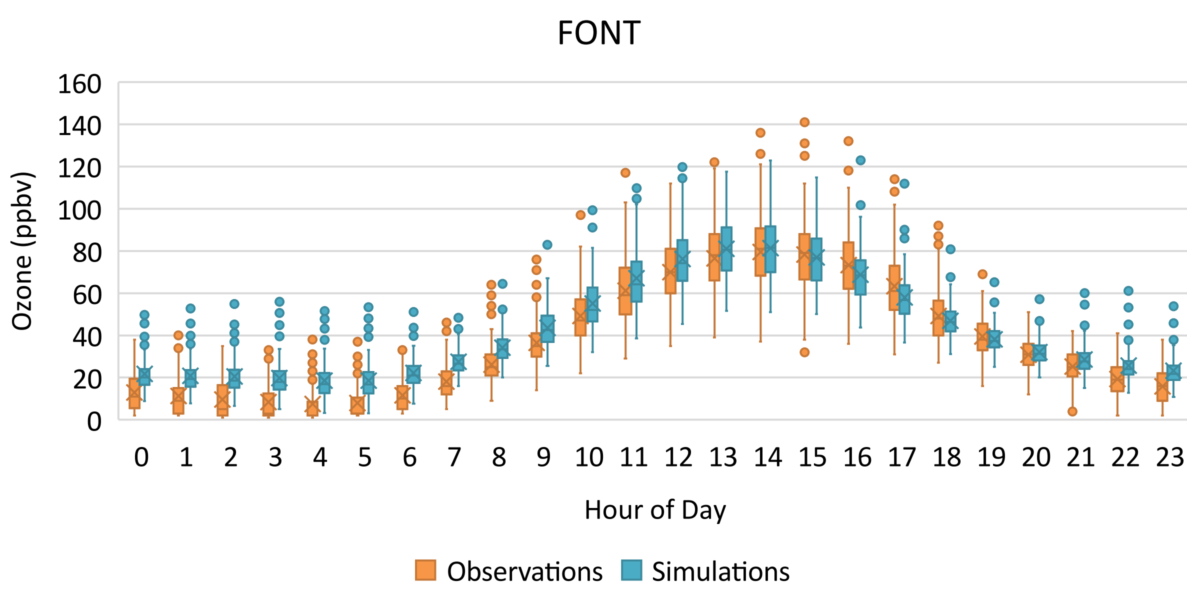


FIGURE III-D-8

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT FONTANA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

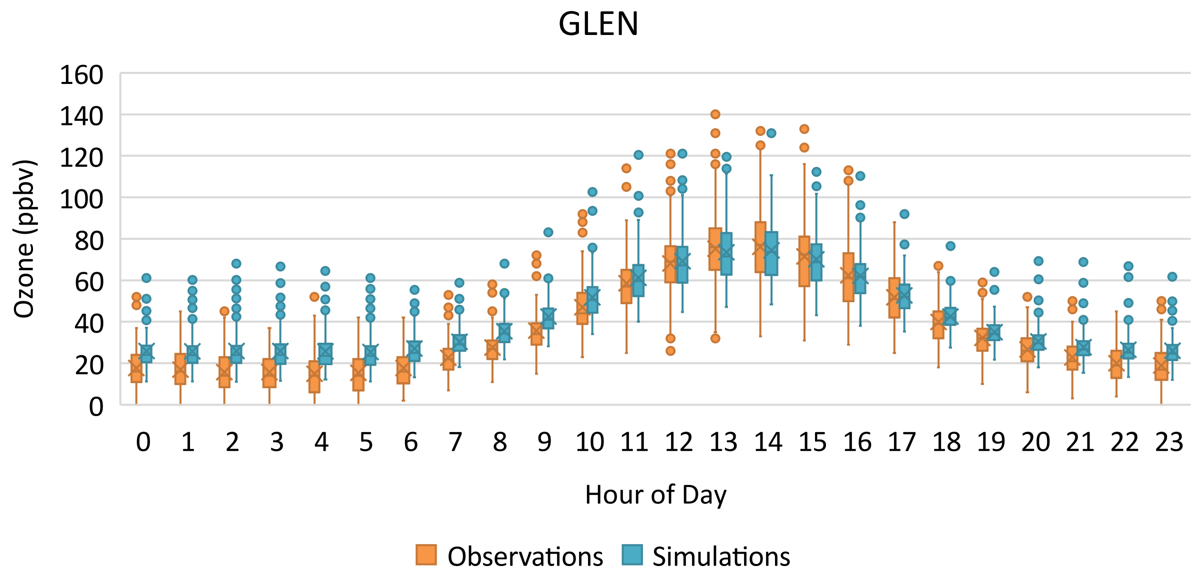


FIGURE III-D-9

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT GLENDORA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

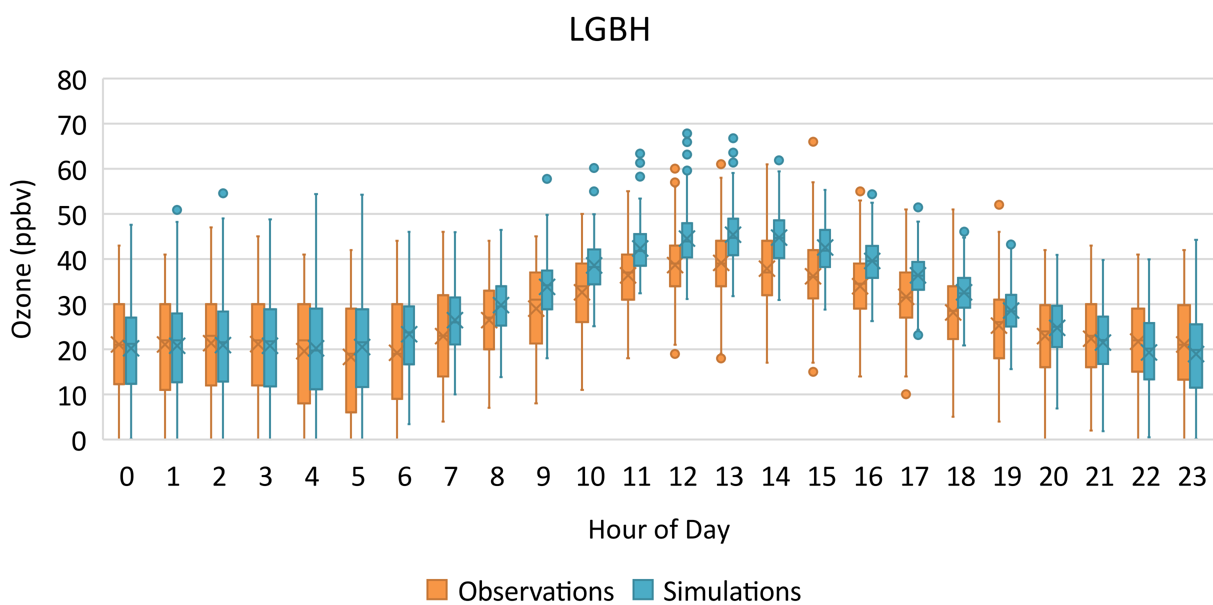


FIGURE III-D-10

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT HUDSON. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

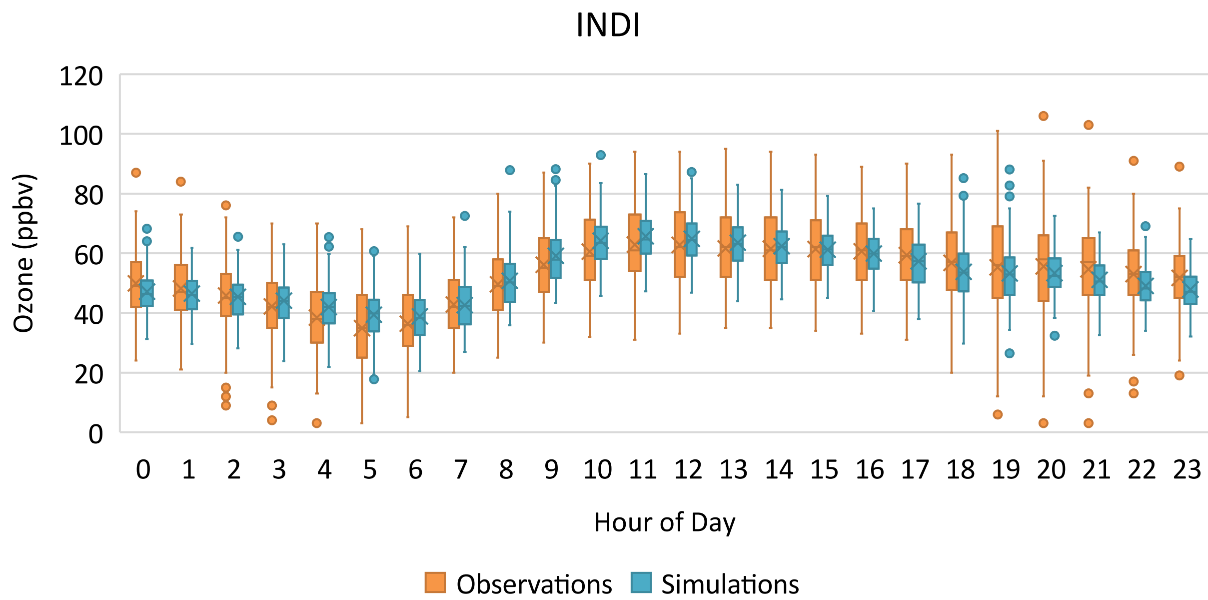


FIGURE III-D-11

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT INDIO. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

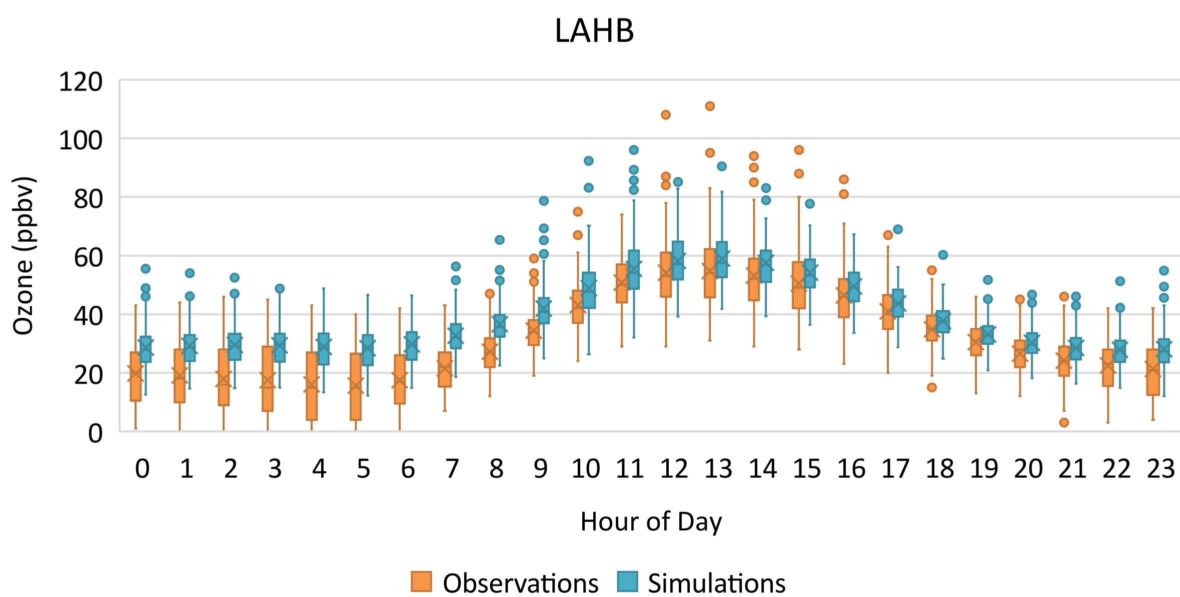


FIGURE III-D-12

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT LA HABRA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES

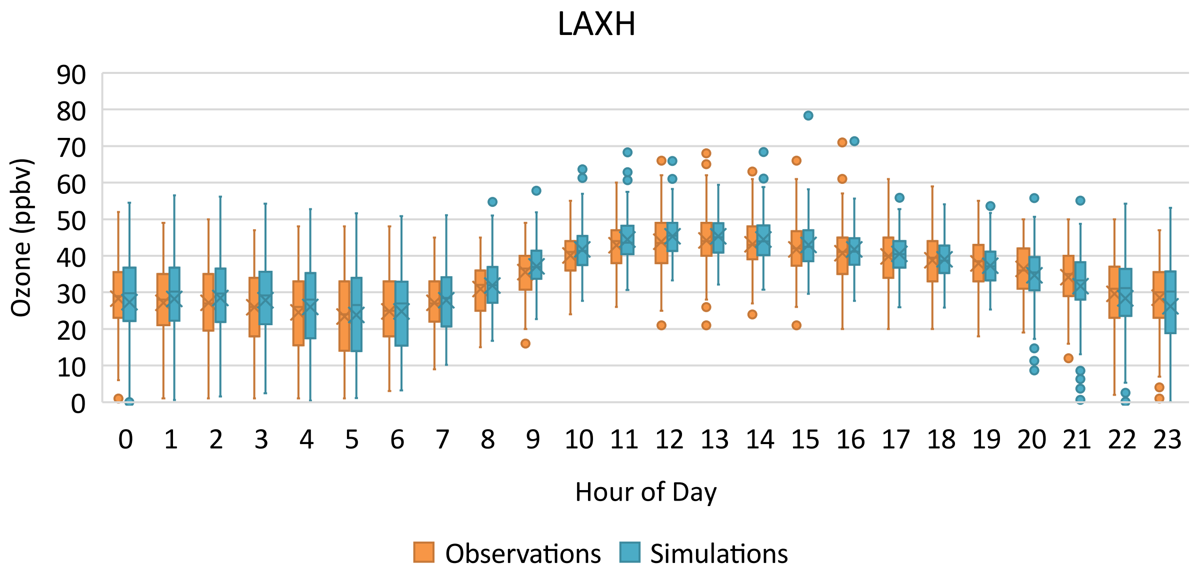


FIGURE III-D-13

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT LAX. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

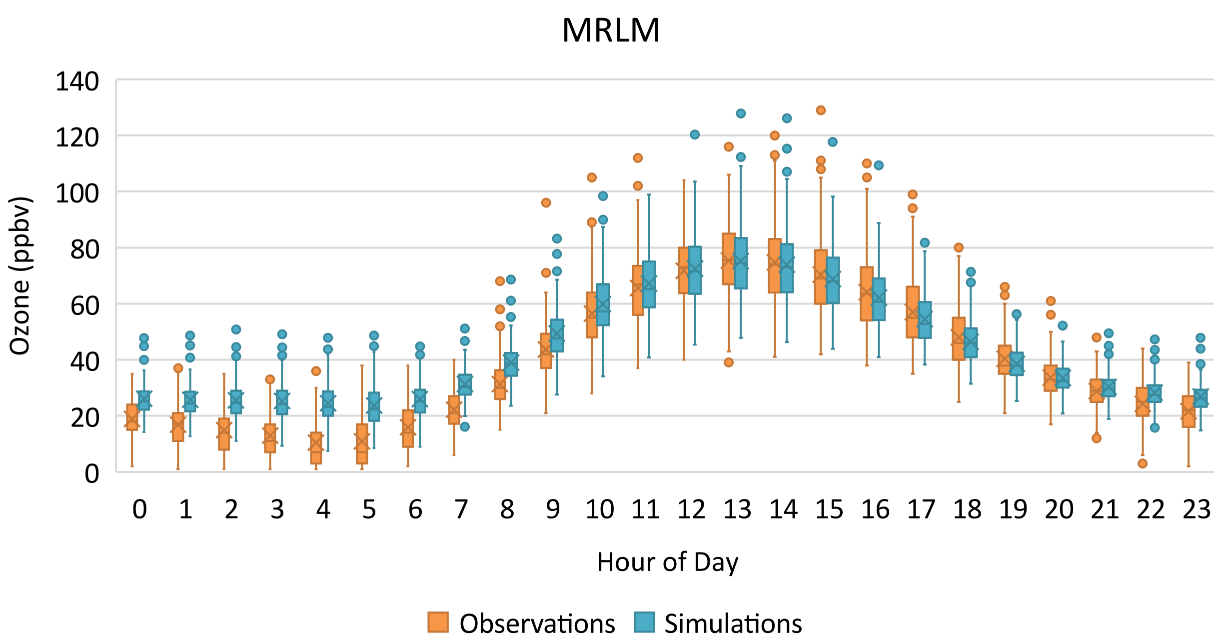


FIGURE III-D-14

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT MIRA LOMA VAN BUREN. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

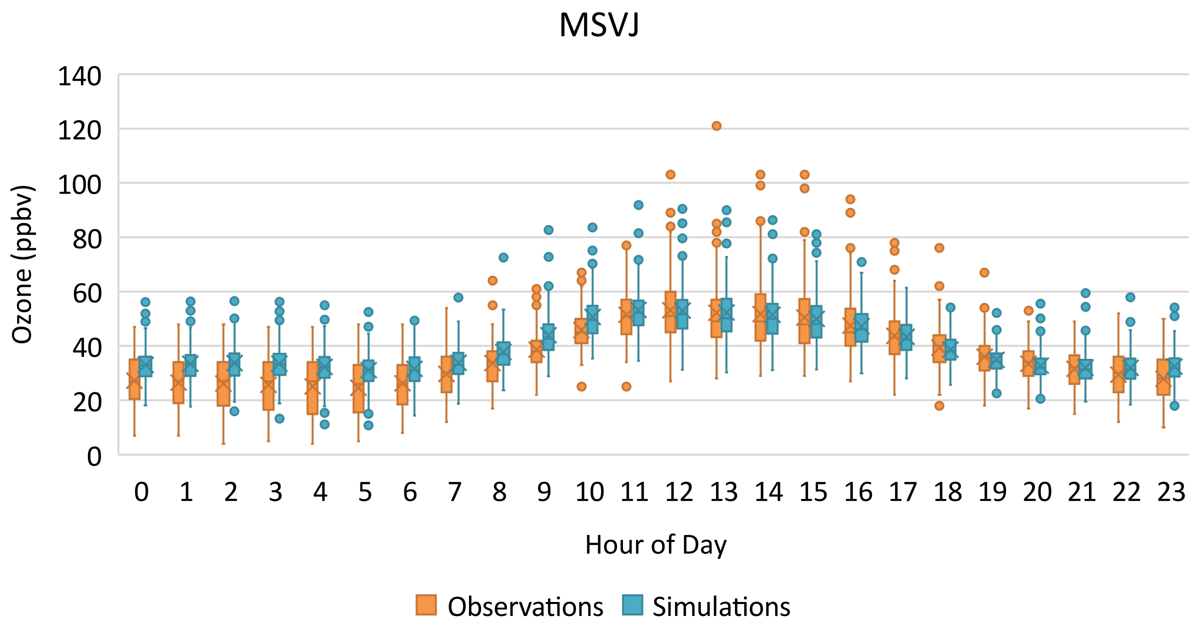


FIGURE III-D-15

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT MISSION VIEJO. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

