# CHAPTER 6

# Federal Clean Air Act Requirements

- **Due to unforeseen challenges such as adverse meteorology and high levels of PM2.5 recorded at near road monitors, it is impractical to attain the 2012 annual PM2.5 standard by the statutory "serious" area attainment date, December 31, 2025.**

- **This Plan requests an extension of the attainment date to December 31, 2030, as allowed by the Clean Air Act Section 188(e). With the control strategy proposed in this Plan, the South Coast Air Basin is expected to attain the 2012 annual PM2.5 standard by 2030.**

- **The PM2.5 Plan complies with SIP planning requirements including, but not limited to, reasonable further progress, quantitative milestones, a comprehensive emissions inventory, the implementation of best available control measures and most stringent measures, control strategies, contingency measures, transportation conformity, motor vehicle emissions budget, and new source review.**

# Other Federal Clean Air Act Requirements

This Plan addresses all "serious" PM2.5 nonattainment area Clean Air Act (CAA) planning requirements as shown in Table 6-1. Chapters 3 to 5 of this Plan fulfill the requirements related to the updated emissions inventory, control strategy, and attainment demonstration. This chapter addresses other CAA requirements.

**TABLE 6-1**

**FEDERAL CLEAN AIR ACT REQUIREMENTS FOR THE 2012 PM2.5 NAAQS**

| 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 |
| BACM/BACT | 189(b)(1)(B) | Provisions to assure that the Best Available Control Measures (BACM) for the control of PM2.5 shall be implemented no later than 4 years after the date the area is reclassified as a "serious" nonattainment area. BACM includes Best Available Control Technology (BACT). | Chapter 4, Appendix III, Appendix IV |
| Attainment Demonstration | 189(b)(1)(A), 188(e) | Attainment date shall be as expeditiously as practicable but no later than the end of the fifteenth calendar year after designation as nonattainment. | Chapter 5 |
| Extension of Attainment Date for Serious Areas | 188(e) | Demonstrations that 1) attainment by the statutory "serious" area attainment date is impracticable, 2) the State has complied with all requirements and commitments pertaining to the area in the SIP, and 3) the State demonstrates that the Plan includes the most stringent measures (MSM) feasible for the area. | Chapter 6, Appendix III |
| Reasonable Further Progress | 172(c)(2) | Plan provisions shall require reasonable further progress (RFP). | Chapter 6 |
| Transportation | 176(c) | Plan provisions addressing transportation | Chapter 6 |

| Requirement | CAA Section | Definition | Location in Plan |
|---|---|---|---|
| Conformity | | conformity, including motor vehicle emissions budgets for RFP milestone years and the attainment year. | |
| Quantitative Milestones | 189(c) | The Plan shall contain quantitative milestones which are to be achieved every three years until the area is redesignated attainment and which demonstrate reasonable further progress toward attainment by the applicable attainment date. | Chapter 6 |
| Nonattainment New Source Review | 189(a)(1)(A), 189(b)(3), 189(e) | A permit program requiring permits for the construction and operation of new and modified major stationary sources of PM. Control requirements applicable to major stationary sources of PM2.5 shall also apply to major stationary sources of PM2.5 precursors. | Chapter 6 |
| Contingency Measures | 172(c)(9) | Fully adopted rules or control measures that are ready to be implemented, should U.S. EPA issue a final rule that the Basin 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, Appendix V |

## Request for Extension of Attainment Date to 2030

Through this plan, South Coast AQMD is formally requesting an extension of the attainment deadline from December 31, 2025 to December 31, 2030 as allowed under CAA Section 188(e). U.S. EPA requires that additional elements accompany the attainment deadline extension request in order to consider it. First, an impracticability demonstration must be provided, showing that the area cannot practicably attain by the end of the tenth calendar year following designation of the area. Second, the State Implementation Plan (SIP) must provide for the implementation of Most Stringent Measures (MSM). Finally, a demonstration of compliance with all requirements and commitments in the applicable SIP must be included.

## *Impracticability Demonstration*

The 2016 AQMP included a strategy to attain the 2012 annual PM2.5 standard by 2025. The strategy primarily relied on co-benefits from the measures to attain the 1997 8-hour ozone standard by 2023 and the 2008 8-hour ozone standard by 2031. Since the submittal of the 2016 AQMP, South Coast AQMD has implemented control measures and achieved emission reductions reflected in the 2016 AQMP attainment demonstration. However, progress in achieving the needed emission reductions was hampered by a variety of circumstances. These include a lack of action at the federal level for sources such as aircraft, ships, trains, interstate trucks, and offroad equipment. Such sources are the dominant source of NOx emissions in the region and are subject to federal regulatory authority. Additionally, the region experienced unforeseen challenges including unfavorable meteorology, wildfires, increases in emissions in the goods movement sector during the COVID-19 pandemic, and the addition of the near-road monitors. All of these factors resulted in higher than expected PM2.5 concentrations.

