



# EXECUTIVE SUMMARY

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- Despite great strides in cleaning the air over the past several decades, the Los Angeles area still has among the highest levels of fine particulate matter (PM2.5) pollution in the nation.
- The South Coast Air Basin fails to meet the 2012 annual PM2.5 national ambient air quality standard and is classified as a “serious” nonattainment area.
- South Coast AQMD submitted a plan to attain the 2012 annual PM2.5 standard by 2025 in 2017; however, the U.S. EPA failed to take timely action on that plan. Due to unforeseen challenges, that plan would no longer provide a path to attaining the standard.
- South Coast AQMD developed a new plan to meet the 2012 annual PM2.5 standard. To address the unforeseen challenges, this plan seeks an extension of the attainment date to 2030 as allowed by the Clean Air Act.
- The new plan requires accelerated implementation of control measures from the 2022 AQMP as well as limited additional measures to reduce ammonia and direct PM2.5 emissions.
- With the emission reductions expected from the strategy listed above, the South Coast Air Basin is expected to meet the 2012 annual PM2.5 standard by 2030.

## Overview

The 17 million residents of the greater Los Angeles area have suffered from some of the worst air quality in the nation. While air quality has improved greatly over the past decade, more needs to be done. The region has the worst levels of ground-level ozone (smog) and among the highest levels of fine particulate matter (PM2.5). PM2.5 is an air pollutant that is either directly emitted into the atmosphere (primary particles) or formed in the atmosphere through chemical reactions (secondary particles). Primary PM2.5 includes road dust, diesel soot, combustion products, and other sources of fine particles. Secondary PM2.5 products, such as sulfates, nitrates, and complex organic compounds, are formed from reactions with oxides of sulfur (SO<sub>x</sub>), oxides of nitrogen (NO<sub>x</sub>), volatile organic compounds (VOCs), and ammonia.

The PM2.5 air pollution levels in the region exceed both National and California Ambient Air Quality Standards. High levels of air pollution cause respiratory and cardiovascular disease, exacerbate asthma, and can lead to premature death. We also know that our Environmental Justice (EJ) communities experience the brunt of adverse health effects from air pollution. Approximately 42 percent of the South Coast Air Basin (Basin) residents live in EJ communities.

The United States Environmental Protection Agency (U.S. EPA) requires areas that do not meet a National Ambient Air Quality Standard (NAAQS or standard) to develop and implement strategies to reduce emissions so that healthy levels of air quality can be achieved in a timely manner. The strategy, along with other supporting elements, must be submitted to U.S. EPA for its review and approval into the State Implementation Plan (SIP). Regions must develop SIPs to attain NAAQS by specific dates or face the possibility of sanctions by the federal government and other consequences under the Clean Air Act (CAA). This can result in increased permitting fees, stricter restrictions for permitting new projects, and the loss of federal highway funds.

This document addresses the planning requirements for the 2012 annual PM2.5 NAAQS. The Basin fails to meet this standard and is currently classified as a “serious” nonattainment area. As such, the South Coast AQMD is required by the Clean Air Act to develop a plan to meet the NAAQS. This document is the plan that provides the strategy and the underlying technical analysis for how the Basin will meet the 2012 annual PM2.5 NAAQS as expeditiously as practicable, but no later than December 31, 2030. This Plan does not address the Coachella Valley as that area already attains the 2012 annual PM2.5 NAAQS.

## Challenges and Need for a New PM<sub>2.5</sub> Plan

Effective April 15, 2015, the U.S. EPA designated the Basin as a “moderate” nonattainment area for the 2012 annual PM<sub>2.5</sub> NAAQS.<sup>1</sup> The 2016 Air Quality Management Plan (AQMP) contained the original plan to meet the 2012 annual PM<sub>2.5</sub> NAAQS. In that plan, staff concluded that attainment by the “moderate” area deadline of December 31, 2021 was not achievable. As provided for under the Clean Air Act, staff requested that the U.S. EPA reclassify the Basin to “serious” nonattainment, which provided for additional time to attain the standard. Accordingly, a “serious” area attainment plan, demonstrating attainment by December 31, 2025, was also included in the 2016 AQMP.