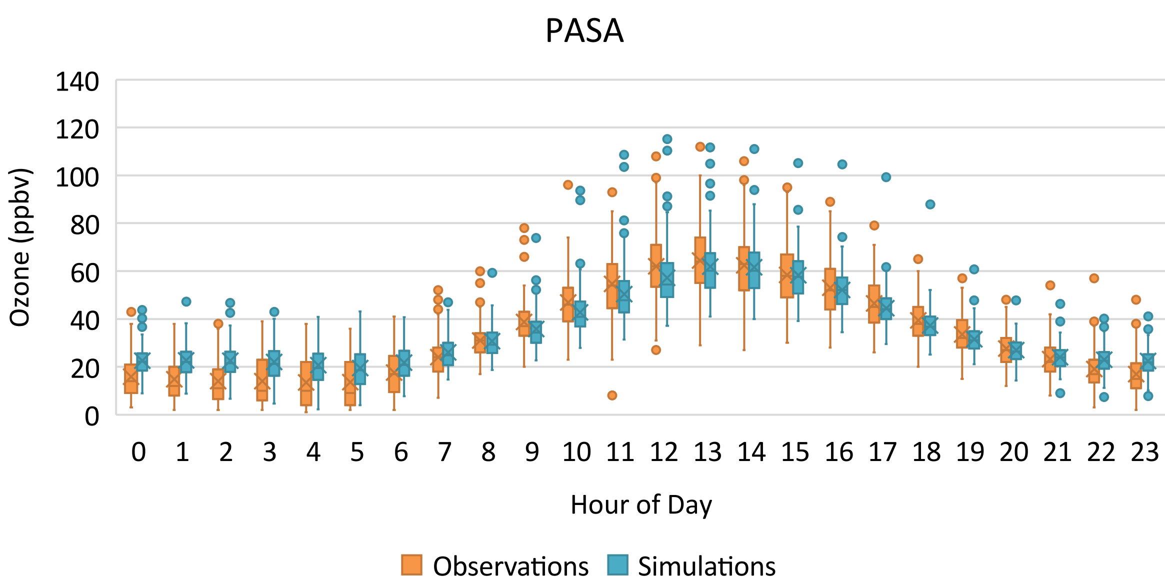


FIGURE III-D-16

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT PASADENA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

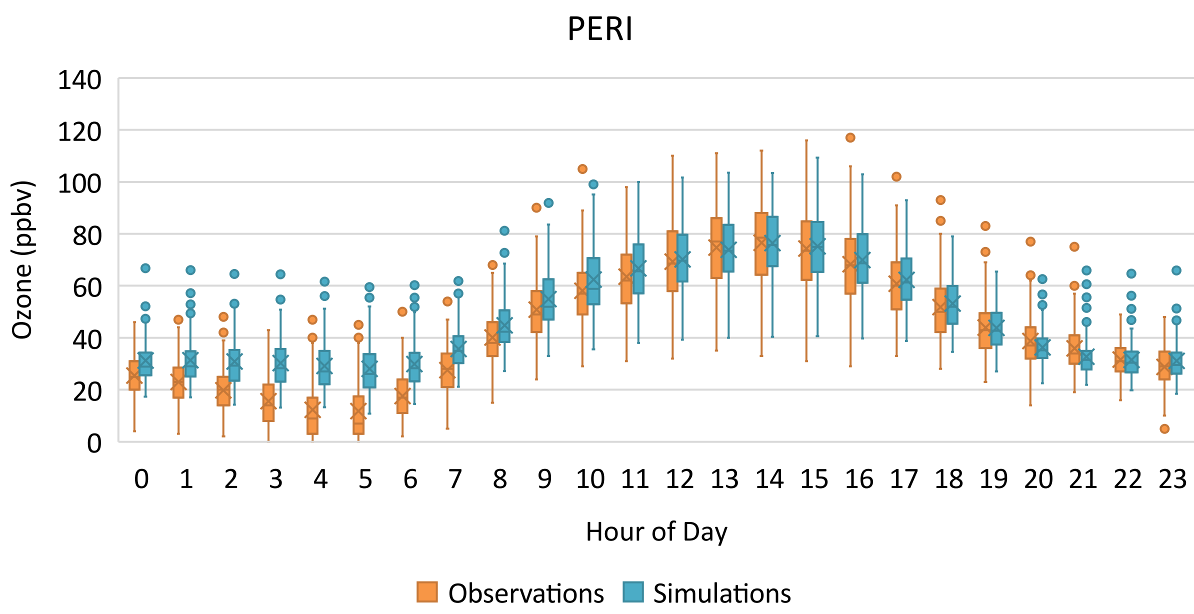


FIGURE III-D-17

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT PERRIS. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

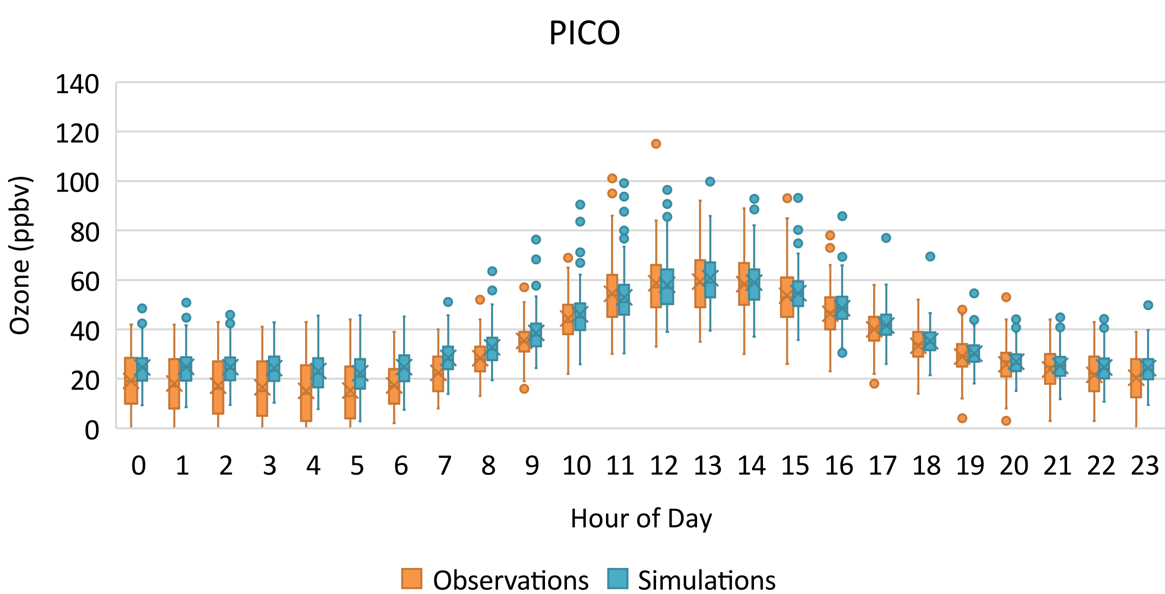


FIGURE III-D-18

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT PICO RIVERO. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

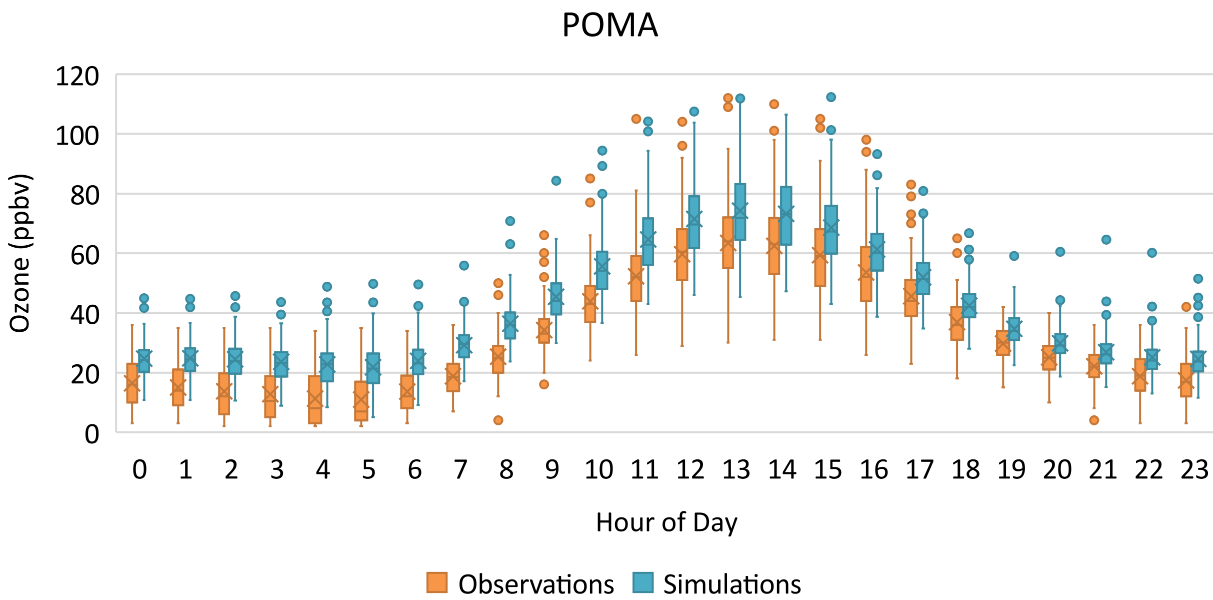


FIGURE III-D-19

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT POMONA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

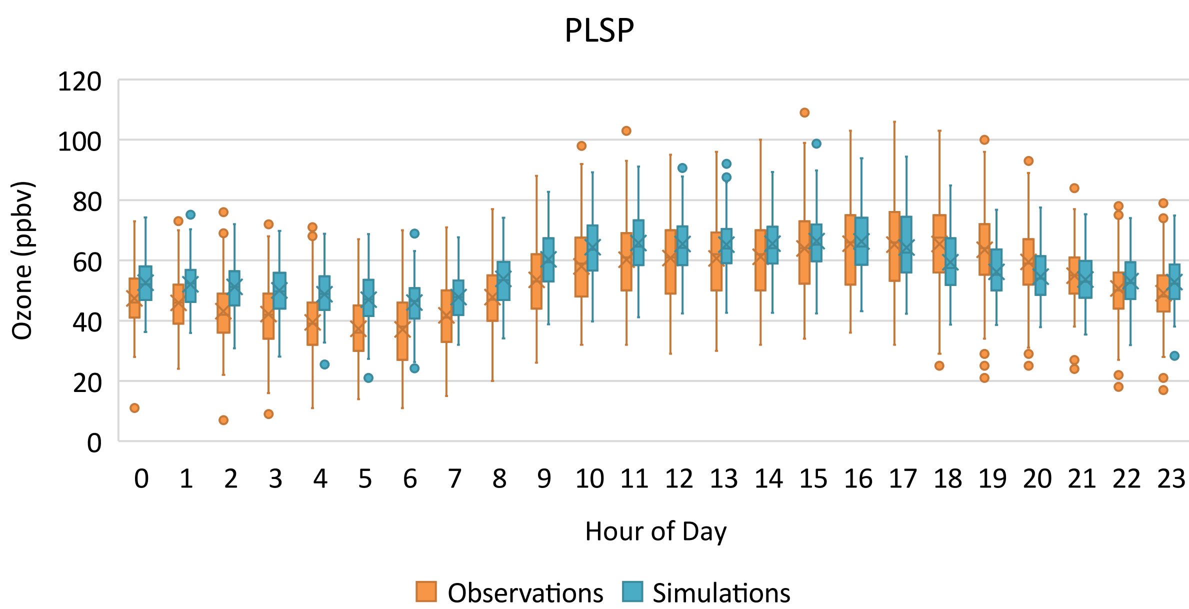


FIGURE III-D-20

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT PALM SPRINGS. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

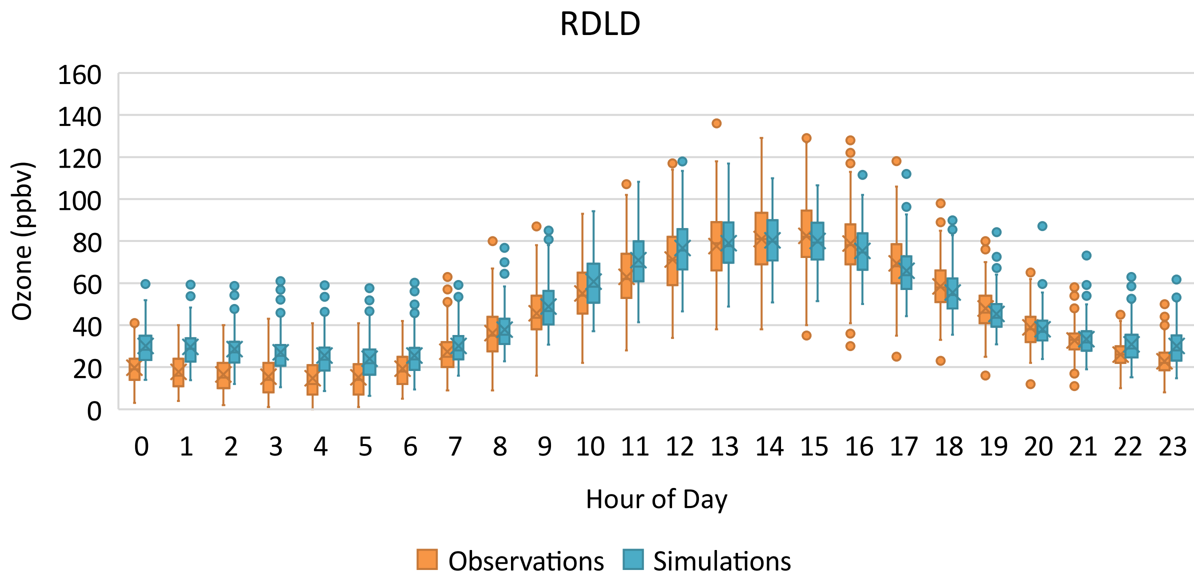


FIGURE III-D-21

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT REDLANDS. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

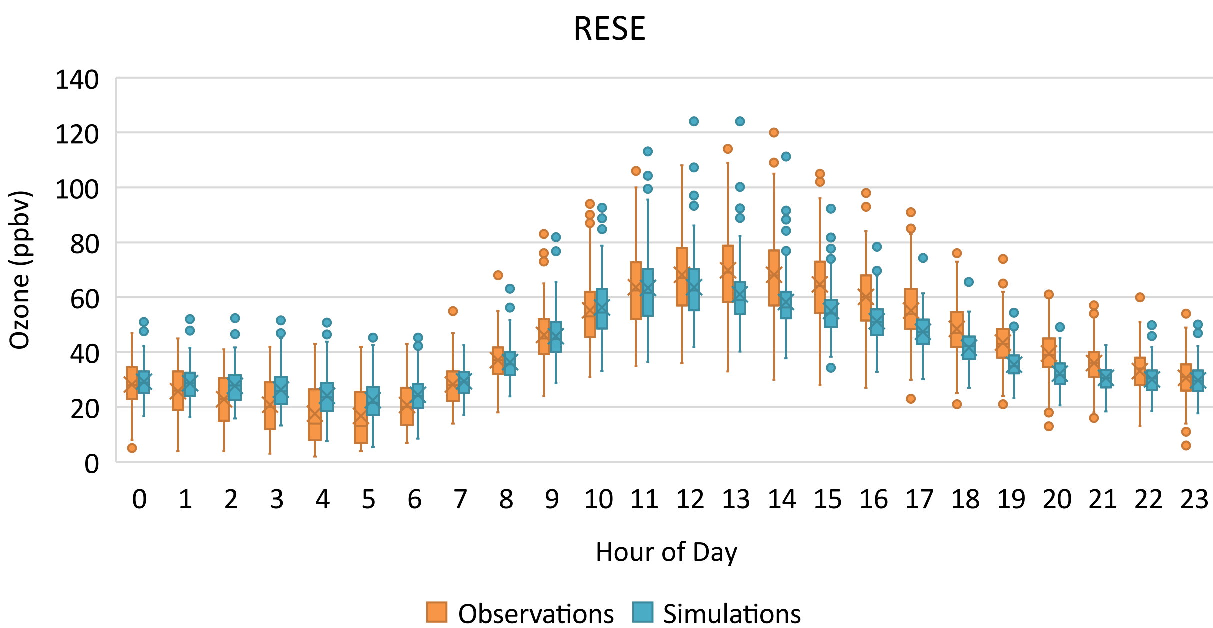


FIGURE III-D-22

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT RESEDA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

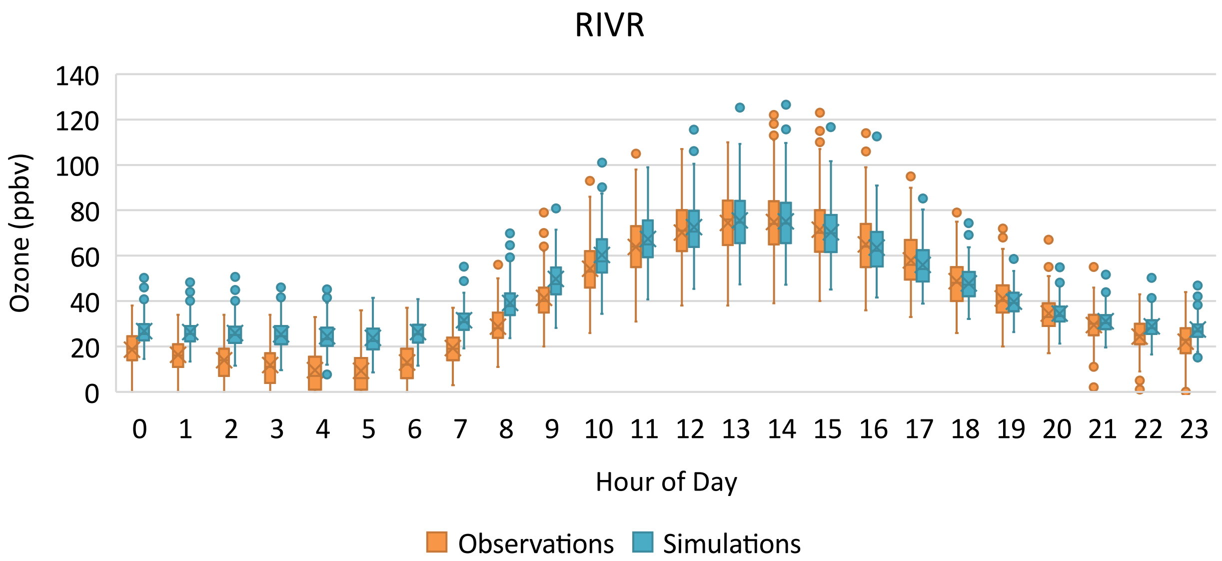


FIGURE III-D-23

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT RIVERSIDE. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

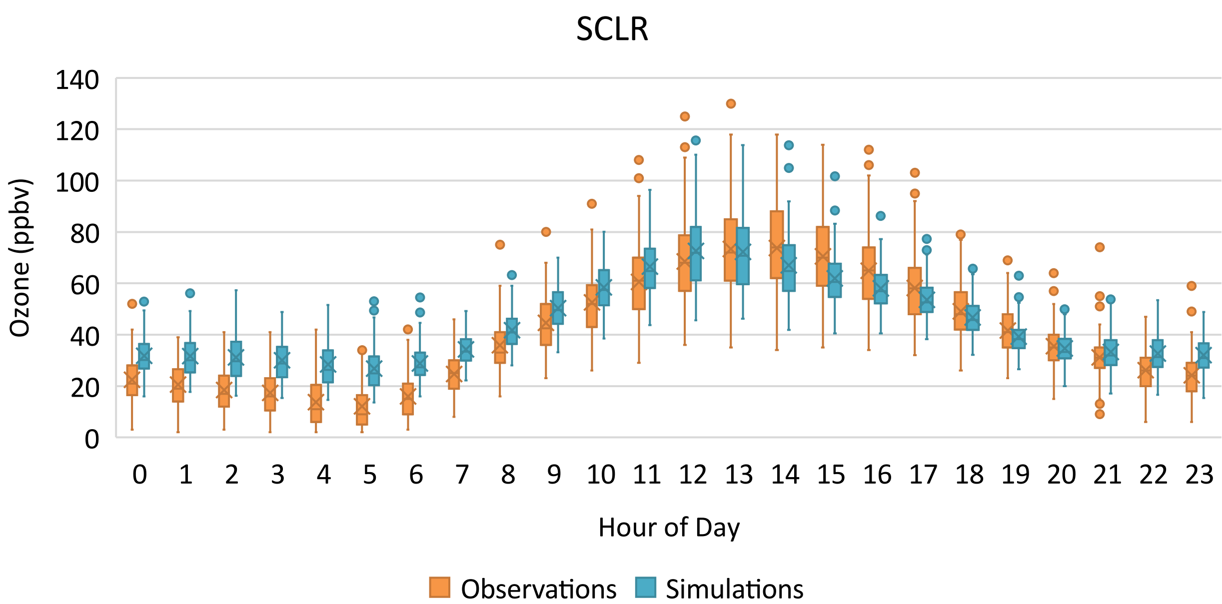


FIGURE III-D-24

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT SANTA CLARITA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