Prior to the submittal of the 2016 AQMP, U.S. EPA established a requirement to monitor PM2.5 levels at near-road locations. Two near-road monitoring stations along the Interstate 710 (I-710) in Long Beach and the California State Route 60 (CA-60) in Ontario began PM2.5 measurements in 2015. At the time of 2016 AQMP adoption, neither of these monitors had sufficient data to be considered in the attainment demonstration. By January 1, 2020, however, these monitors had accumulated sufficient data to be considered in attainment demonstrations and the CA-60 monitor was measuring the highest PM2.5 levels in the Basin. The 2022 design value at the CA-60 monitor was 13.7 $\mu g/m^3$.

U.S. EPA did not act on the submitted plan for a few years and, by the time the South Coast Air Basin was reclassified to “serious” nonattainment in 2020, U.S. EPA stated that near-road monitors must now be included in a supplemental attainment demonstration. South Coast AQMD subsequently determined that demonstrating attainment by 2025, especially at the CA-60 monitor, was impractical.

Currently, model-predicted design values for 2025, the statutory “serious” area attainment year, are well above 12.0 $\mu g/m^3$ at multiple monitors (see Chapter 5, Table 5-4). This scenario reflects baseline emissions with adopted regulations and programs by South Coast AQMD and CARB. It is impractical and infeasible to implement additional reductions beyond already adopted regulations by December 31, 2024, given the amount of time needed to adopt and implement rules and regulations. The control strategy also requires that South Coast AQMD undertake multiple rulemakings, each with its own extensive public process. The proposed attainment year, 2030, reflects the challenges and complexities associated with this plan while balancing expeditious attainment and the time needed to adopt a SIP revision, develop rules, and achieve emission reductions.

## *Implementation of MSM*

Appendix III presents a comprehensive BACM demonstration which also serves to demonstrate MSM. U.S. EPA interprets MSM to mean the maximum degree of emission reduction that has been required or achieved from a source or source category in any other attainment plans or in practice in any other states

and that can feasibly be implemented in the area seeking the extension. In Appendix III, potential control measures identified via MSM evaluation are assessed for technological and economic feasibility and incorporated as control measures if they are feasible. If potential MSM are rejected as infeasible, a reasoned justification is provided.

## *Compliance With the Applicable SIP*

The final element that is required to accompany an attainment date extension request is a demonstration of compliance with commitments made in the applicable SIP. In this case, the applicable SIP is the "moderate" area plan for the 2012 annual PM2.5 standard which was submitted as part of the 2016 AQMP. U.S. EPA approved all but the contingency measure element of the 2016 AQMP as meeting applicable "moderate" area requirements.[1] With respect to the contingency measure element, U.S. EPA granted conditional approval based on South Coast AQMD's commitment to adopt and submit a contingency measure for approval. In response, Rule 445 was amended twice in 2020 to add PM2.5 and ozone contingency provisions. Rule 445 was subsequently approved by U.S. EPA, excluding paragraph (g) (Ozone Contingency Measures) and paragraph (k) (Penalties), as fulfilling the commitment to adopt a contingency measure for PM2.5.[2]

With respect to the Reasonably Available Control Measures (RACM)/Reasonably Available Control Technology (RACT) analysis, the "moderate" area plan in the 2016 AQMP concluded that South Coast AQMD's existing rules were generally equivalent to, or more stringent than, those developed by other air districts. Thus, there were no control measures identified as RACM/RACT. There were, however, four control measures in the 2016 AQMP identified as additional reasonable measures with full or partial implementation by 2020 (see Table 6-2). U.S. EPA approved these additional reasonable measures including CMB-02, CMB-03, BCM-04, and BCM-10.[3]

[1] 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 PM2.5 NAAQS, 85 Fed. Reg. 71264 (Nov. 9, 2020)
[2] Air Plan Approval; California; Los Angeles — South Coast Air Basin, 87 Fed. Reg. 12866 (March 8, 2022)
[3] 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 PM2.5 NAAQS, 85 Fed. Reg. 40026 (July 2, 2020)

**TABLE 6-2**
**SUMMARY OF ADDITIONAL REASONABLE MEASURES FOR ANNUAL PM2.5 IN THE 2016 AQMP**

| CM Number | Title | Adoption | Implementation Period | Commitment Satisfied? |
|---|---|---|---|---|
| **CMB-02** | Emission Reductions from Replacement with Zero or Near-Zero NOx Appliances in Commercial and Residential Applications [NOx] | 2018 | 2020-2031 | Yes, Rule 1111 |
| **CMB-03** | Emission Reductions from Non-Refinery Flares [NOx, VOC] | 2018 | 2020 | Yes, Rule 1118.1 |
| **BCM-04** | Emission Reductions from Manure Management Strategies [NH3] | 2019 | 2020 | Yes, substitute reductions achieved |
| **BCM-10** | Emission Reductions from Greenwaste Composting [NH3] | 2019 | 2020 | Yes, substitute reductions achieved |

South Coast AQMD fulfilled CMB-02 and CMB-03 commitments through amendments to Rule 1111 and adoption of Rule 1118.1, respectively, while the 2016 AQMP control measures BCM-04 and BCM-10 have not yet been adopted as rules. However, the quantified reductions from these measures are less than 0.5 percent of all ammonia emissions. The air quality benefit of the surplus NOx and PM reductions achieved in 2022, discussed in detail later, is expected to greatly exceed the potential benefit of the relatively small ammonia reductions from BCM-04 and BCM-10. Additionally, updated analysis conducted for the PM2.5 Plan shows that ammonia emissions from livestock are considerably lower than assumed in the 2016 AQMP. Total ammonia emissions for dairy cattle, poultry layers, and swine are 1.2 tons per day lower than the projected emissions for the 2025 attainment year in the 2016 AQMP (see Table 6-3). Therefore, the reductions achieved in practice far exceed the reductions sought by BCM-04 and BCM-10.