Despite the 2016 AQMP submittal, U.S. EPA did not act on the PM<sub>2.5</sub> “serious” area plan for several years. On December 9, 2020, U.S. EPA reclassified the Basin from “moderate” to “serious” nonattainment for the 2012 annual PM<sub>2.5</sub> NAAQS with an attainment deadline by December 31, 2025.<sup>2</sup> U.S. EPA simultaneously raised concerns regarding data from near-road monitors which were established in 2015. These monitors are located along the Interstate 710 (I-710) in Long Beach and the California State Route 60 (CA-60) in Ontario. At the time of 2016 AQMP adoption, neither of these monitors had collected enough data to be considered in plans. By January 1, 2020, however, these monitors had accumulated sufficient data to be considered in SIP attainment demonstrations. Based on 2020–2022 monitoring data, the CA-60 near-road monitoring site had the highest PM<sub>2.5</sub> level in the Basin at 13.7 µg/m<sup>3</sup>. U.S. EPA indicated that it could not approve the “serious” area plan included in the 2016 AQMP since, at the time the reclassification request was approved, the near-road monitors were now eligible to be considered in attainment demonstrations. U.S. EPA subsequently requested a supplemental attainment demonstration for the near-road monitors.

On January 12, 2023, U.S. EPA was sued over its failure to take timely action on the “serious” area plan in the 2016 AQMP. To avoid potential disapproval of the plan by U.S. EPA, which would have triggered sanction clocks, South Coast AQMD withdrew the “serious” area plan. As a consequence of withdrawal, South Coast AQMD is required to develop a new plan to address attainment of the 2012 annual PM<sub>2.5</sub> NAAQS.

While the 2016 AQMP had predicted attainment of the 2012 annual PM<sub>2.5</sub> NAAQS by 2025, this PM<sub>2.5</sub> Plan requests an attainment date extension to December 31, 2030 as allowed under CAA Section 188(e). There are multiple factors contributing to the extension of the attainment date. The addition of the near-road monitors, which were not considered in the 2016 AQMP, is one of the primary reasons for the longer timeframe needed for attainment. In addition, due to a lack of action at the federal level, sources such as interstate trucks, ships, locomotives, and aircraft have not been controlled sufficiently, which has resulted

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<sup>1</sup> Air Quality Designations for the 2012 Primary Annual Fine Particle (PM<sub>2.5</sub>) National Ambient Air Quality Standards (NAAQS), 80 Fed. Reg. 2206 (Jan. 15, 2015)

<sup>2</sup> Approval and Promulgation of Implementation Plans; Designation of Areas for Air Quality Planning Purposes; California; South Coast Moderate Area Plan and Reclassification as Serious Nonattainment for the 2012 PM<sub>2.5</sub> NAAQS, 85 Fed. Reg. 71264 (Nov. 9, 2020)

in emission reduction shortfalls for attainment of ozone standards. Other unforeseen challenges that have complicated attainment include unfavorable meteorology, wildfires, and increases in emissions in the goods movement sector during the COVID-19 pandemic.

## Control Measures and Attainment Strategy

U.S. EPA requires PM2.5 plans to address directly-emitted PM2.5 and the gases that form PM2.5 in the atmosphere. These gases are known as precursors, and they include SO<sub>x</sub>, NO<sub>x</sub>, VOCs, and ammonia. While the main sources of NO<sub>x</sub> are on-road and off-road mobile sources, direct PM2.5 emissions are driven by stationary area sources, such as cooking and resuspended particles from paved roads. Ammonia emissions are driven by both area and mobile sources. Control measures for VOCs and SO<sub>x</sub> are not included in the attainment strategy as these precursors have an insignificant contribution to PM2.5 in the Basin.

The reductions needed to meet the 2012 annual PM2.5 NAAQS will come from three categories.