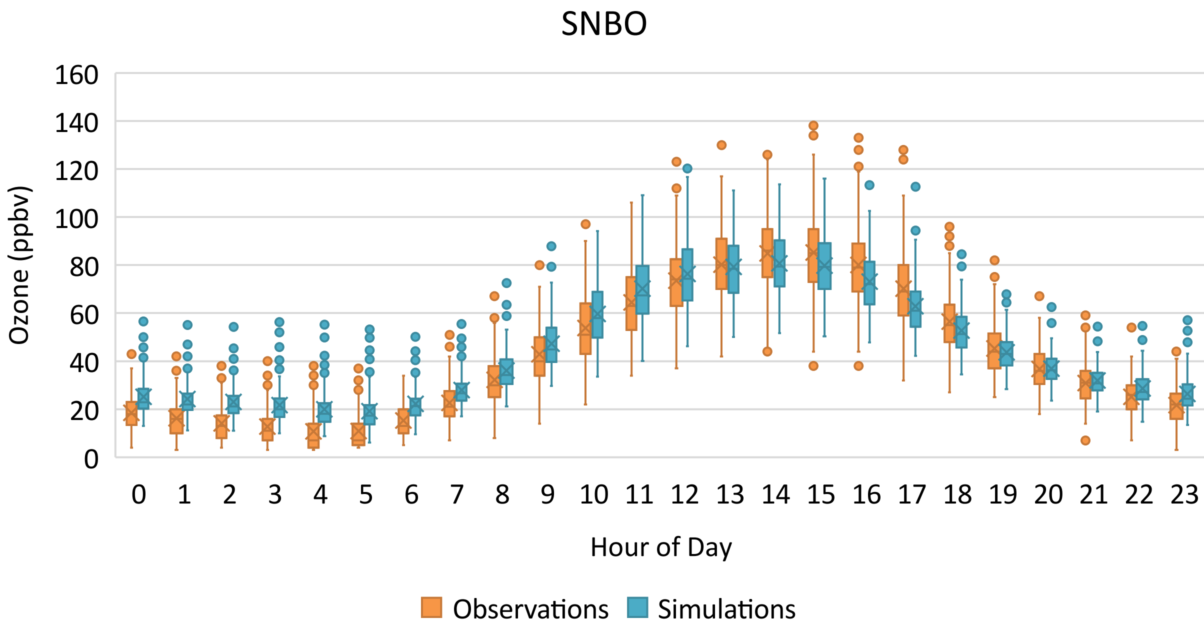


FIGURE III-D-25

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT SAN BERNARDINO. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

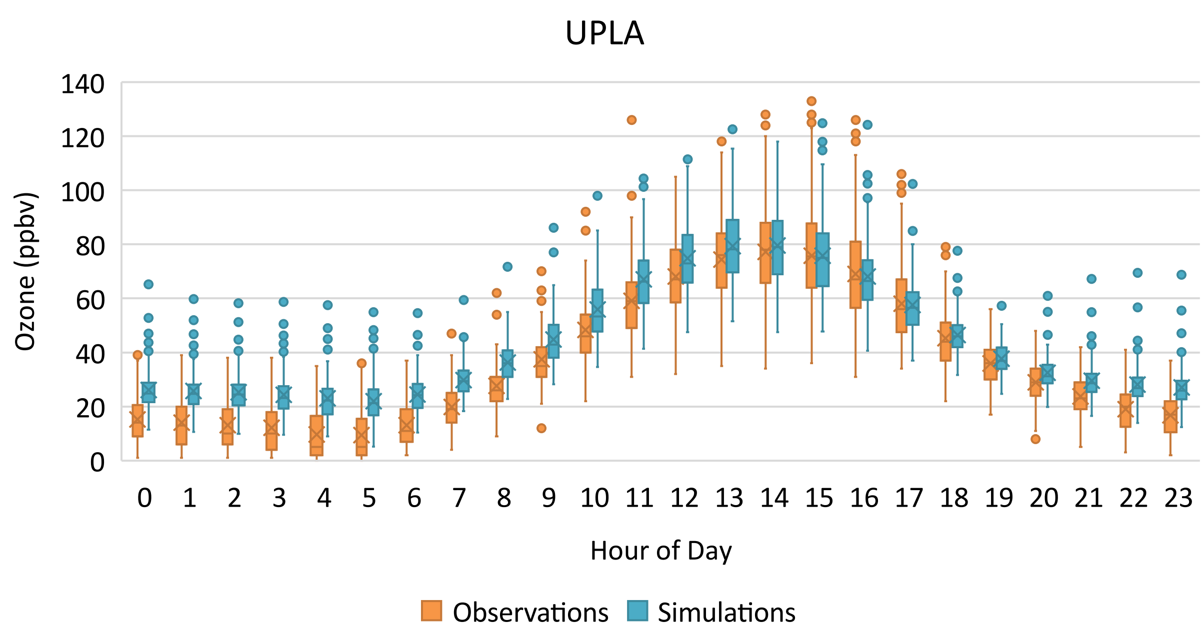


FIGURE III-D-26

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT UPLAND. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

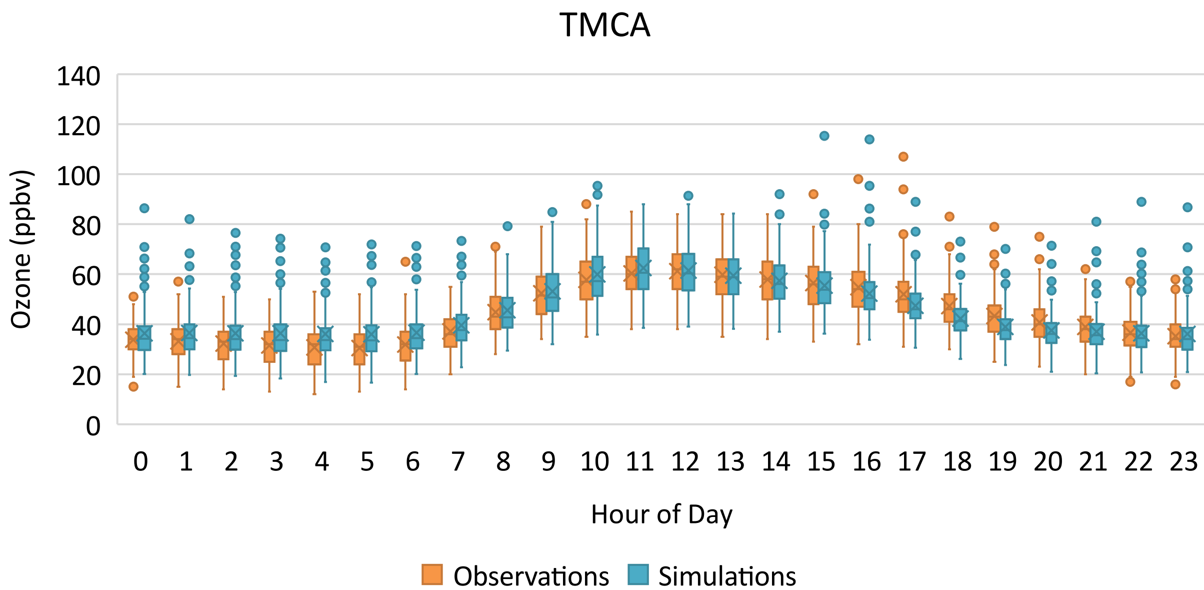


FIGURE III-D-27

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT TEMACULA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

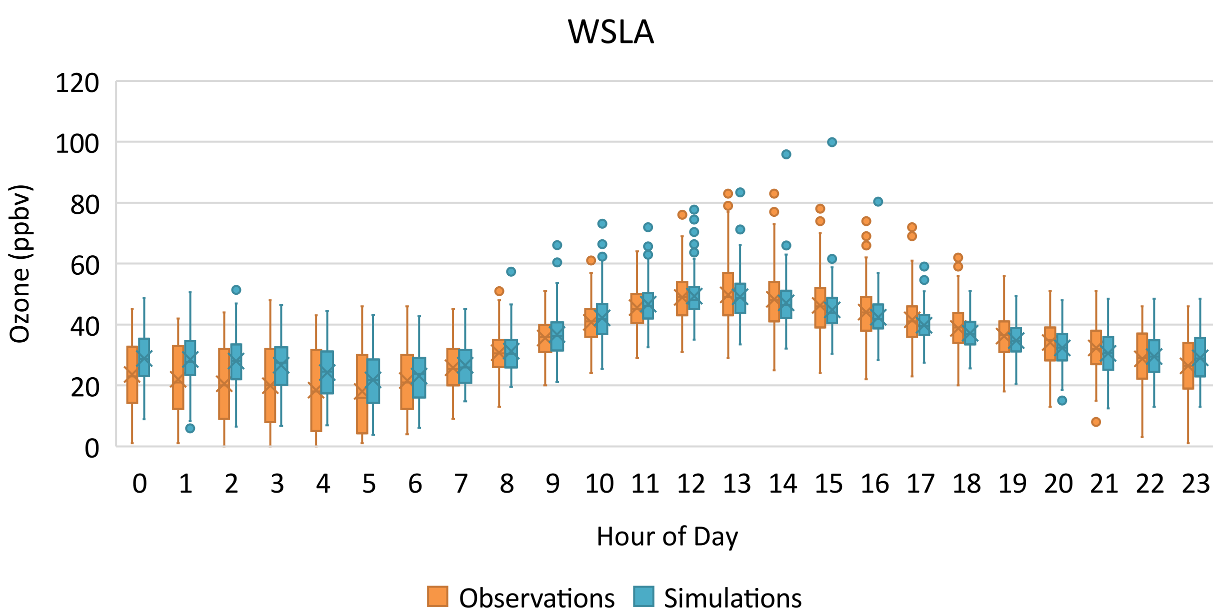


FIGURE III-D-28

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY OZONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT WEST LOS ANGELES. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

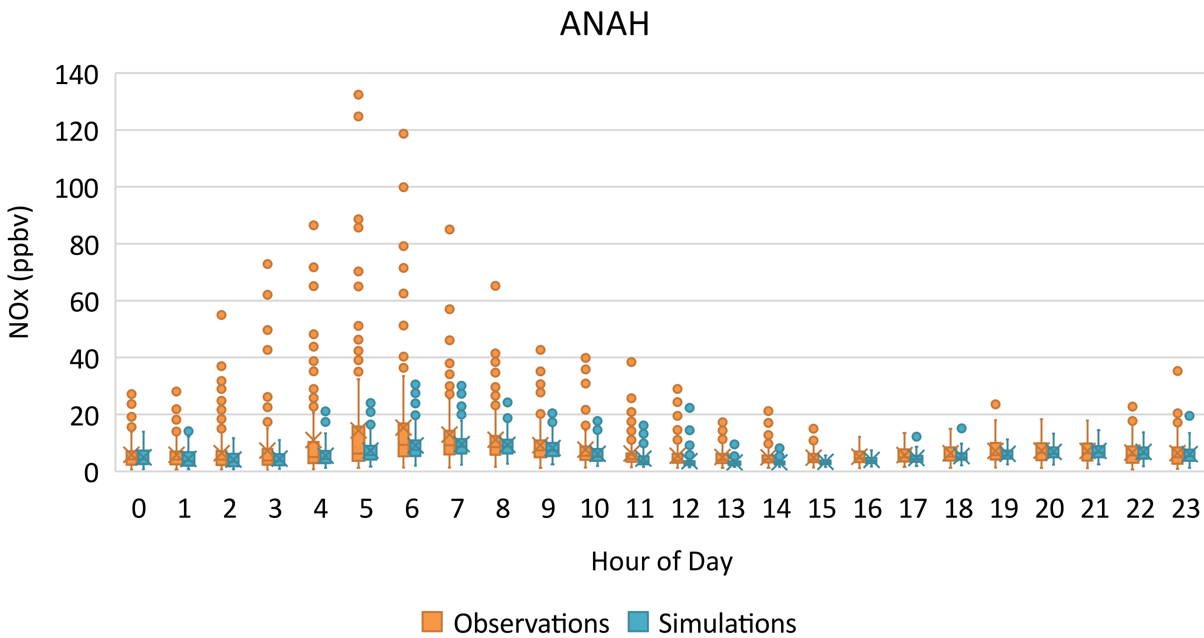


FIGURE III-E-1

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ANAHEIM. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

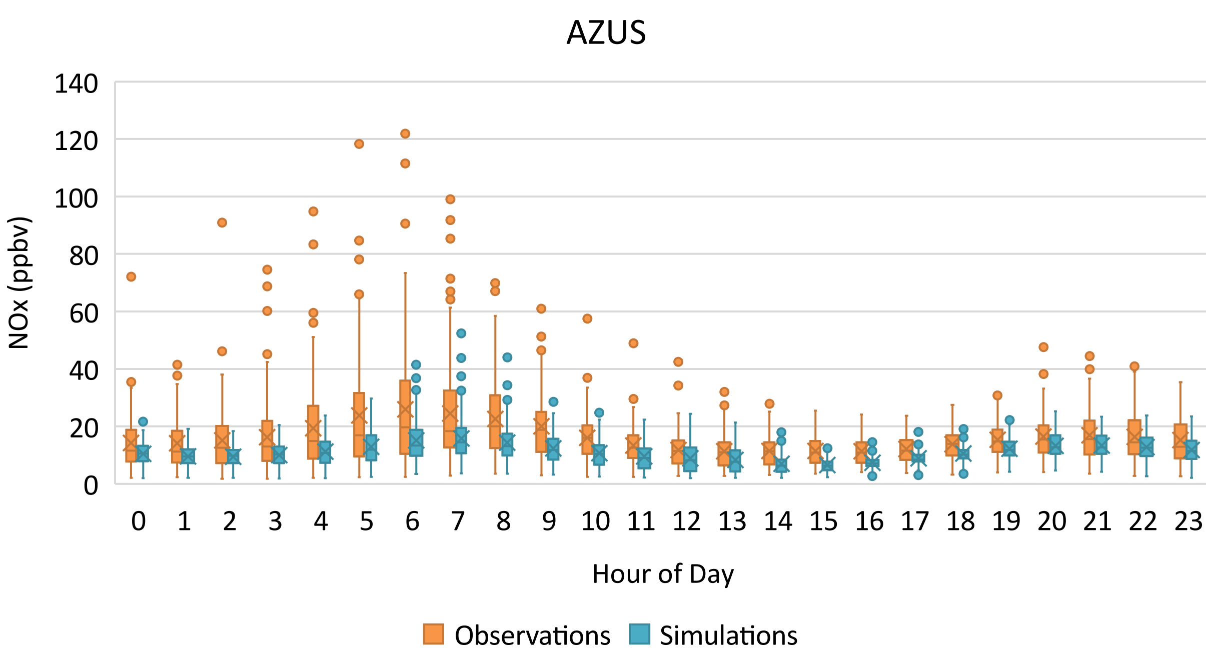


FIGURE III-E-2

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT AZUSA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

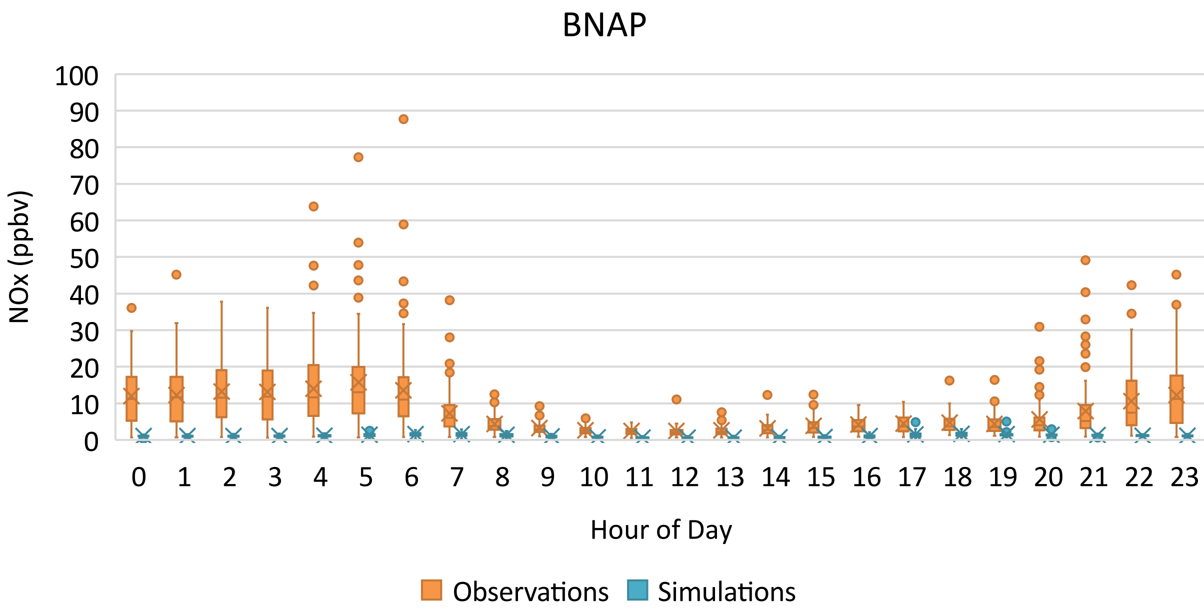


FIGURE III-E-3

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT BANNING. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

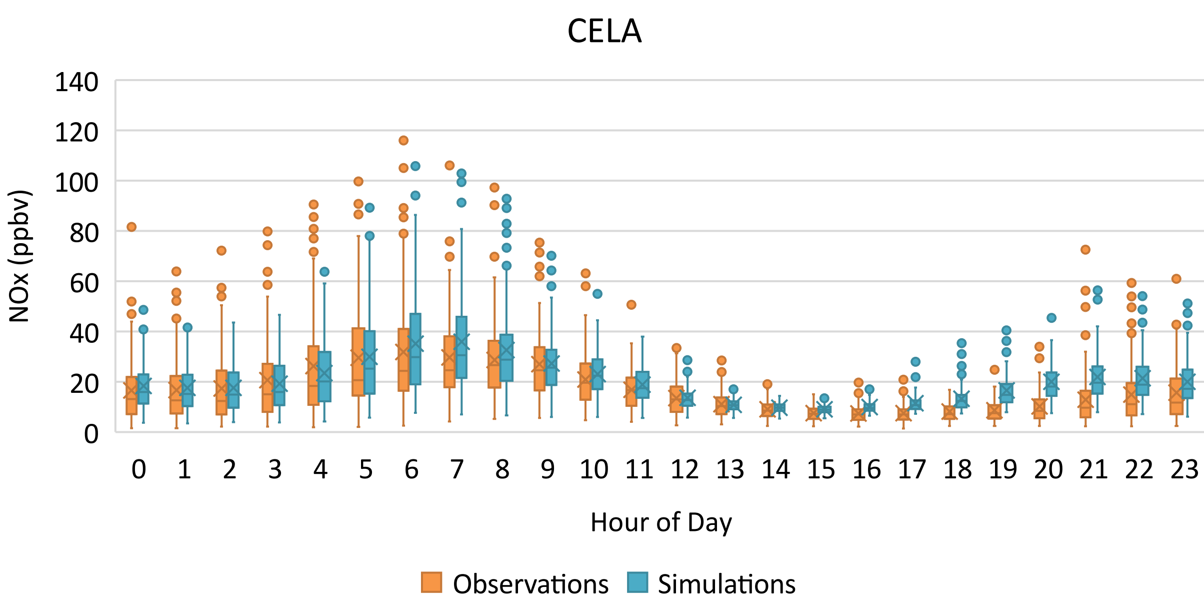


FIGURE III-E-4

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT CENTRAL LOS ANGELES. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