**TABLE 6-3**
**COMPARISON OF 2030 LIVESTOCK AMMONIA EMISSIONS IN THE 2016 AND 2022 AQMPS**

| | | NH3 emissions (tpd) | |
|---|---|---|---|
| CES | Category Description | 2016 AQMP | 2022 AQMP |
| 89516 | LIVESTOCK HUSBANDRY - DAIRY CATTLE | 4.55 | 5.08 |
| 89557 | LIVESTOCK HUSBANDRY - LAYERS | 1.92 | 0.28 |
| 89573 | LIVESTOCK HUSBANDRY - SWINE | 0.15 | 0.02 |
| **Total** | | **6.62** | **5.38** |

Implementation of certain control measures not only depends on South Coast AQMD, but also on state actions. South Coast AQMD determined that state legislation has achieved many of the same objectives as BCM-10 and this control measure has therefore been implemented statewide. The BCM-10 proposed control methods included potential emission reductions to be achieved through increased diversion of foodwaste from landfills to anaerobic digestion (AD), along with pollution control technology, and restricted direct land application (DLA) of chipped and ground uncomposted greenwaste.

BCM-10 was tied with implementation of AB 341 (Chesbro, Chapter 476, Statutes of 2011) and AB 1826 (Chesbro, Chapter 727, Statutes of 2014). AB 341 required mandatory commercial recycling, composting, or source reduction of 75 percent by 2020. AB 1826 introduced organic waste recycling requirements for businesses starting April 1, 2016, depending on the amount of waste they generate per week. For the purpose of AB 1826, organics were meant to include foodwaste, greenwaste, landscape/pruning waste, nonhazardous wood, and food-soiled paper waste mixed with foodwaste. Organics accounted for 34 percent of California's disposed waste stream in 2014.[4] While AB 341 established a 75 percent recycling target by 2020, the actual statewide recycling rate (through source reduction, recycling, and composting) was only 42 percent in 2020.[5] AB 1826 had phased-in requirements for businesses over time. In September 2020, CalRecycle reduced the threshold to 2 cubic yards of solid waste (the total of trash, recycling, and organics) generated by covered businesses.

More recently, other legislation has been enacted to decrease emissions from landfills. SB 1383 (Lara, Chapter 395, Statutes of 2016) is the most significant landfill waste reduction mandate adopted in California. Its goal is to reduce organic waste landfill disposal by 50 percent from 2014 levels by 2020 and 75 percent by 2025. However, implementation of SB 1383 has faced challenges. In 2020, organic waste in landfills increased by a million tons above the 2014 baseline.[6] The reasons for this increase may include: 1) residential organic waste separation and collection were not fully in effect until January 2022, and 2) more residential foodwaste was generated because of COVID-19. Due to restaurants shifting from dine-in to take-out and customers buying groceries in bulk, the generation of foodwaste increased as did the associated packaging waste.[7]

Since January 2022, approximately 72 percent of California communities have implemented residential organic waste collection, while 126 out of 615 jurisdictions (~20 percent) have requested more time to reach compliance.[8] Rural and low population jurisdictions have waivers and exemptions from organic waste collection requirements. Data on the effectiveness of the residential organic waste collection program in achieving emission reductions is lacking.

In BCM-10, AD was one of the proposed control methods to handle the increased diversion of organic waste (mostly foodwaste) from landfills, resulting in emission reductions. State laws have been enacted

[4] Mandatory Commercial Organics Recycling - CalRecycle Home Page
[5] CalRecycle, State of Disposal and Recycling in California for Calendar Year 2020. 2021
[6] Little Hoover Commission, Reducing California's Landfill Methane Emissions: SB 1383 Implementation, Report #274, June 2023: https://lhc.ca.gov/sites/lhc.ca.gov/files/Reports/274/Report%20274.pdf
[7] CalRecycle, Analysis of the Progress Toward the SB 1383 Organic Waste Reduction Goals. August 18, 2020
[8] California's Climate Progress on SB 1383 - CalRecycle Home Page

to achieve the intent of BCM-10 since the adoption of the 2016 AQMP. While implementation of those laws has not proceeded as envisioned, the legal requirement to increase diversion of waste from landfills exists. Therefore, staff concludes that state actions have fulfilled the BCM-10 commitment.