- 1) **Already adopted rules and programs.** Rules and programs that have already been adopted by the South Coast AQMD will continue to bring emission reductions of PM2.5 and its precursors. These reductions are already reflected in the baseline (i.e., Business-As-Usual) emissions. Under baseline conditions, NO<sub>x</sub> and direct PM2.5 emissions are expected to decline by 45 percent and 4 percent from 2018 to 2030, respectively.
- 2) **Actions from the 2022 AQMP.** The NO<sub>x</sub> strategy committed in the 2022 AQMP to attain the 2015 8-hour ozone NAAQS by 2037 is expected to reduce both NO<sub>x</sub> and direct PM2.5 emissions by 2030. Among the control measures included in the 2022 AQMP, those that can be implemented by 2030 were identified and included in this Plan. Both NO<sub>x</sub> emission reductions and concurrent PM2.5 reductions from 2022 AQMP NO<sub>x</sub> control measures were quantified in this PM2.5 Plan.
- 3) **Limited additional reductions of ammonia and direct PM2.5.** These additional reductions will be pursued to satisfy U.S. EPA's stringency requirements. This PM2.5 Plan is required to satisfy U.S. EPA's requirements including Best Available Control Measures (BACM) and Most Stringent Measures (MSM). Demonstrating BACM and MSM is independent of attainment and therefore some control measures, which are surplus to the attainment strategy, are included. For details on the BACM and MSM requirements and analysis, refer to Appendix III.

South Coast AQMD proposes a total of 38 control measures for the PM2.5 Plan. Out of the 38 proposed control measures, 23 measures target reductions from stationary sources and the remaining 15 measures target reductions from mobile sources. The stationary source measures are grouped into the following categories: NO<sub>x</sub> measures, direct PM2.5 measures, ammonia measures, co-benefits from energy and climate change programs, and other measures. Meanwhile, the mobile source measures are grouped into the following categories: emission growth management measures, facility-based mobile source measures, on-road and off-road measures, incentive-based measures, and other measures. Overall, emissions of

NOx and PM2.5 will reduce by 207.7 tons per day and 3.4 tons per day, respectively, between 2018 and 2030.

## Attainment Demonstration

Air quality modeling is used to demonstrate future attainment of the PM2.5 standard and is an integral part of the planning process. Modeling shows the connection between emission reductions and a path to attainment. It reflects updated emissions estimates, new technical information, enhanced air quality modeling techniques, updated attainment demonstration methodology, and the control strategy.

The modeling platform consists of a suite of modeling tools that calculate air pollutant emissions, meteorological conditions that drive the transport of pollutants, and chemical transformation of pollutants to predict the concentrations of PM2.5 and its precursors. The modeling setup is an upgrade from the modeling platform used in the 2022 AQMP and incorporates new versions of the Weather Research Forecast (WRF) meteorological model and the Community Multiscale Air Quality (CMAQ) model. Emissions modeling incorporates detailed information from satellite observations, vehicle traffic sensor data, and communication platforms for aircraft and ocean-going vessels, to refine emissions spatial and temporal distribution.

For the first time in a South Coast Air Basin PM2.5 plan, the design site for the annual PM2.5 standard is a near-road monitor. That site is the near-road monitor that is located by the CA-60 freeway in Ontario. Modeling the air quality in this site presents challenges to regional air quality models commonly used in attainment demonstrations. The U.S. EPA modeling guidance for attainment demonstrations<sup>3</sup> recognizes the limitations of regional models to represent the steep gradients in PM2.5 around near-road sites and acknowledges that demonstrating attainment at near-road sites may require different treatment compared to other monitors. This PM2.5 plan employs a hybrid approach that combines traditional regional modeling with dispersion modeling around the near-road site. The hybrid modeling helps characterize the contribution of near-road sources to measured PM2.5 at the near-road monitor to better quantify the benefits of emission controls on on-road sources. Other than the near-road monitor at Ontario CA-60, the traditional regional modeling approach was employed to demonstrate attainment at all stations in the Basin.

With the proposed control measures and emissions reductions, the attainment strategy in this Plan will result in meeting the 2012 annual PM2.5 standard by 2030 at all the stations in the Basin.