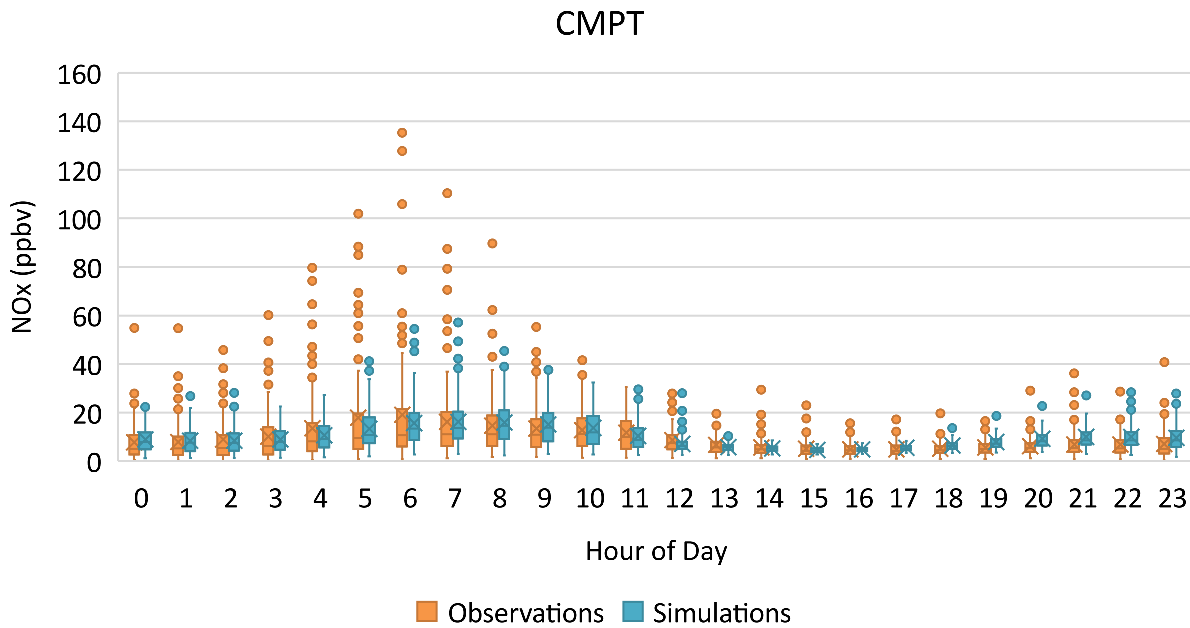


FIGURE III-E-5

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT COMPTON. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

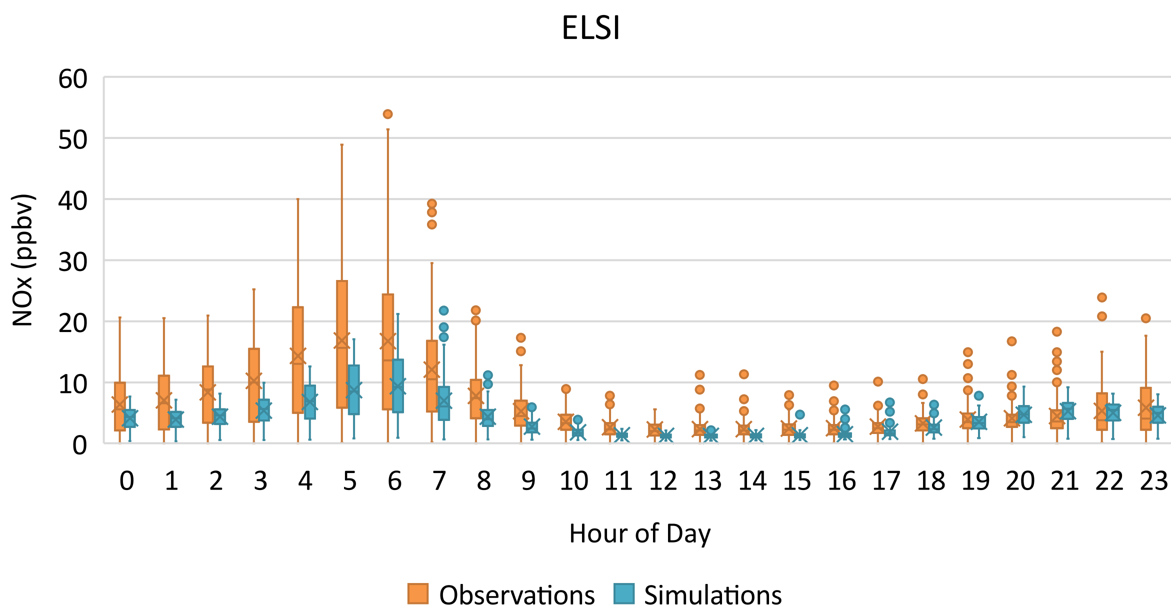


FIGURE III-E-6

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT LAKE ELSINORE. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

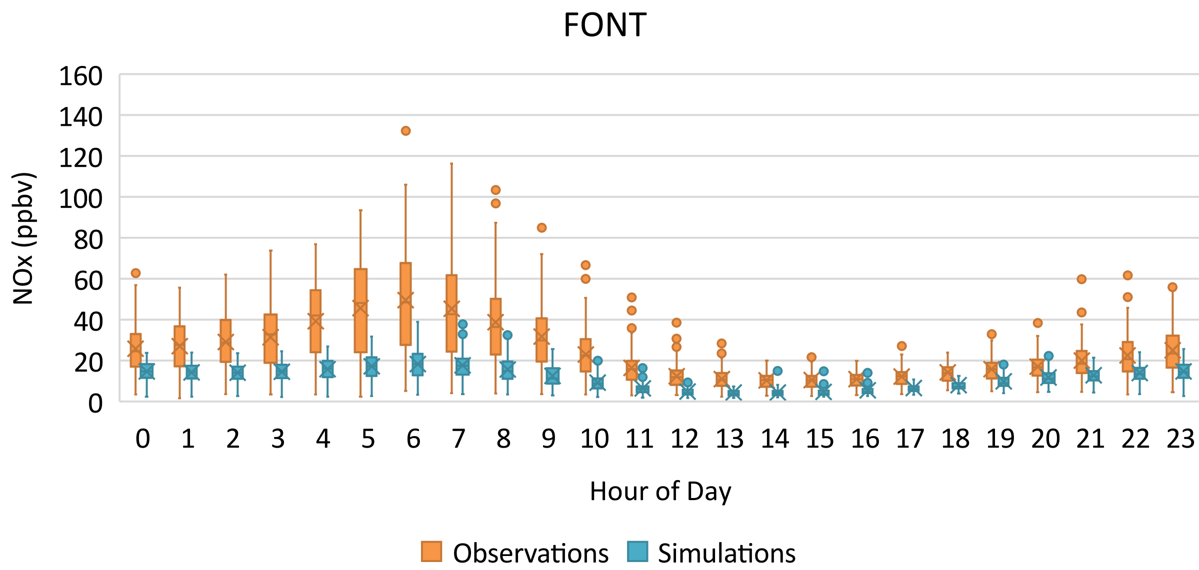


FIGURE III-E-7

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT FONTANA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

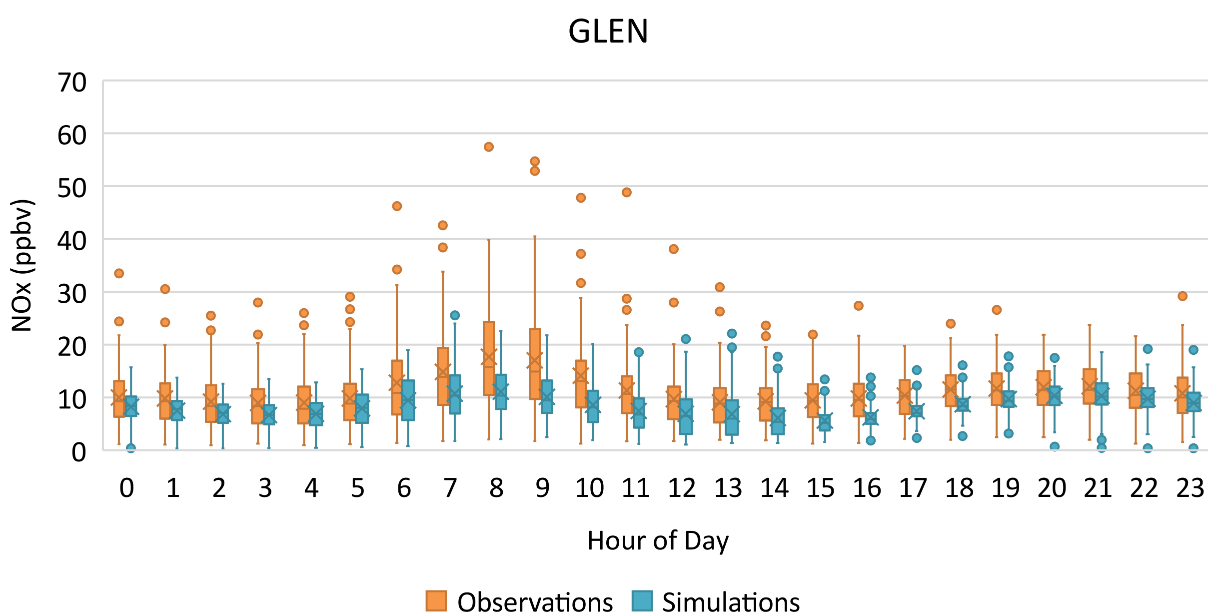


FIGURE III-E-8

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT GLENDORA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

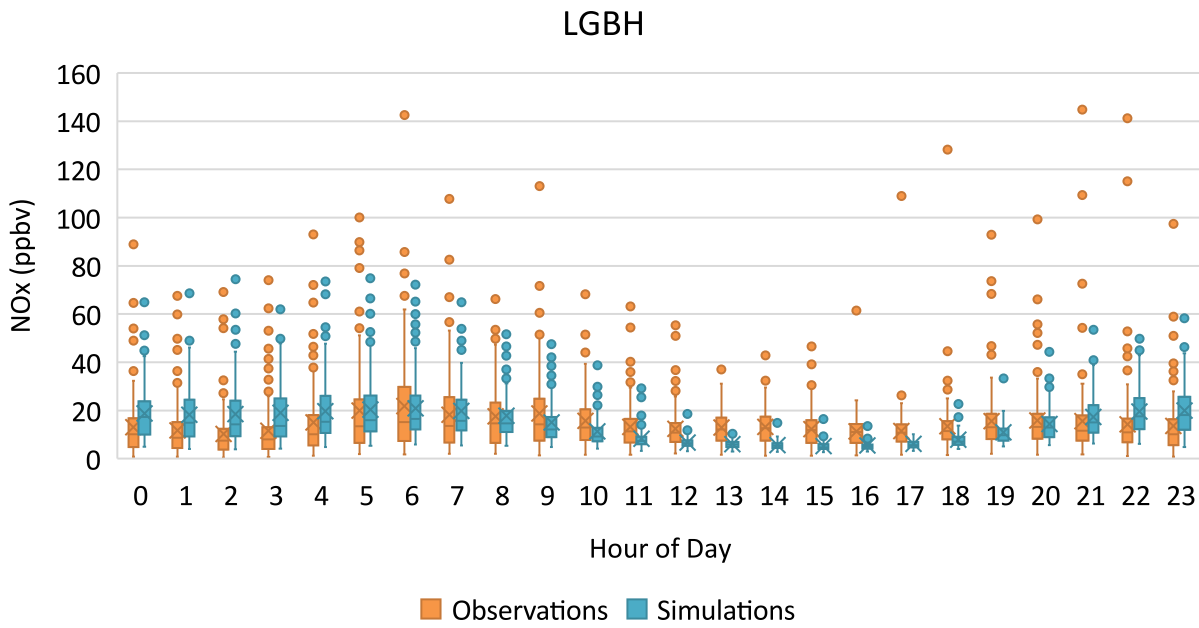


FIGURE III-E-9

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT LONG BEACH HUDSON. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

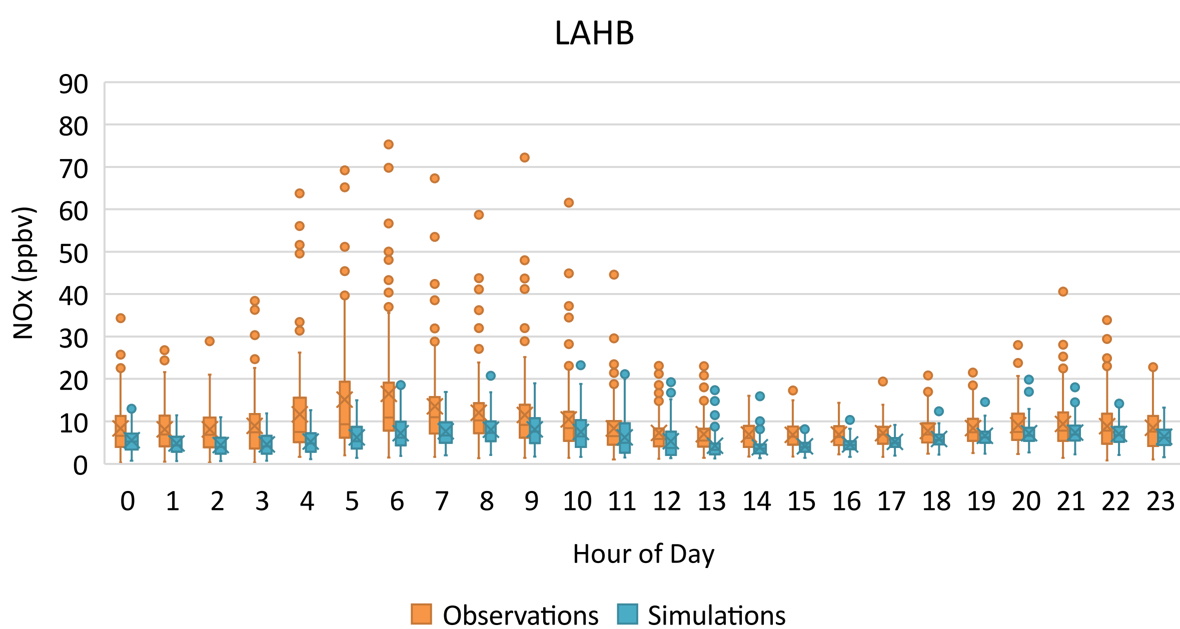


FIGURE III-E-10

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT LA HABRA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

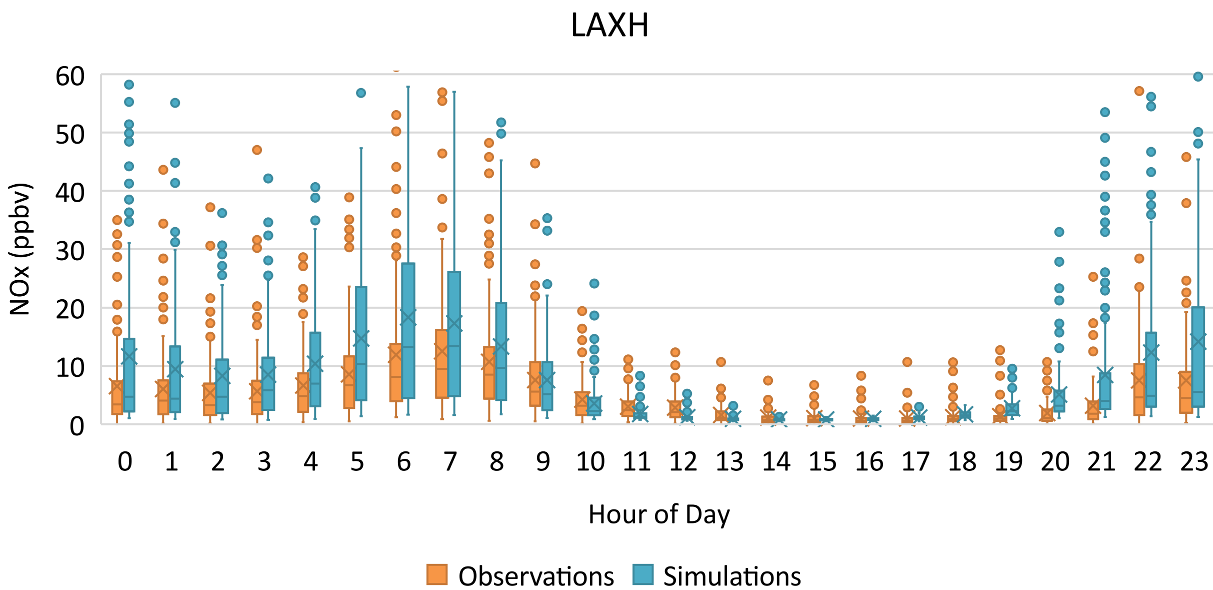


FIGURE III-E-11

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT LAX. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

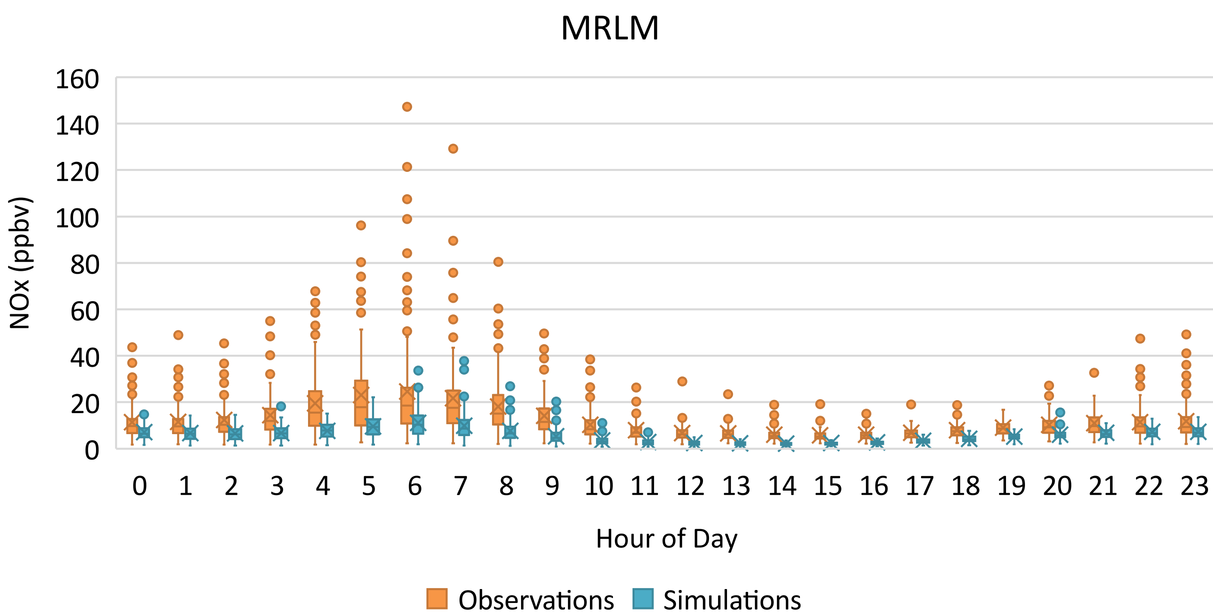


FIGURE III-E-12

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT MIRA LOMA VAN BUREN. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