Quantitative milestones provide another means to demonstrate continued compliance with the applicable SIP. CAA Section 189(c) requires that quantitative milestones must be achieved every 3 years until the area is redesignated attainment which demonstrate Reasonable Further Progress (RFP) toward attainment. South Coast AQMD submitted the 2022 Quantitative Milestone Report (QMR) to U.S. EPA demonstrating continued compliance with all applicable commitments for the 2012 annual PM2.5 standard.[9] The 2016 AQMP projected that 7 tpd of surplus NOx reductions would be needed to meet the 2022 RFP target, while all other pollutants would meet RFP based on baseline measures. Total surplus reductions were determined to be 15.90 tpd NOx and 0.51 tpd PM2.5, significantly exceeding the 7 tpd of NOx reductions needed for RFP.

A significant portion of the reductions came from mobile source incentive measures. The 2016 AQMP included MOB-14 – Emission Reductions from Incentive Programs and provided a mechanism to ensure that emission reductions were SIP creditable. The incentive programs include the Carl Moyer Program, Proposition 1B – Air Quality Improvement Fund, Lower-Emission School Bus Program (LESBP), and the Community Air Protection Program (CAPP). The Carl Moyer Program funds projects that reduce NOx, VOC and PM caused by the combustion of diesel and gasoline in on-road vehicles and off-road engines. The program also funds after-treatment devices such as diesel oxidation catalysts and PM filters. The emission reductions from Proposition 1B are the result of the deployment of cleaner locomotives and heavy-duty trucks. Since 2018, LESBP has funded the replacement of 201 school buses with newer, cleaner models and CAPP incentives have resulted in emission reductions from locomotives, heavy-duty trucks, cargo handling equipment, harbor craft, and other sources that impact disadvantaged communities. Table 6-4 summarizes the emission reductions from these incentive programs.

[9] Submitted to U.S. EPA via CARB on June 7, 2023

**TABLE 6-4**
**SURPLUS NOX AND PM2.5 REDUCTIONS IN 2022 FROM**
**MOBILE SOURCE INCENTIVE PROGRAMS**

| Program | Source Category | NOx (tpd) | PM2.5 (tpd) |
|---|---|---|---|
| **Carl Moyer** | Metrolink[10] | 3.00 | Not Quantified |
| | Harbor Craft | 3.32 | 0.128 |
| | Off-road | 3.80 | 0.139 |
| | On-road | 0.17 | 0.003 |
| | Locomotives | 0.11 | 0.002 |
| **Prop 1B** | Freight Locomotives | 0.61 | 0.023 |
| | On-road HD Trucks | 0.38 | 0.000 |
| **LESBP** | School Buses | 0.10 | 0.005 |
| **CAPP** | Harbor Craft | 0.27 | 0.012 |
| | Off-road | 1.41 | 0.041 |
| | On-road | 0.14 | 0.000 |
| | Locomotives | 0.67 | 0.023 |
| | **Total** | **13.99** | **0.377** |

The 2022 QMR quantified additional reductions resulting from the unused portion of the general conformity set-aside account. Pursuant to Clean Air Act Section 176(c) (42 U.S.C. 7506) and the U.S. EPA's implementing regulations (40 CFR Part 93, Subpart B and 40 CFR Part 51, Subpart W), general conformity is required for NAAQS nonattainment and maintenance areas. The intent of general conformity is to prevent the air quality impacts of a proposed federal action, under Title 23 U.S.C., from causing or contributing to new violations of the air quality standards, exacerbating existing violations, or interfering with the purpose of the applicable implementation plan.

In order to streamline a conformity evaluation process, SIP set-aside accounts were allocated in the 2016 AQMP. The revised set-aside account to accommodate projects subject to general conformity included a balance of: 2.0 tpd of NOx and 0.5 tpd of VOC each year from 2017 to 2030, and 0.5 tpd of NOx and 0.2 tpd of VOC in 2031. Emissions from general conformity projects are tracked by South Coast AQMD and debited from the account on a first-come-first-serve basis. In 2022, the set-aside account had a remaining

[10] Funded with Carl Moyer and other programs. Since February 2013, South Coast AQMD awarded Metrolink a total of $101.85 million for the replacement of 37 Tier 0 & Tier 2 locomotives with Tier 4 locomotives and the new purchase of three Tier 4 locomotives. As of April 2021, 39 Tier 4 locomotives had been delivered to Metrolink and delivery of a final Tier 4 locomotive was expected by June 2021. Beginning in fiscal year 2022, Metrolink anticipated operating 40 trainsets serviced by a fleet of 48 to 52 locomotives. The emission reductions from the Tier 4 conversions and the purchase of the new Tier 4 locomotives, which are surplus to the 2016 AQMP inventory, are estimated to be 3 tpd in 2022

balance of 1.15 tpd NOx and 0.32 tpd VOC since approved projects had not consumed the entire allocation.

A summary of the overall NOx reductions quantified as part of the 2022 QMR is presented in Table 6-5. In addition to the incentive measures and general conformity set-aside account, the Regional Clean Air Incentives Market (RECLAIM) shutdown credit, Rule 445, and Rule 1179.1 reductions are considered.