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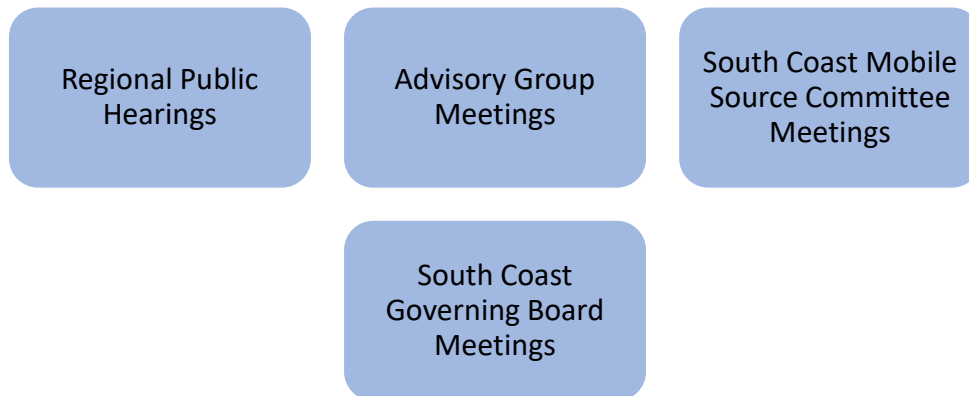
<sup>3</sup> Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze, U.S. EPA, Office of Air Quality Planning and Standards. Available at: [https://www.epa.gov/sites/default/files/2020-10/documents/o3-pm-rh-modeling\\_guidance-2018.pdf](https://www.epa.gov/sites/default/files/2020-10/documents/o3-pm-rh-modeling_guidance-2018.pdf)

## Health Benefits

A Socioeconomic Impact Assessment, which includes quantification of public health benefits, is being prepared and will be released for public review at least 30 days prior to the Public Hearing.

## Collaboration, Public Process, and Outreach

The development of the PM2.5 Plan has been a regional, multi-agency effort that includes South Coast AQMD, CARB, the Southern California Association of Governments, and the U.S. EPA. The PM2.5 Plan also incorporates collaborative efforts by a wide range of stakeholders such as businesses, environmental and health organizations, community groups, and academia. As shown in Figure ES-1, development of the PM2.5 Plan involved numerous types of public meetings to promote collaboration and public participation. Meeting materials for the regional public hearings were translated to Spanish and all hearings were provided with live Spanish translation. Agendas and presentations for each meeting will be forthcoming.



**FIGURE ES-1**  
**VENUES ACCOMMODATING STAKEHOLDER PARTICIPATION**

## Implications of a New PM<sub>2.5</sub> Standard for the Basin

U.S. EPA recently revised the annual PM<sub>2.5</sub> standard from its current level of 12 µg/m<sup>3</sup> to 9.0 µg/m<sup>3</sup>.<sup>4</sup> The new standard is the result of an extensive scientific review conducted by U.S. EPA's Clean Air Scientific Advisory Committee (CASAC), which found that the 12 µg/m<sup>3</sup> standard does not sufficiently protect public health.

This PM<sub>2.5</sub> Plan, together with the 2022 AQMP, serves as a steppingstone for attaining the 2024 PM<sub>2.5</sub> NAAQS. However, even after implementing the control strategy of this Plan, air quality modeling predicts that the 2030 design value will be 11.7 µg/m<sup>3</sup>, significantly higher than the new 9.0 µg/m<sup>3</sup> standard. Preliminary results suggest that even implementation of the 2022 AQMP strategy, which targets attainment of the 2015 8-hour ozone NAAQS by 2037, will be insufficient to lower the design value to 9.0 µg/m<sup>3</sup>. Substantial emission reductions especially of direct PM<sub>2.5</sub> will therefore be required to meet the new standard. South Coast AQMD commits to develop the optimal attainment strategy that considers stakeholder feedback while ensuring expeditious attainment of the 2024 PM<sub>2.5</sub> standard.

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<sup>4</sup> Reconsideration of the National Ambient Air Quality Standards for Particulate Matter, 89 Fed. Reg. 16202 (Mar. 6, 2024)