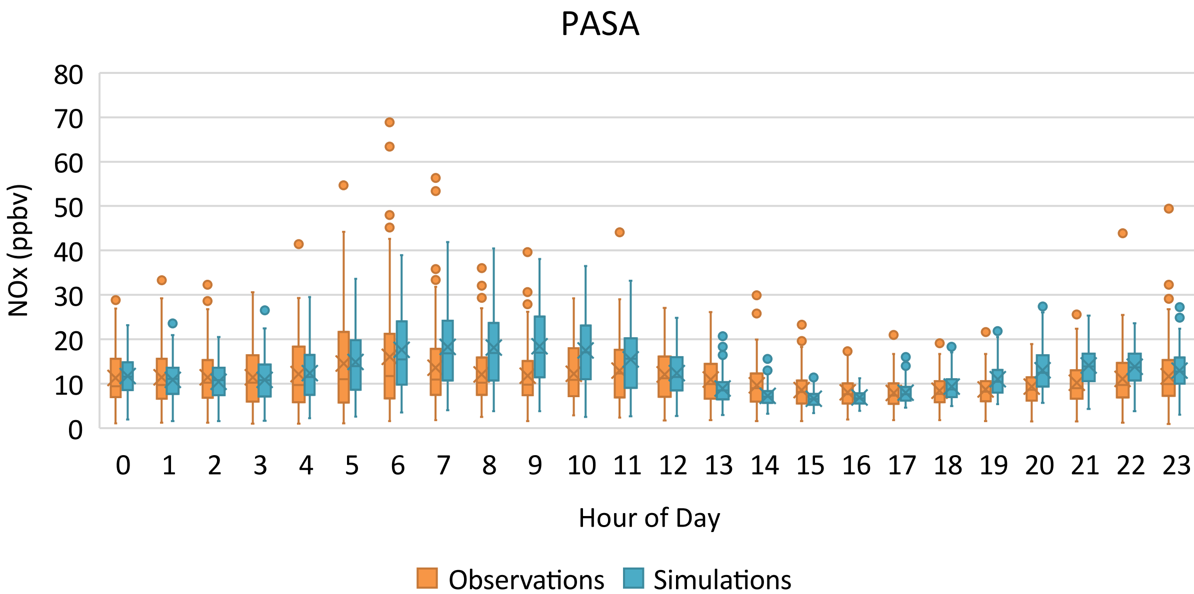


FIGURE III-E-13

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT PASADENA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

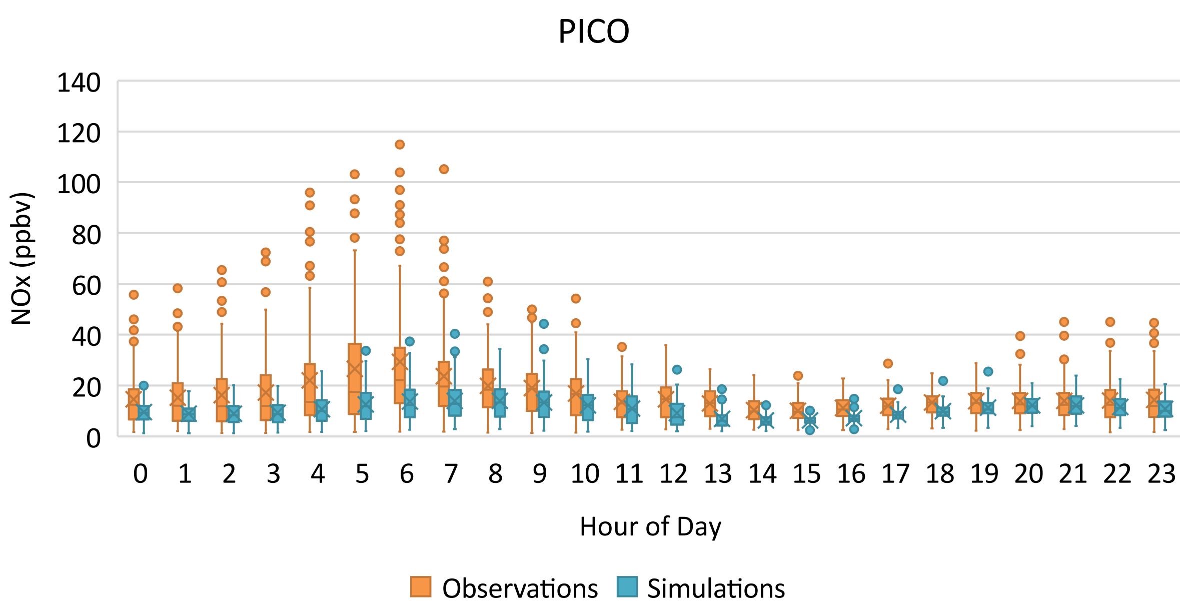


FIGURE III-E-14

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT PICO RIVERO. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

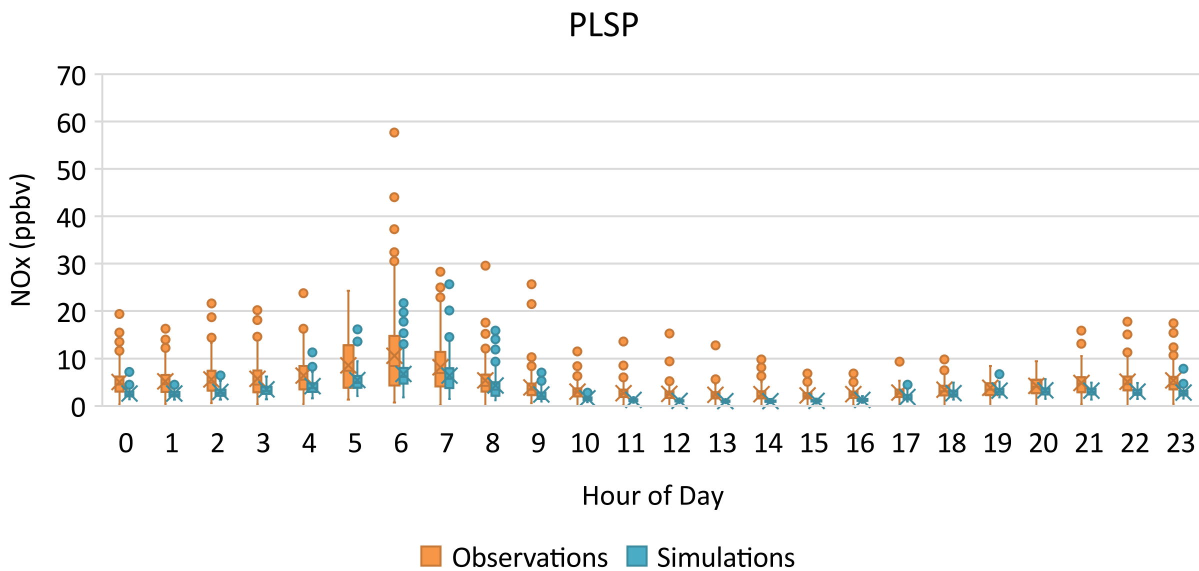


FIGURE III-E-15

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT PALM SPRINGS. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

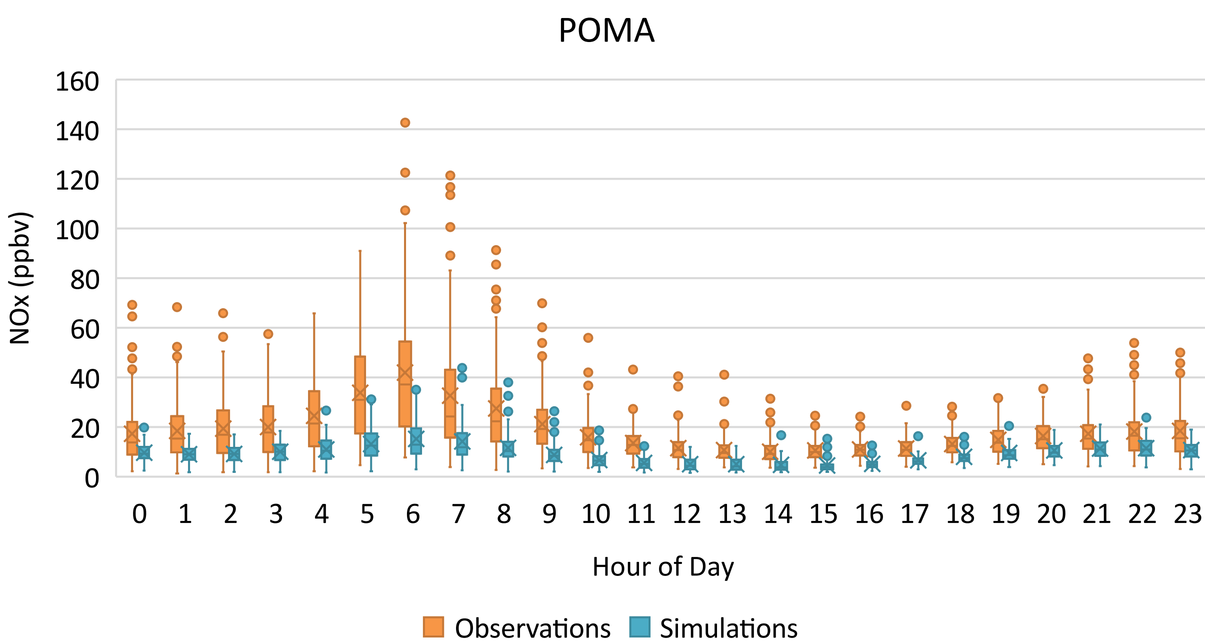


FIGURE III-E-16

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT POMONA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

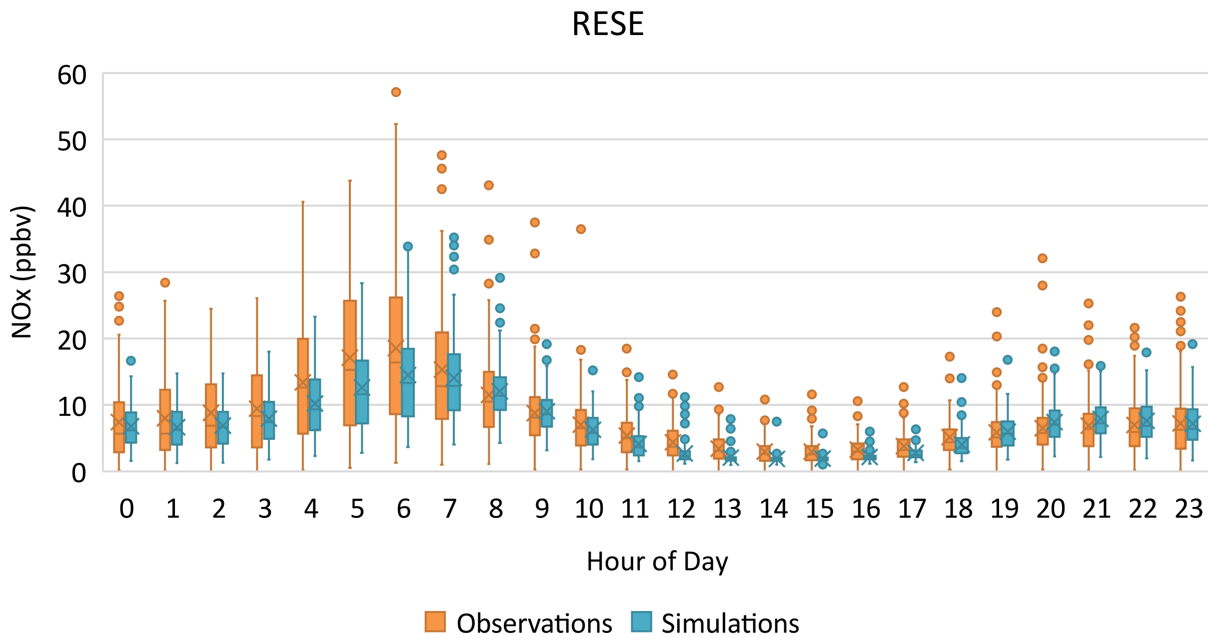


FIGURE III-E-17

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT RESEDA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

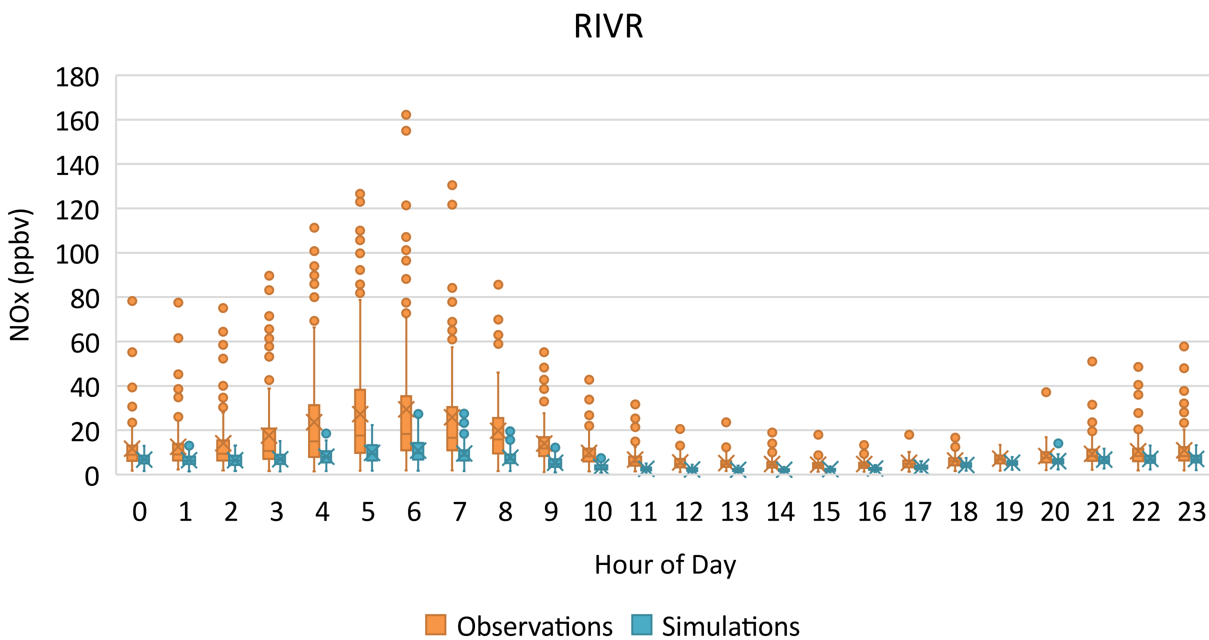


FIGURE III-E-18

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT RIVERSIDE. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

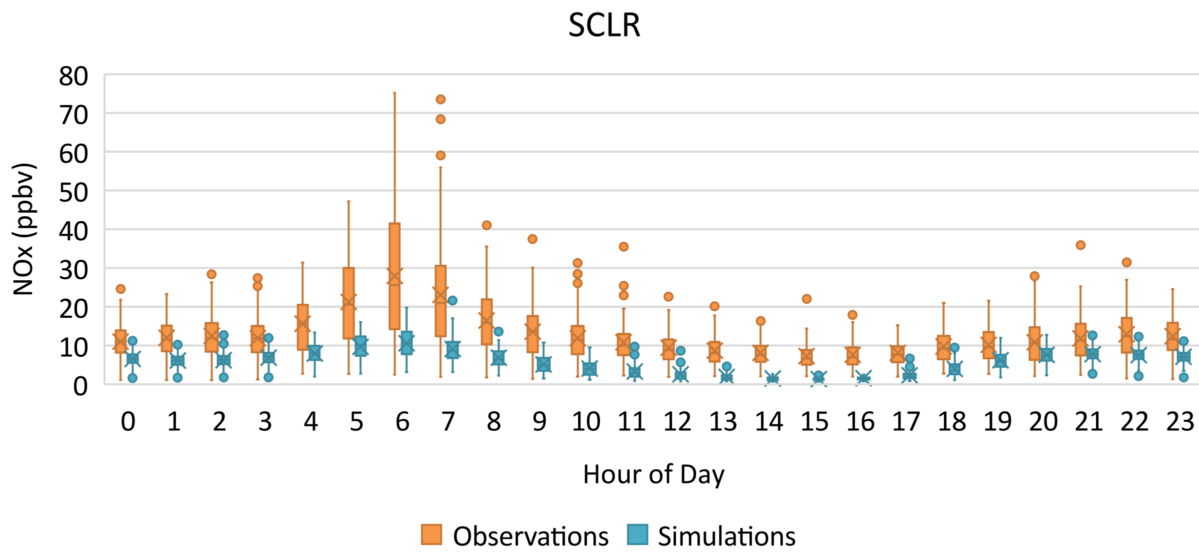


FIGURE III-E-19

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT SANTA CLARITA. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

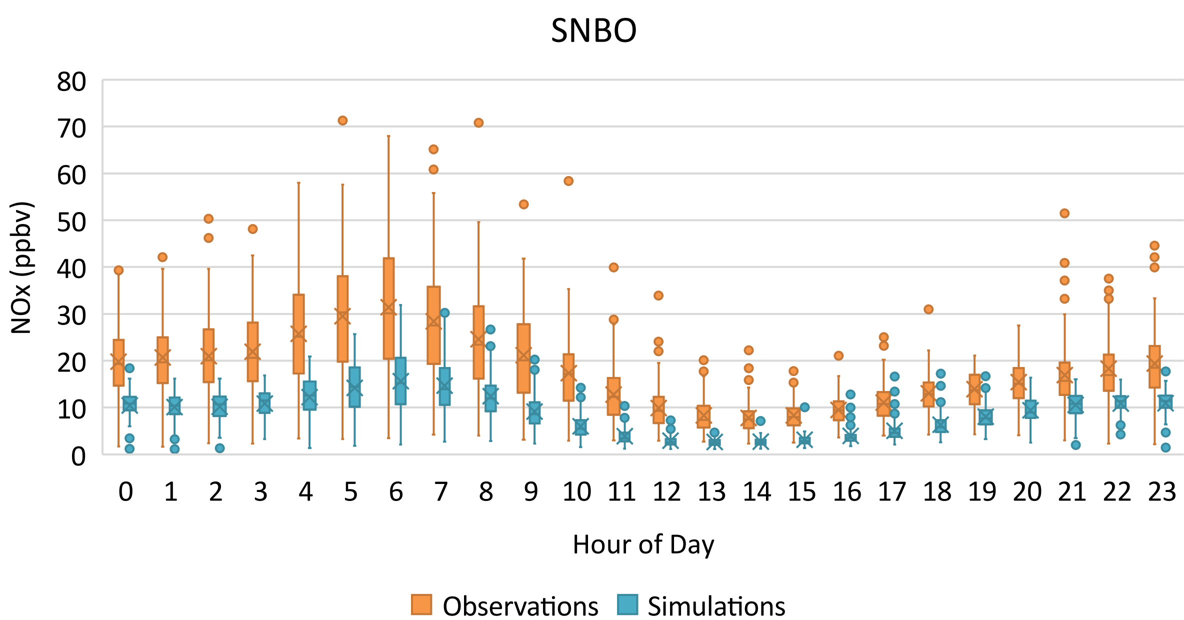


FIGURE III-E-20

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT SAN BERNARDINO. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