The RECLAIM shutdown incorporates reductions from the decommissioning of a coke calciner in 2022 by Marathon Petroleum Corporation. The reductions from Rule 445 - Wood Burning Devices - stem from the June 2020 amendment which established PM2.5 contingency provisions that would be automatically triggered in the event that the U.S. EPA determines that the Basin failed to meet any RFP requirement, meet any quantitative milestone, submit a quantitative milestone report, or attain applicable PM2.5 NAAQS by the attainment date. The amendment also expanded the curtailment to the entire Basin instead of using a source receptor area approach. The South coast Air Basin failed to attain the 2006 24-hour PM2.5 standard by the statutory attainment date, December 31, 2019, which triggered a contingency measure in Rule 445 and lowered the curtailment threshold to 29 $\mu g/m^3$ in 2020.[11] Overall, the amendment resulted in a total of 0.13 tpd of PM2.5 reductions. Finally, Rule 1179.1 - Emission Reductions from Combustion Equipment at Publicly Owned Treatment Works Facilities - was adopted in October 2020 and established NOx emission limits for boilers, process heaters and engines burning digester gas or those units capable of burning digester and natural gas.

**TABLE 6-5**
**SURPLUS REDUCTIONS IN 2022 BASED ON REGULATIONS AND INCENTIVES**

| Regulation/Incentive | Surplus NOx Reduction in 2022 (tpd) | Surplus PM2.5 Reduction in 2022 (tpd) |
|---|---|---|
| Rule 445 | Not Quantified | 0.13 |
| Rule 1179.1 | 0.05 | Not Quantified |
| RECLAIM Shutdown Credit (Rule 1109.1) | 0.71 | Not Quantified |
| Mobile Source Incentive Programs | 13.99 | 0.38 |
| General Conformity Set-Aside Credit | 1.15 | N/A |
| **Total** | **15.90** | **0.51** |

In summary, South Coast AQMD determined that all annual PM2.5 “moderate” area plan commitments have been fulfilled. The additional reasonable measures identified in the 2016 AQMP have either been implemented or substitute reductions have been achieved. In the 2016 AQMP, South Coast AQMD committed to achieve emission reductions in aggregate to accommodate necessary changes during

[11] Finding of Failure To Attain the 2006 24-Hour Fine Particulate Matter Standards; California; Los Angeles- South Coast Air Basin, 85 Fed. Reg. 57733 (Sept. 16, 2020)

rulemaking, during which emission reduction commitments of individual control measures are adjusted to reflect stakeholder's needs, technological maturity, commercial availability and other economic needs. The reductions quantified as part of the 2022 QMR, which are surplus to the 2016 AQMP baseline and count towards the aggregate reduction commitment, exceed the level of reductions needed to demonstrate RFP. Therefore, South Coast AQMD concludes that commitments to adopt control measures and meet RFP targets have been achieved.

# Reasonable Further Progress and Quantitative Milestones

## Reasonable Further Progress

The CAA requires that SIPs for most nonattainment areas demonstrate Reasonable Further Progress (RFP) towards attainment through emission reductions phased in from the base year until the attainment date. Per CAA Section 171(1), RFP is defined as:

> "*such annual incremental reductions in emissions of the relevant air pollutant as are required by this part or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date.*"

Emission reductions required under an RFP plan for PM2.5 are directly emitted PM2.5 and applicable precursors. Appendix VI of this Plan presents a precursor demonstration to exclude VOCs and SOx from certain planning requirements including the RFP demonstration. Therefore, this RFP demonstration focuses on NOx, direct PM2.5, and ammonia as the pollutants with a significant impact on PM2.5 levels.

To determine RFP for the attainment date, U.S. EPA guidance states that the plan should rely only on emission reductions achieved from sources within the nonattainment area. Section 172(c)(2) of the CAA requires that attainment plans show ongoing annual incremental emission reductions toward attainment, which is commonly expressed in terms of target emission levels to be achieved by certain interim milestone years.

For PM2.5 nonattainment areas, in addition to the RFP requirements, CAA Section 189(c)(1) requires states to achieve quantitative milestones, which are designed to track RFP to ensure expeditious attainment. U.S. EPA requires that all "serious" area PM2.5 attainment plans define appropriate quantitative milestones to be achieved 7.5 years from the original designation of the area and every 3 years thereafter until the area is re-designated as attainment.[12] The South Coast Air Basin was originally designated nonattainment for the 2012 annual PM2.5 NAAQS effective April 15, 2015.[13] Therefore, the first "serious" area quantitative milestone occurred on October 15, 2022. The 2022 Quantitative

[12] CFR §51.1013(a)(2)(i)

[13] Air Quality Designations for the 2012 Primary Annual Fine Particle (PM2.5) National Ambient Air Quality Standards (NAAQS), 80 Fed. Reg. 2206 (Jan. 15, 2015)

Milestone Report was submitted to U.S. EPA to address compliance with this milestone.

U.S. EPA requires that RFP plans contain projected emissions for each calendar year in which quantitative milestones must be met. Since the first "serious" area quantitative milestone is in the past (October 15, 2022), the first quantitative and RFP milestone year considered in this plan is 2025. The quantitative milestones recur every 3 years and continue through 2031, the post-attainment milestone year.

As described in Chapter 3 – Base-Year and Future Emissions, the base year of this Plan is 2018, which also serves as the base year for the purposes of tracking RFP. Alignment of the RFP and modeling base year is clarified in U.S. EPA's implementation rule for PM2.5 NAAQS:[14]

> "Because the statute does not clearly establish the applicable baseline year from which to begin calculating annual emissions reductions for purposes of demonstrating RFP, the EPA is finalizing a requirement that states use the same year as the base year inventory used for developing the control strategy and associated air quality modeling demonstrating that the area will attain expeditiously."

U.S. EPA requires that all SIPs contain RFP projected emissions and that those emissions demonstrate either: (i) Generally linear progress toward the projected attainment date; or (ii) stepwise progress toward the projected attainment date with proper justification.[15] This analysis demonstrates generally linear RFP for NOx and direct PM2.5 and stepwise RFP for ammonia.

## Stepwise RFP Justification

The RFP demonstrations for NOx and PM2.5 were conducted following the generally linear approach, while RFP for ammonia was demonstrated using the stepwise approach. This is due to the nature of ammonia emissions in the Basin, technologies anticipated to bring ammonia reductions, and the timeline to develop and implement rules to achieve reductions.

Attainment of the 2012 annual PM2.5 NAAQS requires NOx and PM2.5 emissions reductions of 54 percent and 6 percent, respectively, from 2018 to 2030. While portions of the needed reductions come from continued implementation of already adopted rules and regulations, new reductions from the proposed control measures are necessary for attainment. In Chapter 4, Tables 4-4 and 4-5 present South Coast AQMD's commitment to adopt and implement the proposed control measures. CARB's commitments are provided in Tables 4-6 and 4-11, which includes adoption and implementation dates for each measure. The adoption and implementation dates are as expeditious as possible and reflect best estimates of the time required to develop and implement each proposed measure.

In addition, the nature of ammonia emissions needs to be considered. The South Coast Air Basin is a highly

[14] Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements, 81 Fed. Reg. 58009 (Aug. 24, 2016)
[15] CFR § 51.1012(a)(4)

urbanized area with limited agricultural activities and dairy operations. The majority of ammonia emissions come from area sources such as humans and pets in the Basin. Other large sources include on-road vehicles, industrial processes, and farming. Area source emissions are expected to grow in the future due to increases in the population of humans and pets. While the ammonia emissions from mobile or stationary point sources can be controlled by transitioning to zero emissions, ammonia from humans and pets cannot be controlled with current technology. Although there are limited ammonia controls proposed in control measures BCM-08 through BCM-11, the majority of ammonia reductions are anticipated from the deployment of zero emission vehicles. This contrasts with the widespread availability of control technologies targeting NOx and PM2.5 from combustion sources. For NOx, SCR and low-NOx burners are available and, for PM2.5, Diesel Particle Filters are available for certain applications. Such controls are already required by adopted regulations and will continue to lower NOx and PM2.5 emissions to meet generally linear progress toward attainment. However, such NOx and PM2.5 control technologies often do not reduce ammonia concurrently and transition to zero emissions technologies is often the only pathway to achieve significant amount of ammonia reductions. Although the deployment of zero emission technologies is complex and requires more time to implement, ammonia emissions will be sufficiently controlled to attain the 2012 annual PM2.5 standard in 2030.

In summary, it is necessary to rely on a stepwise RFP demonstration for ammonia. Generally linear progress is not feasible due to the type of control technologies relied on for attainment, and time required to develop and implement rules.

## *Adoption Dates*

The committed adoption dates in Table 4-4, Table 4-5, and Table 4-6 are based on the best estimate of the amount of time required to develop a measure. Time spent in this developmental phase is influenced by the level of interest from stakeholders and conflicts of interest, if any, among stakeholders. Maturity of technology, market capacity for at-scale deployment, infrastructure to support the new technology, and cost effectiveness determine the timeline to develop a proposed control measure to a rule/regulation. In addition, once the proposed measure has been developed, it must be adopted through a public process, which entails procedural requirements with their own timing.

## *Implementation Dates*

The committed implementation dates in Table 4-4, Table 4-5, and Table 4-6 are based on the best estimate of the amount of time required for measure adoption and procedural elements as well as the implementation phase. For example, CARB regulations, once adopted, undergo a prescribed review process by the State Office of Administrative Law (OAL) to ensure compliance with California's Administrative Procedure Act before the measure can be codified in the California Code of Regulations. The effective date of an OAL-approved regulation can be a year or more from the date of CARB adoption. Following development and adoption, in all cases, the implementation schedule of a measure must account for the time needed by the affected entities to comply with the requirements in the measure. This includes planning for, and investing in, the resources to implement the required controls—to change,

buy, or install new technology, if applicable. Specific challenges related to the timing of implementation of innovative South Coast AQMD and CARB measures are described in further detail below.