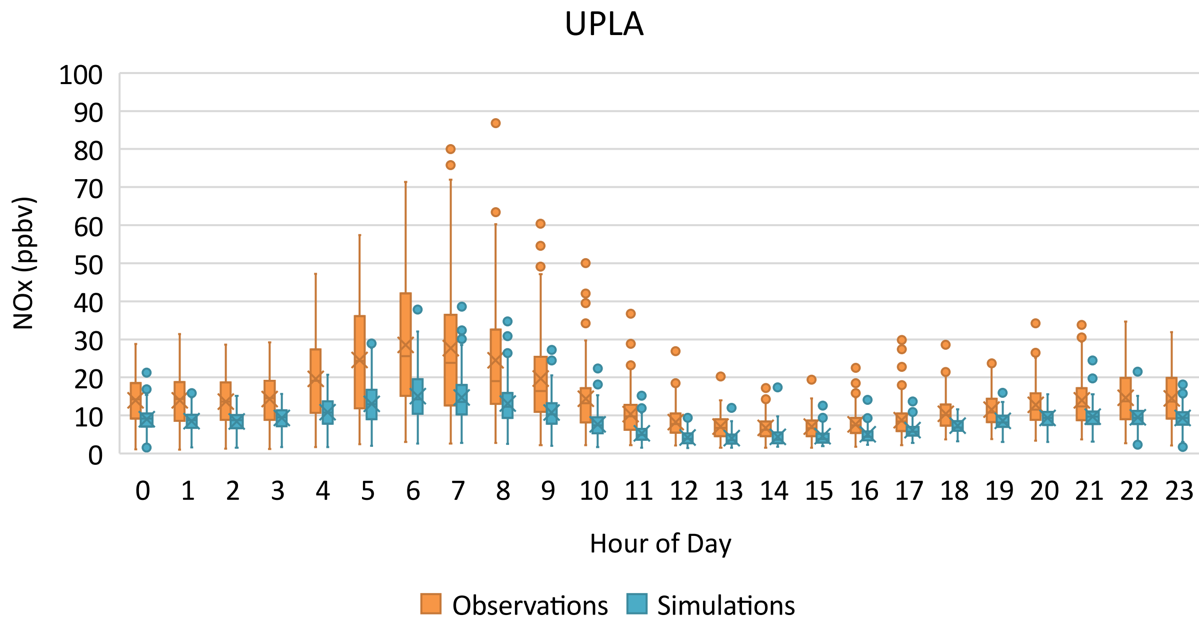


FIGURE III-E-21

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT UPLAND. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

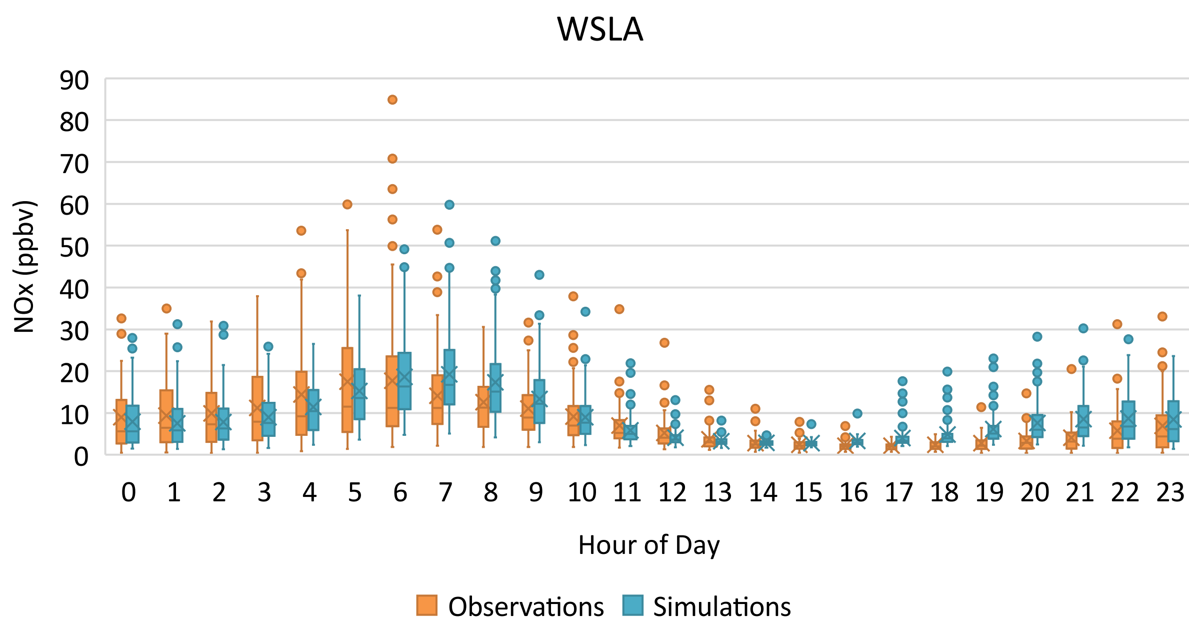


FIGURE III-E-22

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOX DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT WEST LOS ANGELES. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

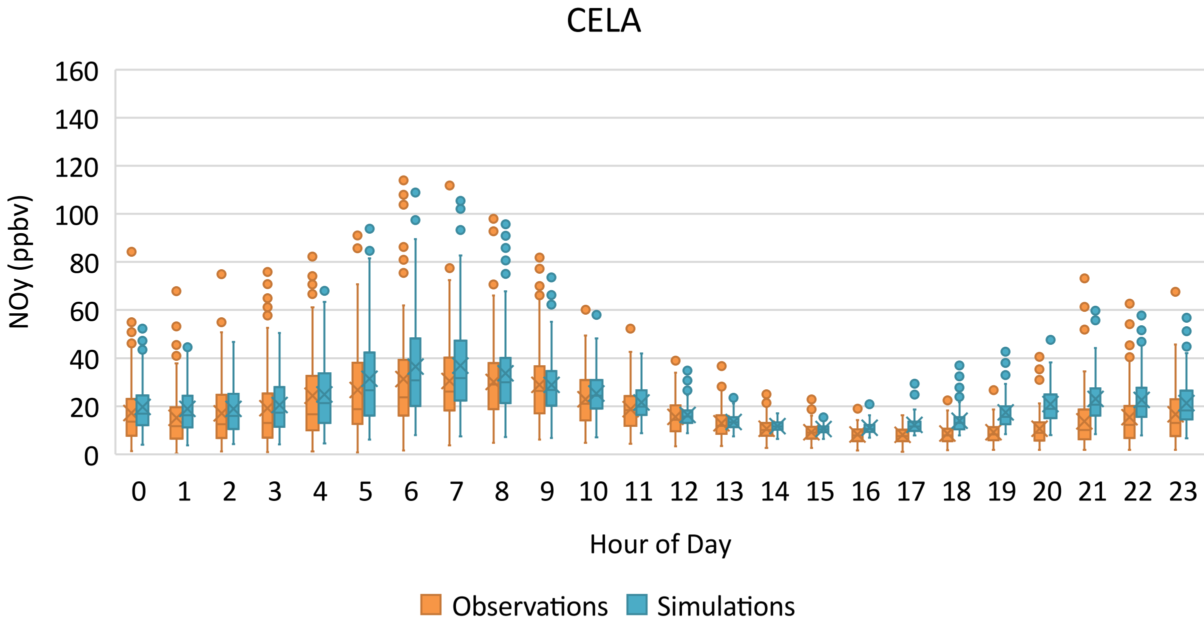


FIGURE III-F-1

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOY DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT CENTRAL LOS ANGELES. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

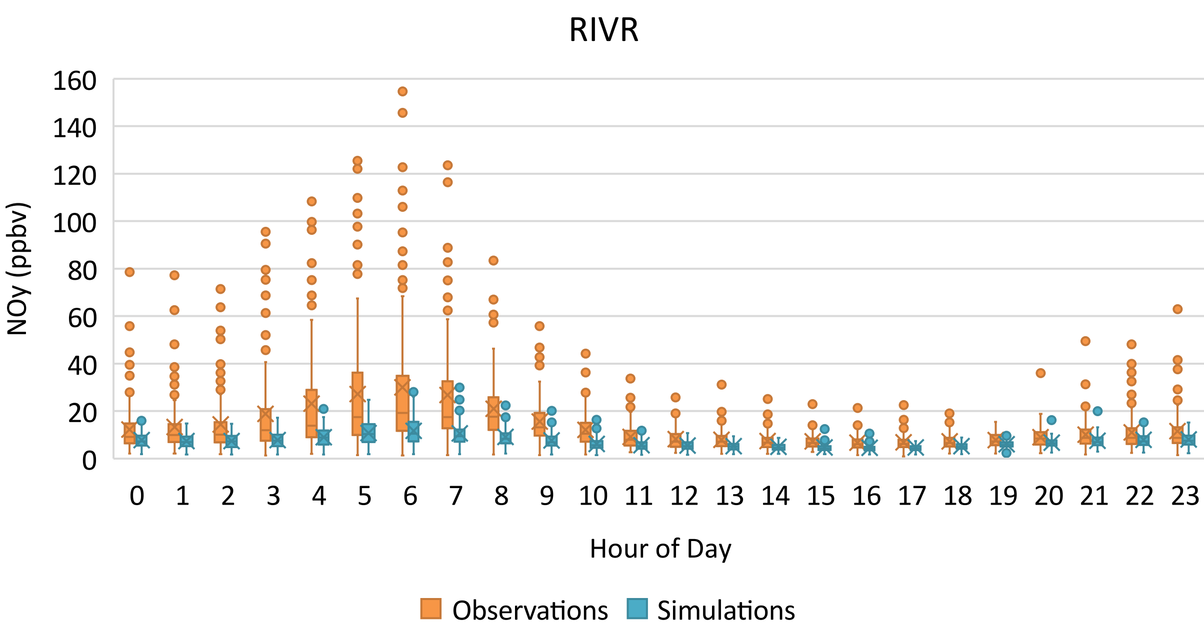


FIGURE III-F-2

BOX PLOTS OF OBSERVED VS. PREDICTED HOURLY NOY DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT RIVERSIDE. HORIZONTAL LINES INDICATE 25TH, 50TH (MEDIAN), AND 75TH PERCENTILES.

CMAQ VOC Model Performance Scatter Plots

To assess model performance in simulating volatile organic carbon (VOC) concentrations across the South Coast Air Basin, modeled concentrations of total non-methane organic compounds (TNMOC) and individual VOC species during the ozone season of 2018 are compared to available measurements from selected stations in the modeling domain. VOC measurements used for this analysis include measurements of selected VOC species at seven stations (Burbank, Compton, Fontana, Hudson, Huntington Park, Long Beach and Pico Rivera) as part of the Multiple Air Toxics Exposure Study V (MATES V) monitoring campaign[4] and measurements of carbonyl and hydrocarbon species at three stations (Central Los Angeles, Riverside, El Cajon) in the Photochemical Assessment Monitoring Stations (PAMS) network. In 2018, both programs collected 24-hour samples on a 1-in-6 days schedule for VOC measurements.

Figures III G1-G14 show modeled versus measured concentrations of available individual VOC species and TNMOC. In general, modeled VOC concentrations are reasonably well correlated with measured values. However, in some cases, the model underpredicted measured ambient concentrations.

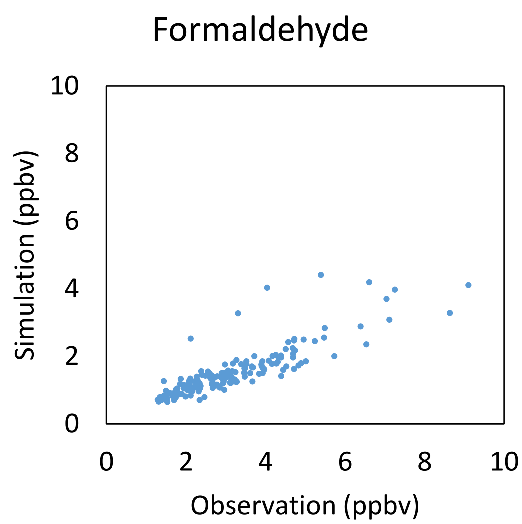


FIGURE III-G-1
SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY FORMALDEHYDE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

[4] The MATES V monitoring campaign was conducted from May 2018-April 2019, although measurements at some stations began several months earlier. All available data was included in this analysis.

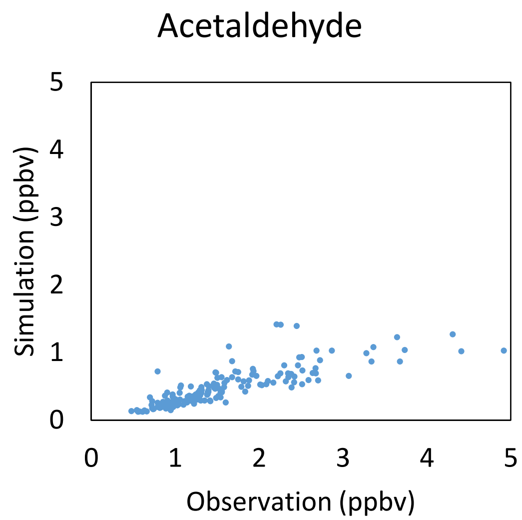


FIGURE III-G-2

SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY ACETYLENE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

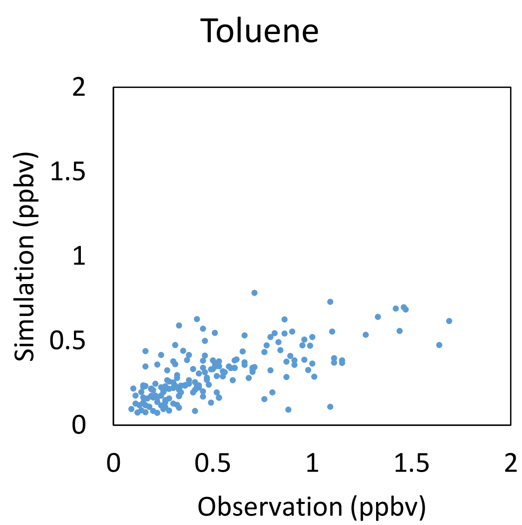


FIGURE III-G-3

SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY TOLUENE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

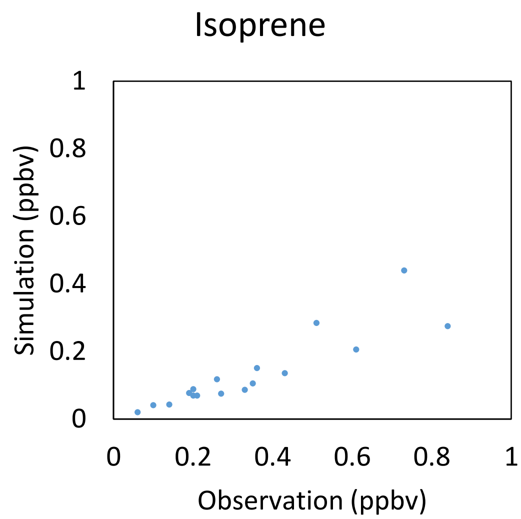


FIGURE III-G-4

SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY ISOPRENE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

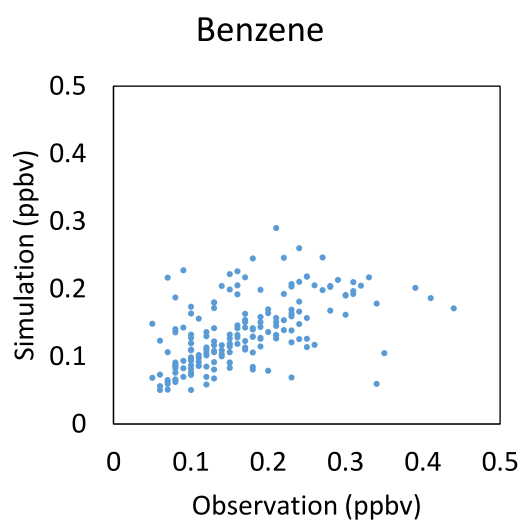


FIGURE III-G-5

SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY BENZENE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

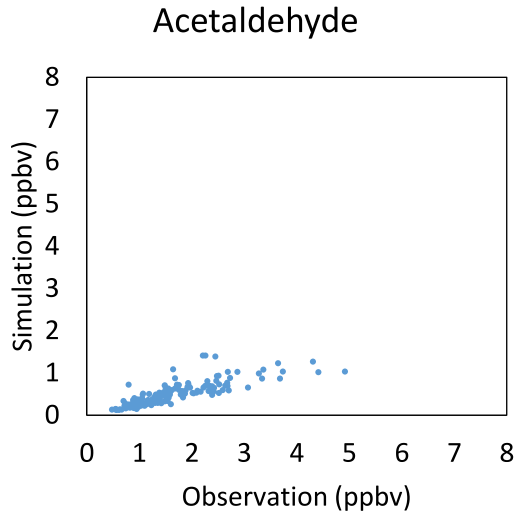


FIGURE III-G-6

SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY ACETALDEHYDE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

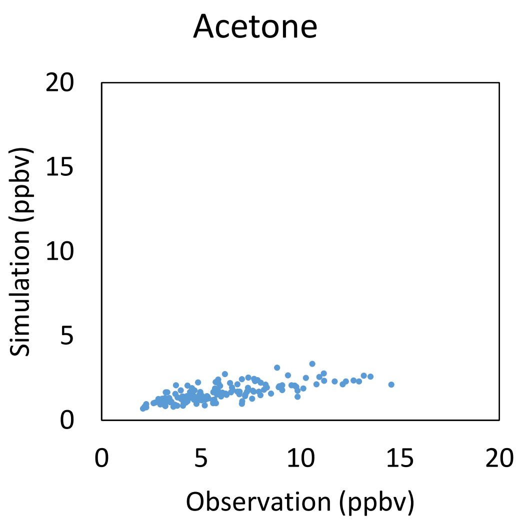


FIGURE III-G-7

SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY ACETONE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

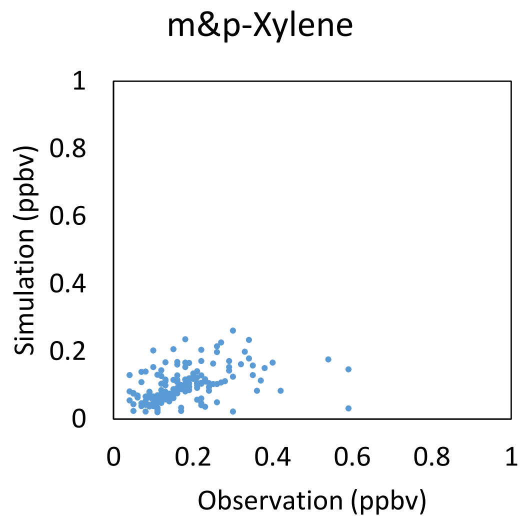


FIGURE III-G-8

SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY M&P-XYLENE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

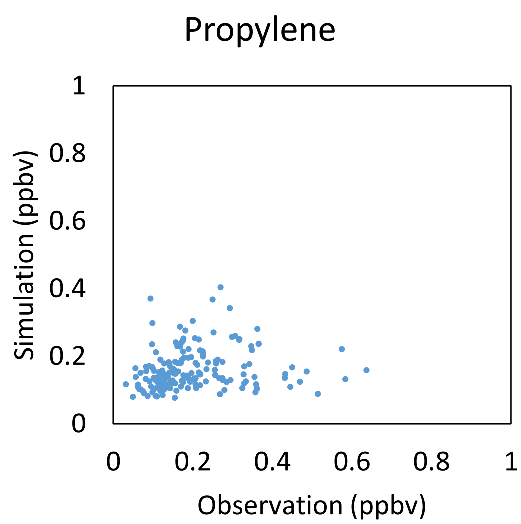


FIGURE III-G-9

SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY PROPYLENE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