## *South Coast AQMD Stationary Source Measures*

As outlined in Table 4-4, South Coast AQMD has committed to adopt stationary source control measures beginning in 2024, and not later than 2027. Implementation is set to begin as expeditiously as possible for each measure. For example, for BCM-10 - Emission Reductions from Direct Land Application of Chipped and Ground Uncomposted Greenwaste, is scheduled to adopt in 2026 but will be implemented starting in 2030. This is to allow composting facilities sufficient lead time to expand their operations to accommodate the increased demand for greenwaste composting.

Further understanding of the applicability of control technologies, the cost-effectiveness of controls, and the socioeconomic impacts of potential regulations are necessary before regulations can be adopted. The market availability of control equipment capable of reducing emissions further than the already stringent limits required by South Coast AQMD's technology-forcing rules is an additional consideration in implementing new regulatory requirements.

Time after rule adoption will be necessary for manufacturers and vendors to make available compliant equipment, and for facility operators to source, purchase, and install new units or compliant retrofit equipment. Dependent on the source category, construction of controls may include engineering, site preparation and infrastructure upgrades, unit installation, and operator training on proper operation. Potential control technologies have significant costs to affected facilities, and these operations will also require time to plan for these investments. Based on these challenges, rule implementation is not expected to be feasible prior to the implementation date listed in Table 4-4.

Considering the factors mentioned earlier, the emission reductions resulting from the proposed control measures are projected to materialize around 2030 rather than in the immediate future. This necessitates a stepwise RFP demonstration for ammonia. The expeditious implementation of some measures, where feasible, may result in emission reductions that occur before 2030. South Coast AQMD commits to demonstrate and discuss any early emission reductions achieved in Quantitative Milestone Reports.

## *Zero Emission Mobile Source Measures*

Mobile sources are responsible for approximately 25 percent of the NH3 emissions in the South Coast; NH3 can be emitted as a byproduct during the use of control technologies designed to lower the emissions of NOx, the dominant precursor of both ozone and PM2.5 pollution. In engines fueled by Compressed Natural Gas (CNG), NH3 is formed as a byproduct of a three-way catalyst that converts NOx to nitrogen (N2). In diesel engines, Selective Catalytic Reduction controls use NH3 as a catalyst to convert NOx to N2 and water. Unreacted NH3 can be emitted as part of in this process, referred to as an ammonia slip.

CARB programs that drive mobile sources to zero-emission vehicles and engines will provide ammonia emission reduction benefits in 2030 in the South Coast, in addition to significant NOx and PM2.5

reductions; these programs include adopted regulations such as the Advanced Clean Cars, Advanced Clean Trucks, Advanced Clean Fleets, and the Transport Refrigeration Unit (Part I) Regulations, and proposed measures such as the Zero-Emissions Truck Measure, Transport Refrigeration Unit (Part II) Regulation, and Cargo Handling Equipment Amendments. CARB's adoption and implementation schedules are as expeditious as possible, but like many stationary source control measures, sufficient time is needed for both regulatory development and for development, manufacture, and purchase of control technologies prior to emissions reductions being achieved from these programs. Based on these challenges, rule implementation is not expected to be feasible prior to the implementation date listed in Table 4-8. Considering all of the factors mentioned, the majority of emission reductions resulting from the proposed control measures are projected to be achieved by 2030 rather than in the near term years.

## RFP Demonstration

This analysis demonstrates generally linear RFP for NOx and direct PM2.5 emissions and stepwise RFP for ammonia emissions. Table 6-6 presents the baseline emissions of NOx, direct PM2.5, and ammonia including line item adjustments reflecting adopted regulations for the RFP milestone years. The regulations included in the line item adjustments are provided in Table 6-7. RFP is demonstrated using reductions from three categories: adopted regulations already reflected in the baseline emissions, regulations adopted since the development of the 2022 AQMP, and control measures proposed in this Plan. The second category includes South Coast AQMD's rules adopted during November 2020 to September 2023 and CARB's regulations adopted in 2022 and afterwards. The projected emissions account for all of these reductions. However, in some years, the RFP target is higher than the projected emissions. This is because the projected emissions are below the level needed to demonstrate linear progress. RFP is expected to be met for all milestone and attainment years as presented in detail for each pollutant in subsequent sections. The 2031 post-attainment year target is assumed to have same amount of reductions as the attainment scenario. However, in reality, 2031 emissions are expected to be below the RFP target levels due to continued implementation of the control strategies required to meet the 2008 and 2015 ozone NAAQS by 2031 and 2037, respectively.