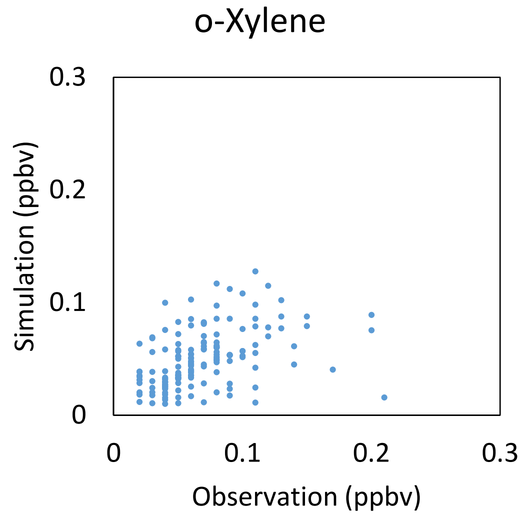


FIGURE III-G-10

SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY O-XYLENE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

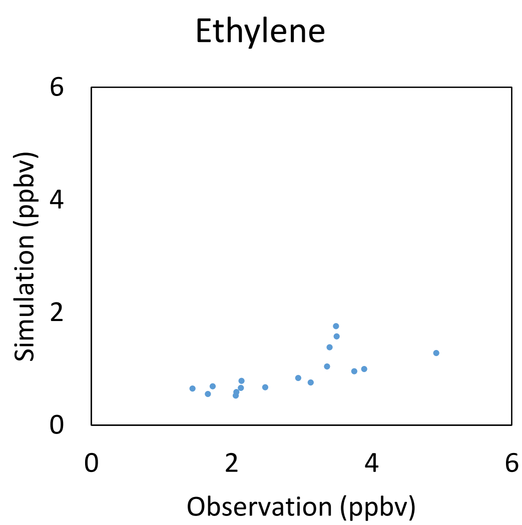


FIGURE III-G-11

SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY ETHYLENE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

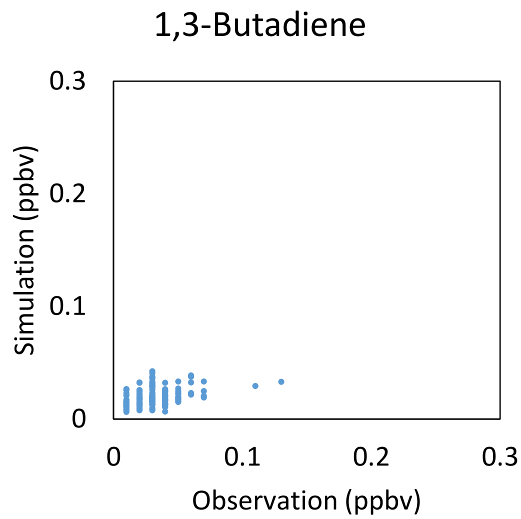


FIGURE III-G-12
SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY 1,3-BUTADIENE DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

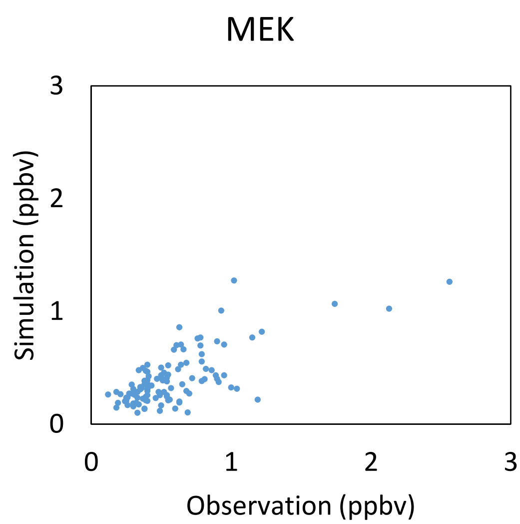


FIGURE III-G-13
SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY METHYL ETHYL KETONE (MEK) DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

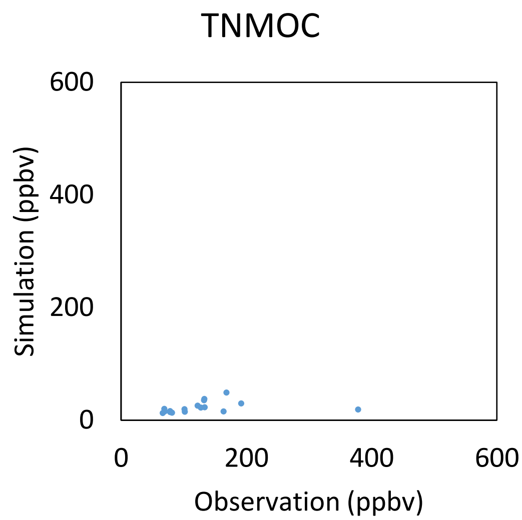


FIGURE III-G-14
SCATTER PLOT OF PREDICTED VS. OBSERVED CONCENTRATIONS OF DAILY TNMOC DURING MAY 1ST TO SEPTEMBER 30TH, 2018, AT ALL AVAILABLE STATIONS

ATTACHMENT C

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

SUBJECT: **NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT**

PROJECT TITLE: **COACHELLA VALLEY ATTAINMENT PLAN FOR THE 2008 8-HOUR OZONE STANDARD**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, the South Coast Air Quality Management District (South Coast AQMD), as Lead Agency, has prepared a Notice of Exemption pursuant to CEQA Guidelines Section 15062 – Notice of Exemption for the project identified above.

If the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties. The Notice of Exemption will also be electronically filed with the State Clearinghouse of the Governor's Office of Planning and Research for posting on their CEQAnet Web Portal which may be accessed via the following weblink: https://ceqanet.opr.ca.gov/search/recent. In addition, the Notice of Exemption will be electronically posted on the South Coast AQMD's webpage which can be accessed via the following weblink: http://www.aqmd.gov/nav/about/public-notices/ceqa-notices/notices-of-exemption/noe---year-2024 .

NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

To: County Clerks for the Counties of Los Angeles, Orange, Riverside and San Bernardino; and Governor's Office of Planning and Research – State Clearinghouse

From: South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Project Title: Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard (Coachella Valley Ozone Plan)

Project Location: The location of the proposed project is the portion of the South Coast Air Quality Management District (South Coast AQMD) jurisdiction covering the federal nonattainment area known as the Coachella Valley, which consists of the Riverside County portion of the Salton Sea Air Basin, excluding tribal lands.

Description of Nature, Purpose, and Beneficiaries of Project: In November 2022, South Coast AQMD requested that the United States Environmental Protection Agency (U.S. EPA) reclassify the Coachella Valley from "severe-15" to "extreme" nonattainment for the 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS) with a new attainment date of July 20, 2032. The reclassification requires a State Implementation Plan (SIP) revision to address new requirements associated with the reclassification. The Coachella Valley Ozone Plan has been developed to satisfy those requirements and includes: 1) ozone precursors emissions inventory for base year, 2018 and future milestone years; 2) a strategy to demonstrate attainment by continued implementation of adopted rules and regulations; 3) a demonstration of compliance with other federal Clean Air Act requirements; and 4) air quality modeling to demonstrate attainment of the 2008 8-hour ozone standard in Coachella Valley by 2031. Implementation of the Coachella Valley Ozone Plan will result in emission reductions of 12.5 and 1.9 tons per day, of nitrogen oxides (NOx) and volatile organic compounds (VOC) respectively, from 2018 base year to the 2031 attainment scenario in the Coachella Valley.

Public Agency Approving Project:
South Coast Air Quality Management District

Agency Carrying Out Project:
South Coast Air Quality Management District

Exempt Status:
CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption
CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment

Reasons why project is exempt: South Coast AQMD, as Lead Agency, has reviewed the proposed project (Coachella Valley Ozone Plan) pursuant to: 1) CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA; and 2) CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA. Since the South Coast AQMD is proposing an attainment strategy which relies on the continued implementation of previously adopted rules and regulations and does not propose new requirements which will result in additional physical modifications, no adverse environmental impacts are expected. Thus, it can be seen with certainty that there is no possibility that the proposed project may cause a significant adverse effect on the environment. Therefore, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption. The proposed project is also categorically exempt because it is intended to further protect or enhance the environment pursuant to CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment. Further, there is no substantial evidence indicating that any of the exceptions set forth in CEQA Guidelines Section 15300.2 – Exceptions apply to the proposed project.

Date When Proposed Project Will Be Considered for Approval (subject to change):
South Coast AQMD Governing Board Public Hearing: October 4, 2024

CEQA Contact Person:	**Phone Number:**	**Email:**	**Fax:**
Farzaneh Khalaj, Ph.D.	(909) 396-3022	fkhalaj@aqmd.gov	(909) 396-3982
Proposed Project Contact Person:	**Phone Number:**	**Email:**	**Fax:**
Eric Praske, Ph.D.	(909) 396-2948	epraske@aqmd.gov	(909) 396-3982

Date Received for Filing: ______________ **Signature:** *(Signed and Dated Upon Board Approval)*
Kevin Ni
Program Supervisor, CEQA
Planning, Rule Development, and Implementation

Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard

Board Meeting

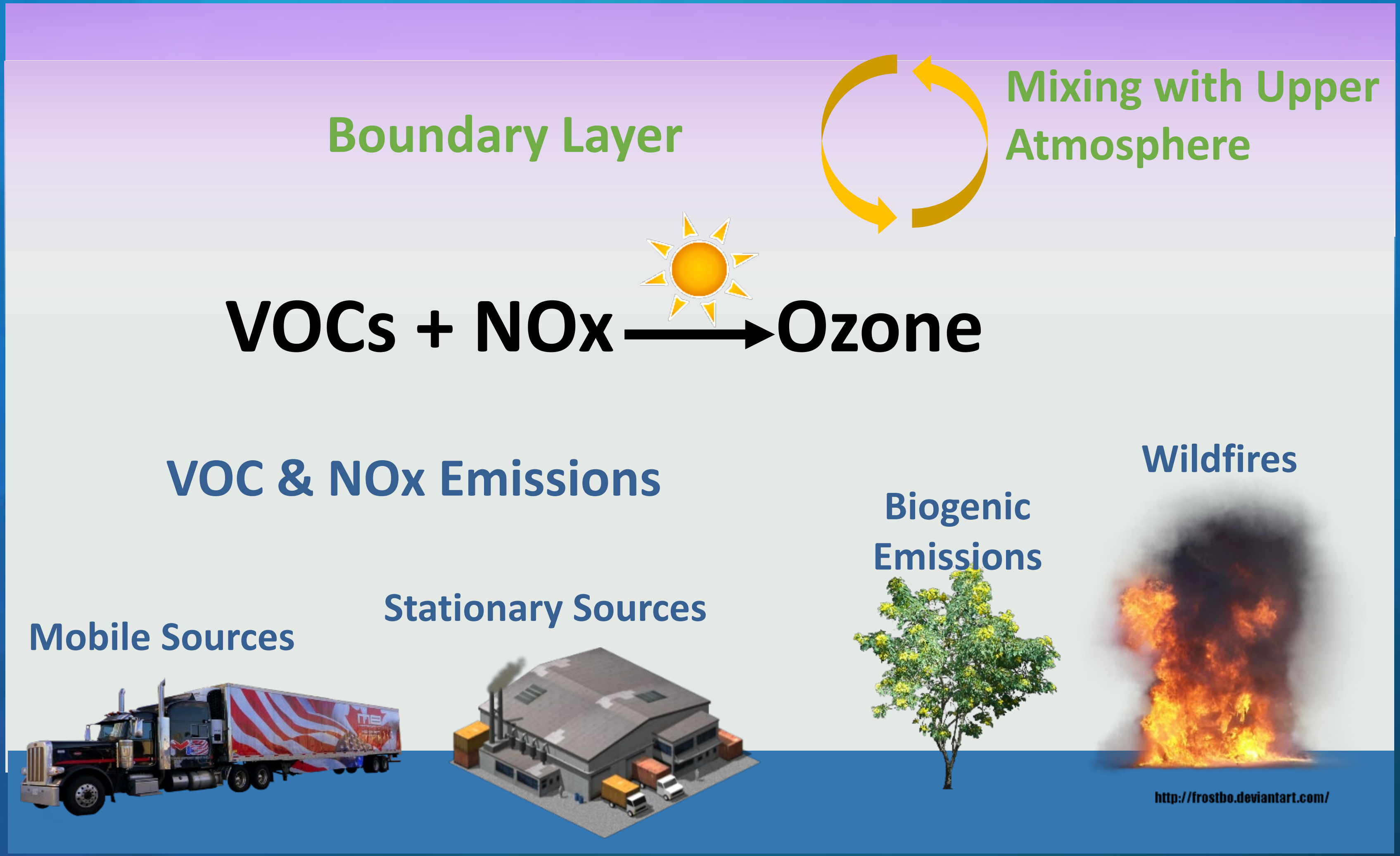
October 4, 2024

South Coast AQMD

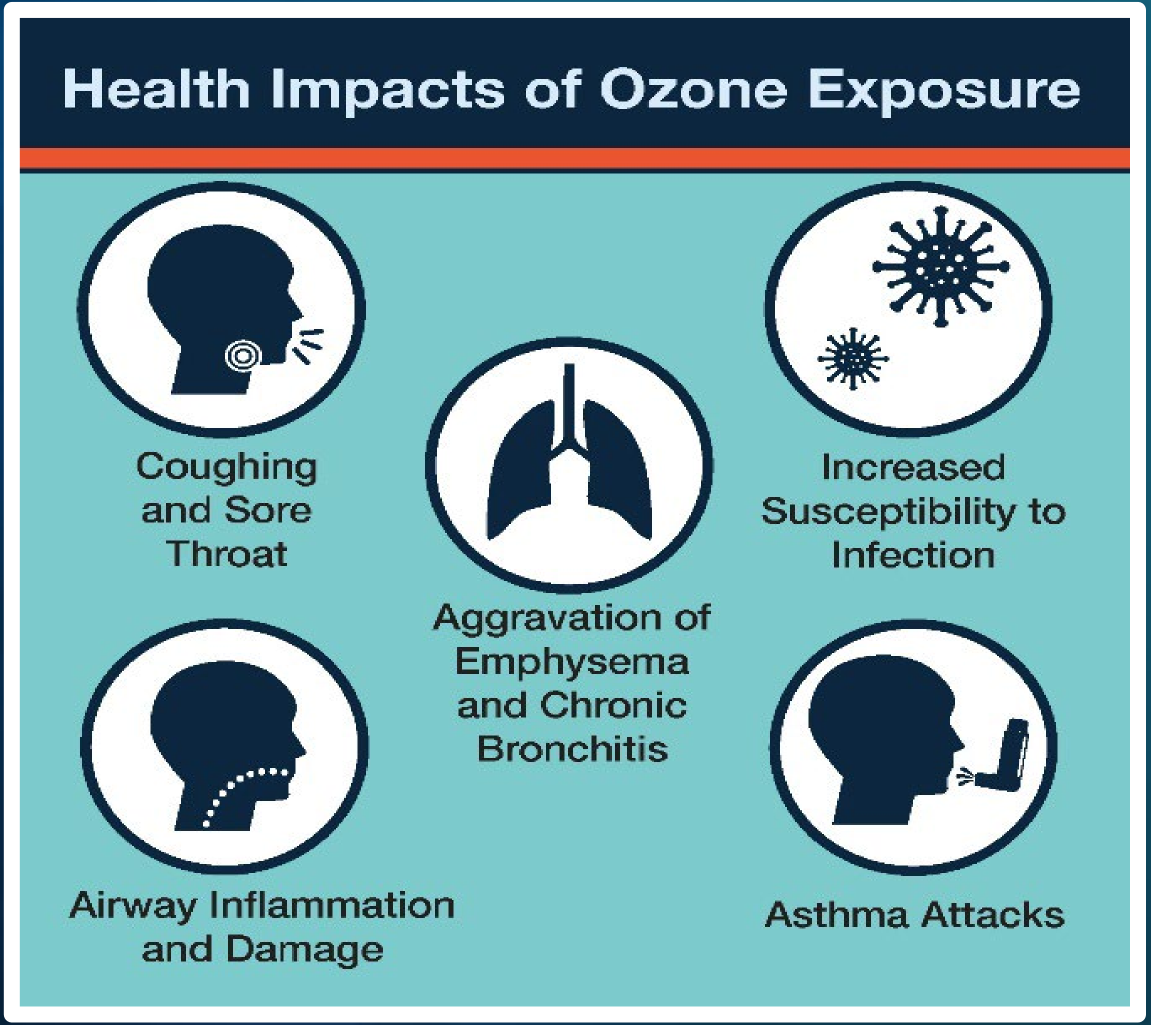
Outline

- Background and Ozone Air Quality in Coachella Valley
- Attainment Status
- Control Strategy
- Attainment Demonstration
- Public Process
- Next Steps

Ozone Formation

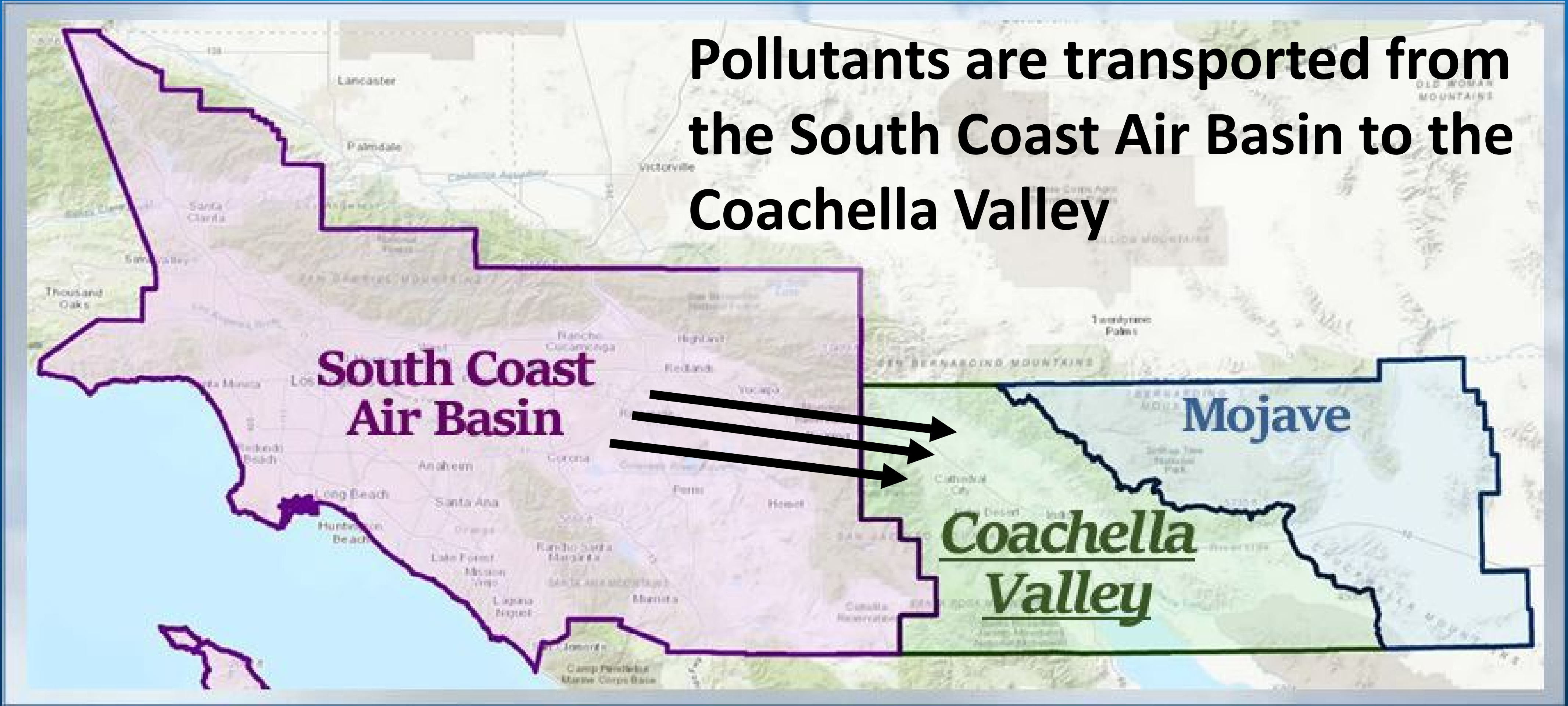


Ozone Health Effects

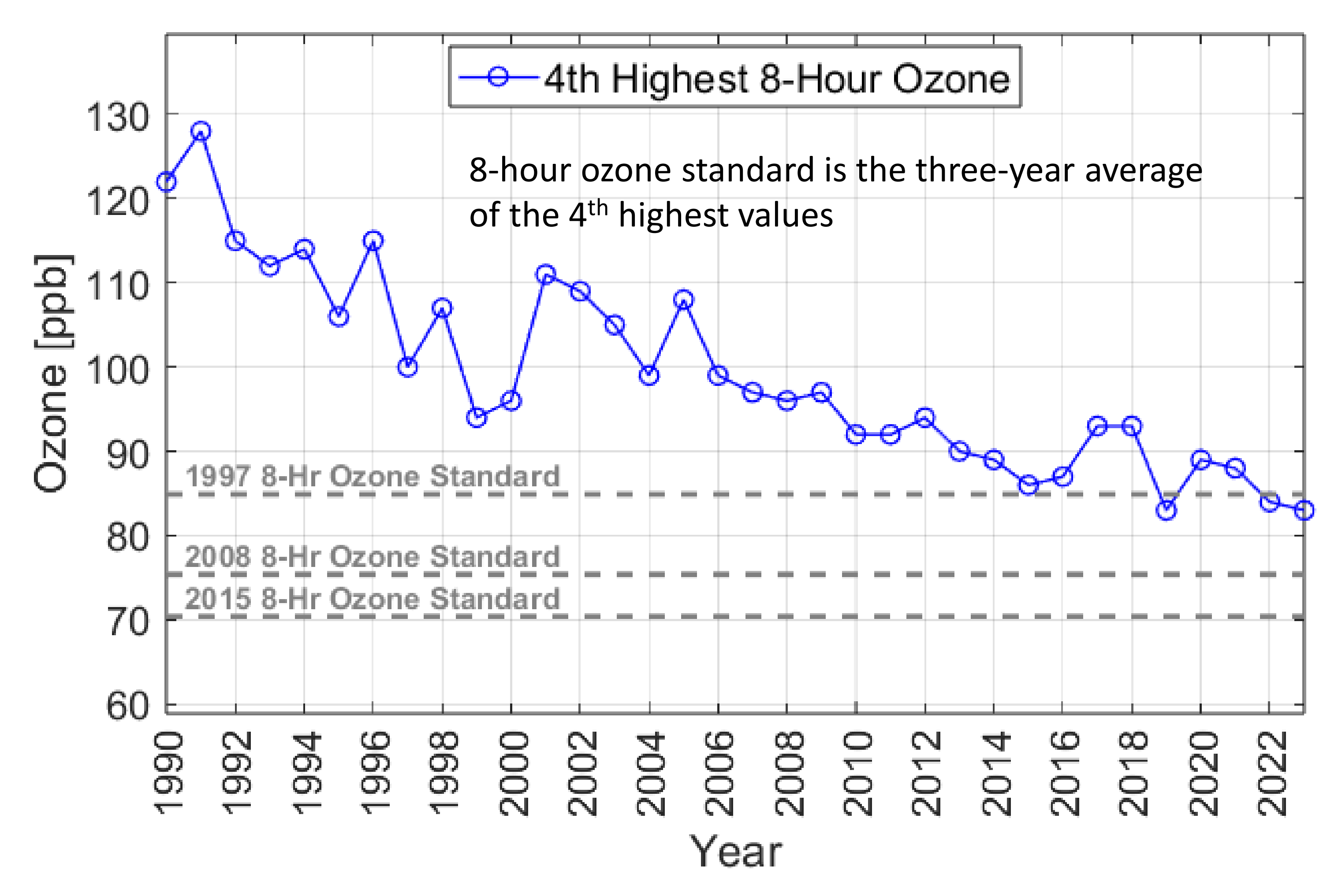


- The National Ambient Air Quality Standards (NAAQS) are health-based standards.
- Ozone exposure is associated with **adverse health impacts**, including respiratory inflammation and worsening asthma symptoms

Ozone Transport into the Coachella Valley



Ozone Air Quality in Coachella Valley



Coachella Valley ozone levels have been improved significantly

Ozone Standard	Attainment Year
1997	2023
2008	2031
2015	2032*

*Reclassification request to “extreme” nonattainment is pending U.S. EPA’s approval and would extend the attainment year to 2037

Overview of SIP Actions for the 2008 8-Hour Ozone Standard

Ozone Nonattainment Classifications

Attainment
Marginal
Moderate
Serious
Severe
Extreme

Coachella Valley was originally classified as a "severe" nonattainment area, with attainment by 2026.

U.S. EPA approved South Coast AQMD's request to bump-up Coachella Valley to "extreme" nonattainment in March 2023.

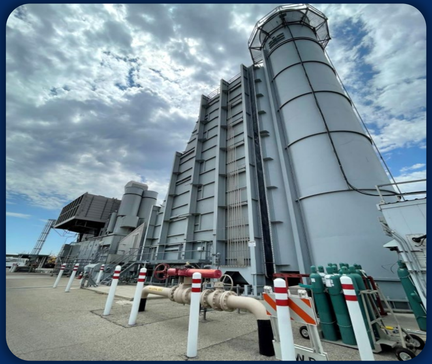
A new SIP addressing "extreme" area requirements is due to U.S. EPA by October 7, 2024.

Implications of Reclassification

- Federal Clean Air Act and subsequent U.S. EPA regulations describe reclassification process
  - Attainment deadline extended to 2031
  - An update to the Air Quality Management Plan must be prepared
    - Must include 15 elements

Emissions Inventory	Control Strategy	Reasonably Available Control Measures
Reasonably Available Control Technology	Attainment Demonstration	Reasonable Further Progress
Transportation Conformity	Vehicle Miles Traveled Offset Demonstration	New Source Review Program
Emissions Statement	Clean Fuels for Fleets	Clean Fuels for Boilers
NOx Requirements	CAA Section 185 Fee Program	Contingency Measures

Strategy to Attain 2008 8-Hour Ozone Standard: Relies on Phase-In of Previously Adopted Rules



Baseline Measures

Recently Adopted South Coast AQMD Rules

CARB's and U.S. EPA's Recently Adopted Mobile Source Regulations

Recently Adopted 2022 Air Quality Management Plan provides additional assurance that standard will be met on time

South Coast AQMD Rules Contributing to Attainment

Baseline Reductions

Rules adopted by October 2020 (e.g. Rules 1111 and 1113) and Rule 1109.1

Other RECLAIM Landing Rules*

Rules other than Rule 1109.1 that were adopted to implement the RECLAIM transition to a command-and-control structure (e.g., Rules 1110.2, 1118.1, and 1147)

Recently Adopted Rules Affecting Non-RECLAIM Sources

Other rules adopted through 2023 (e.g., Rules 1111, 1153.1, and 1168)

Recently Adopted Mobile Source Measures Providing Reductions in 2031

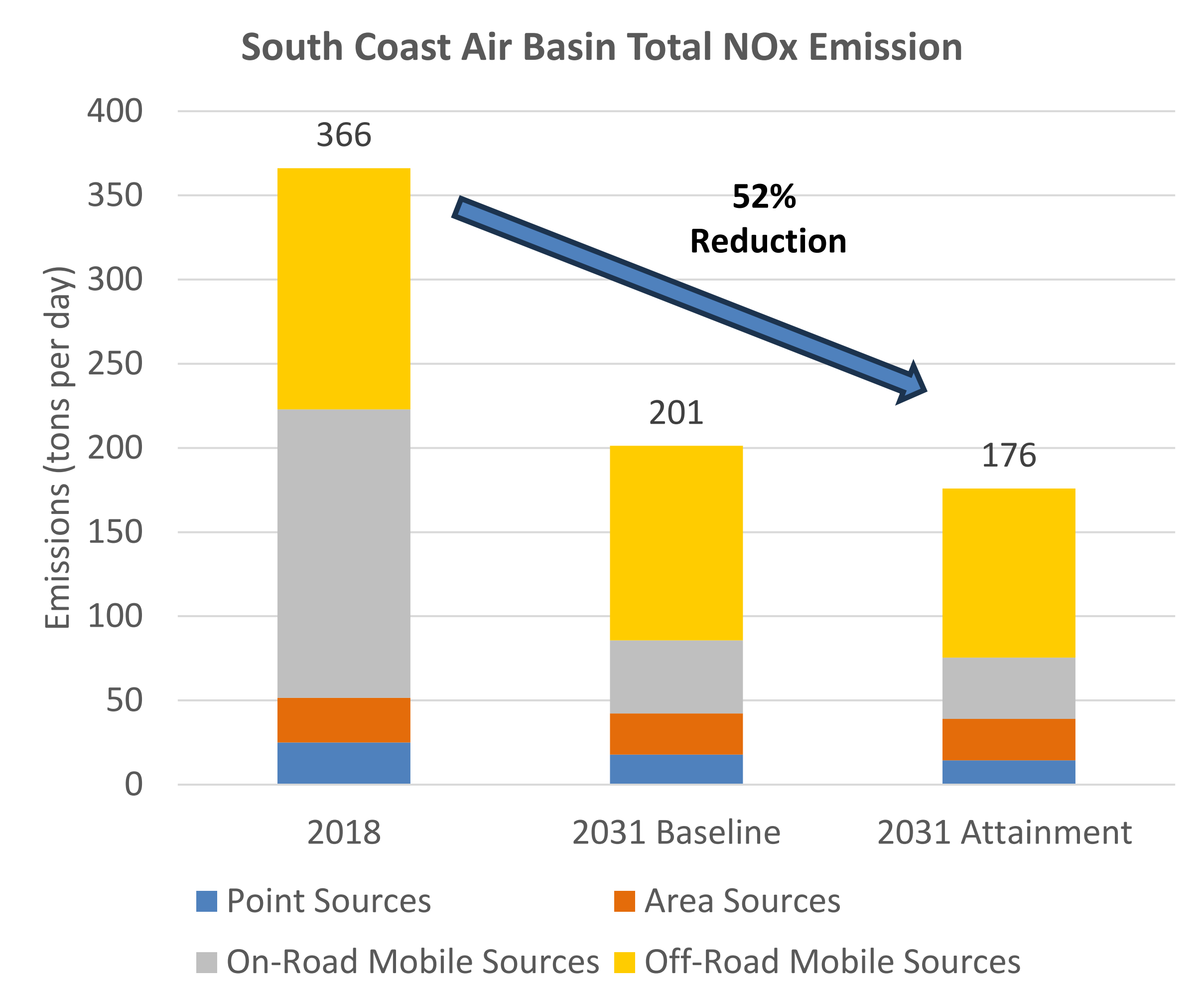
On-Road Light-Duty

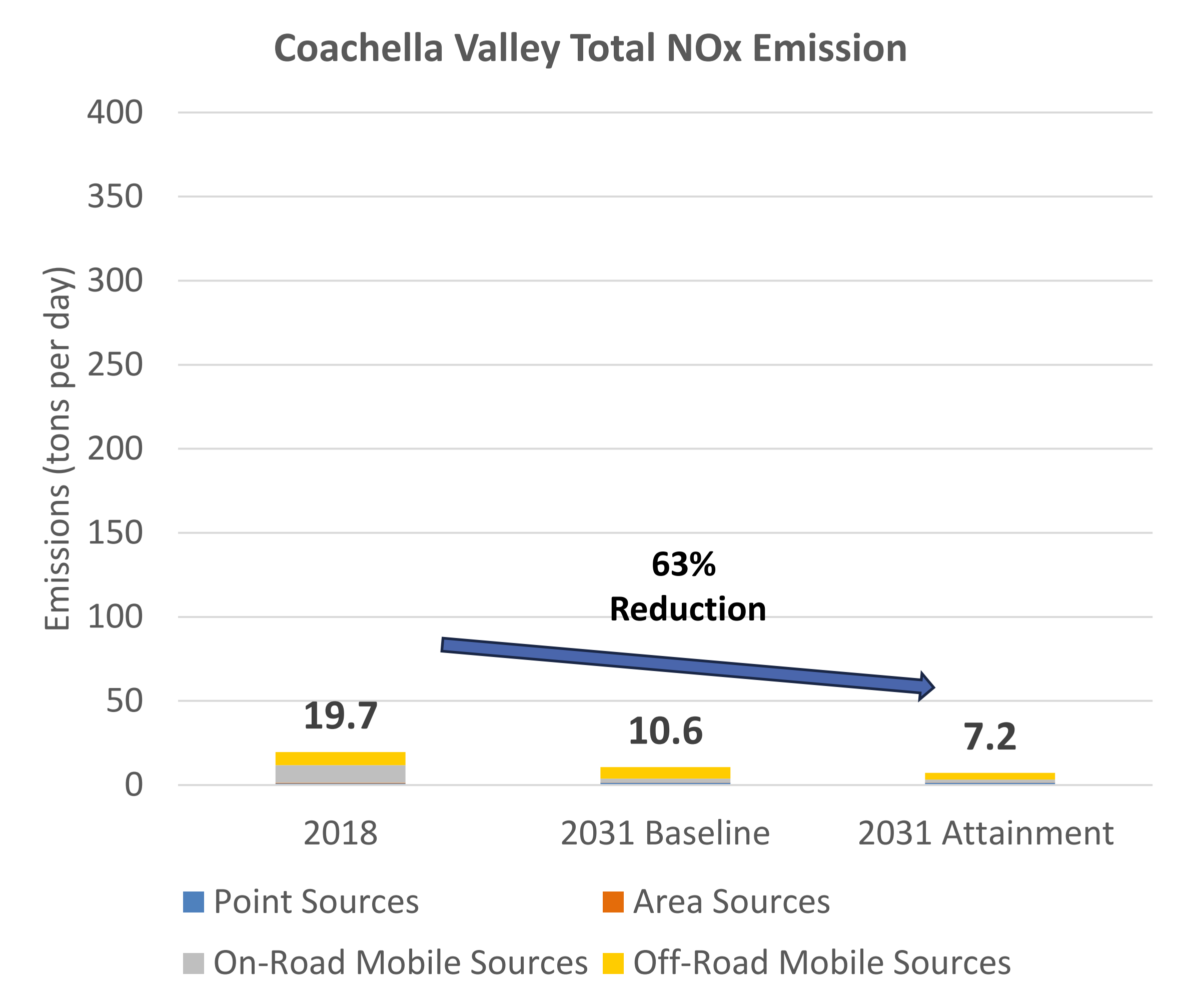
On-Road Heavy-Duty

Off-Road Equipment

Primarily-Federally Regulated Sources

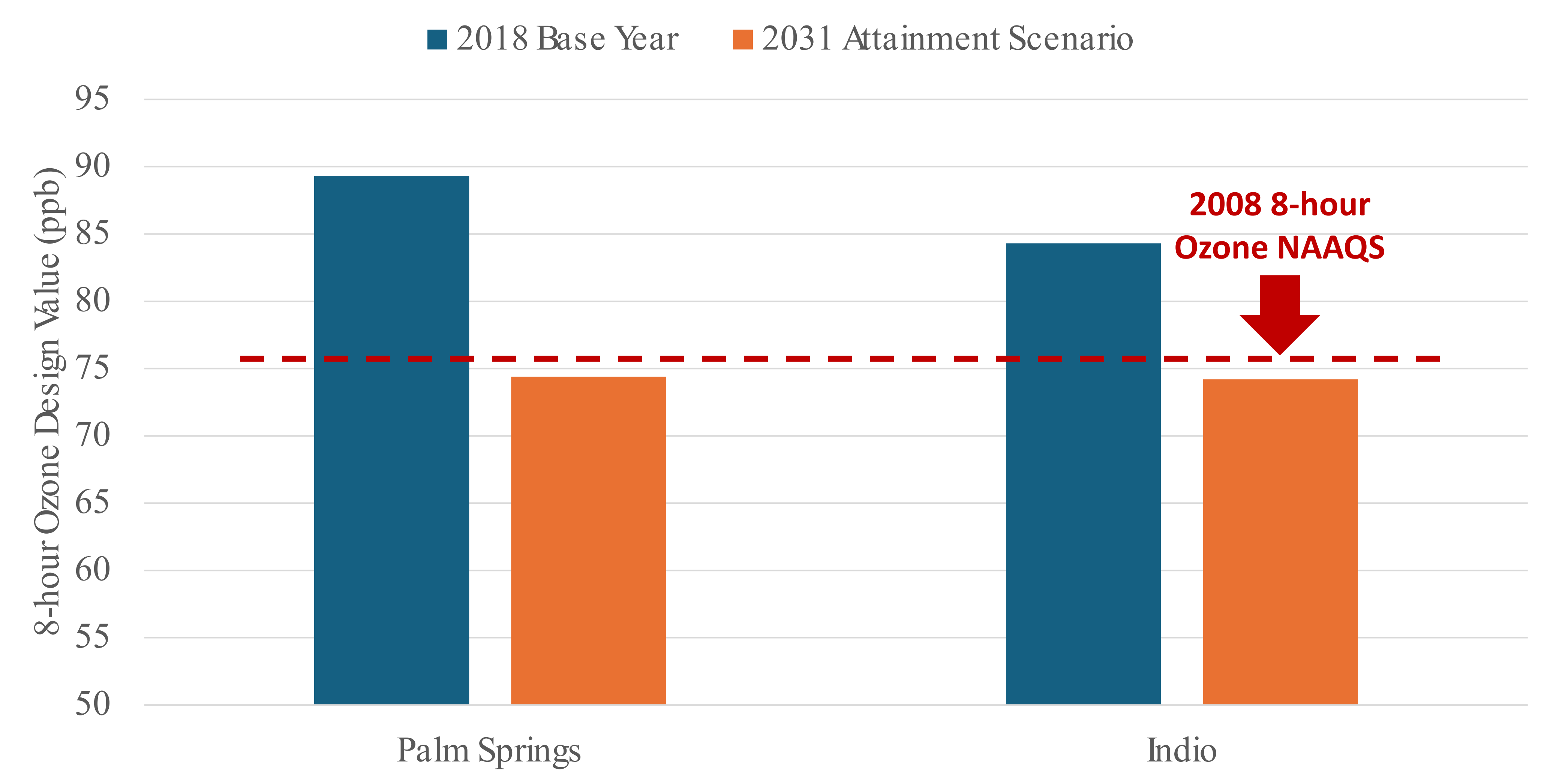
Emission Changes from 2018 to Attainment Scenario





‘Baseline’ includes all previously adopted rules. ‘Attainment’ includes projections from recently adopted rules. NOx contributes to ozone formation.

Future Ozone Concentrations



SIP Development Public Process

July 31
- Released Draft Plan

August 14
- Public Consultation meeting

August 16
- Mobile Source Committee

August 30
- Public Comment Deadline

September 5
- Eastern Coachella Valley Community Steering Committee

October 4
- Governing Board Hearing

October
- Submission to U.S. EPA via CARB

Staff Recommendation

Adopt the Resolution:

- Determining that the Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard is exempt from the requirements of CEQA.
- Adopting the Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard and directing staff to submit the plan to CARB for its approval and subsequent submittal to the U.S. EPA for inclusion into the SIP.