**TABLE 6-6**
**REASONABLE FURTHER PROGRESS CALCULATIONS FOR MILESTONE YEARS**

| | Pollutant | 2018 | 2025 | 2028 | 2030 | 2031 |
|---|---|---|---|---|---|---|
| Baseline Emissions | NOx | 383.02 | 239.40 | 219.29 | 210.31 | 207.17 |
| | PM2.5 | 56.04 | 54.01 | 54.11 | 54.05 | 54.06 |
| | NH3 | 74.54 | 77.79 | 78.91 | 79.31 | 79.48 |
| Line Item Adjustments | NOx | - | 3.26 | 10.06 | 24.34 | 24.34 |
| | PM2.5 | - | 0.14 | 0.47 | 0.83 | 0.83 |
| | NH3 | - | 0.10 | 1.40 | 2.96 | 2.96 |
| Control Measure Reductions | NOx | - | 0 | 0 | 10.60 | 10.60 |
| | PM2.5 | - | 0 | 0 | 0.54 | 0.54 |
| | NH3 | - | 0 | 0 | 0.24 | 0.24 |
| Projected Emissions | NOx | - | 236.14 | 209.23 | 175.37 | 172.23 |
| | PM2.5 | - | 53.87 | 53.64 | 52.68 | 52.69 |
| | NH3 | - | 77.69 | 77.51 | 76.11 | 76.28 |
| Generally Linear RFP Target | NOx | - | 261.89 | 209.98 | 175.37 | 172.23 |
| | PM2.5 | - | 54.08 | 53.64 | 52.68 | 52.69 |
| Stepwise RFP Target | NH3 | - | 77.69 | 77.51 | 76.11 | 76.28 |

**TABLE 6-7**
**REGULATIONS INCLUDED IN THE LINE-ITEM ADJUSTMENTS FOR RFP DEMO**

| Adopted Measure | Adoption Date | 2025 | | | 2028 | | | 2030 | | | 2031 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NOx | PM2.5 | NH3 | NOx | PM2.5 | NH3 | NOx | PM2.5 | NH3 | NOx | PM2.5 | NH3 |
| Advanced Clean Cars II | Nov. 2022 | 0.00 | 0.00 | 0.00 | 0.67 | 0.12 | 0.94 | 1.49 | 0.18 | 2.12 | 1.49 | 0.18 | 2.12 |
| Clean Miles Standard | Mar. 2022 | 0.01 | 0.00 | 0.00 | 0.03 | 0.01 | 0.00 | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 |
| EPA Clean Trucks Plan | Dec. 2022 | 0.00 | 0.00 | 0.00 | 0.23 | 0.00 | 0.00 | 0.61 | 0.00 | 0.00 | 0.61 | 0.00 | 0.00 |
| Advanced Clean Fleets | Oct. 2023 | 1.10 | 0.01 | 0.10 | 2.99 | 0.04 | 0.46 | 4.79 | 0.09 | 0.84 | 4.79 | 0.09 | 0.84 |
| In-use Locomotive Regulation | Oct. 2023 | 0.69 | 0.01 | 0.00 | 2.78 | 0.06 | 0.00 | 9.90 | 0.24 | 0.00 | 9.90 | 0.24 | 0.00 |
| Commercial Harbor Craft Amendments | Dec. 2022 | 1.06 | 0.06 | 0.00 | 1.58 | 0.08 | 0.00 | 2.06 | 0.09 | 0.00 | 2.06 | 0.09 | 0.00 |
| Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation | Nov. 2022 | 0.31 | 0.02 | 0.00 | 1.53 | 0.10 | 0.00 | 1.91 | 0.12 | 0.00 | 1.91 | 0.12 | 0.00 |
| Transport Refrigeration Unit Phase 1 | Feb. 2022 | 0.09 | 0.04 | 0.00 | 0.25 | 0.07 | 0.00 | 0.33 | 0.10 | 0.00 | 0.33 | 0.10 | 0.00 |
| Non-RECLAIM Rules adopted/amended after 2022 AQMP cut-off date | Sep. 2023 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.34 | 0.00 | 0.00 | 0.34 | 0.00 | 0.00 |
| RECLAIM landing rules adjustment | Sep. 2023 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.86 | 0.00 | 0.00 | 2.86 | 0.00 | 0.00 |
| **Total Benefit (tpd)** | | 3.26 | 0.14 | 0.10 | 10.06 | 0.47 | 1.40 | 24.34 | 0.83 | 2.96 | 24.34 | 0.83 | 2.96 |

Table 6-8 summarizes the total reductions needed from the 2018 baseline emissions inventory that must be achieved to reach attainment in 2030.

**TABLE 6-8**
**TOTAL REDUCTIONS NEEDED FOR ATTAINMENT (TPD)**

| Pollutant | 2018 Base Year Emissions | 2030 Attainment Scenario Emissions | Total Reductions Needed |
|---|---|---|---|
| **NOx** | 383.02 | 175.37 | 207.65 |
| **PM2.5** | 56.04 | 52.68 | 3.36 |
| **NH3** | 74.54 | 76.11 | -1.57* |

*Negative reductions reflect increase in emissions from 2018 to 2030

## *NOx*

NOx emissions are expected to decrease in a generally linear fashion from the base year to the attainment scenario, as shown in Figure 6-1. The NOx emission reductions anticipated from the baseline reductions and line item adjustments are sufficient to meet or exceed the RFP targets. Therefore, NOx is determined to meet the RFP requirements.

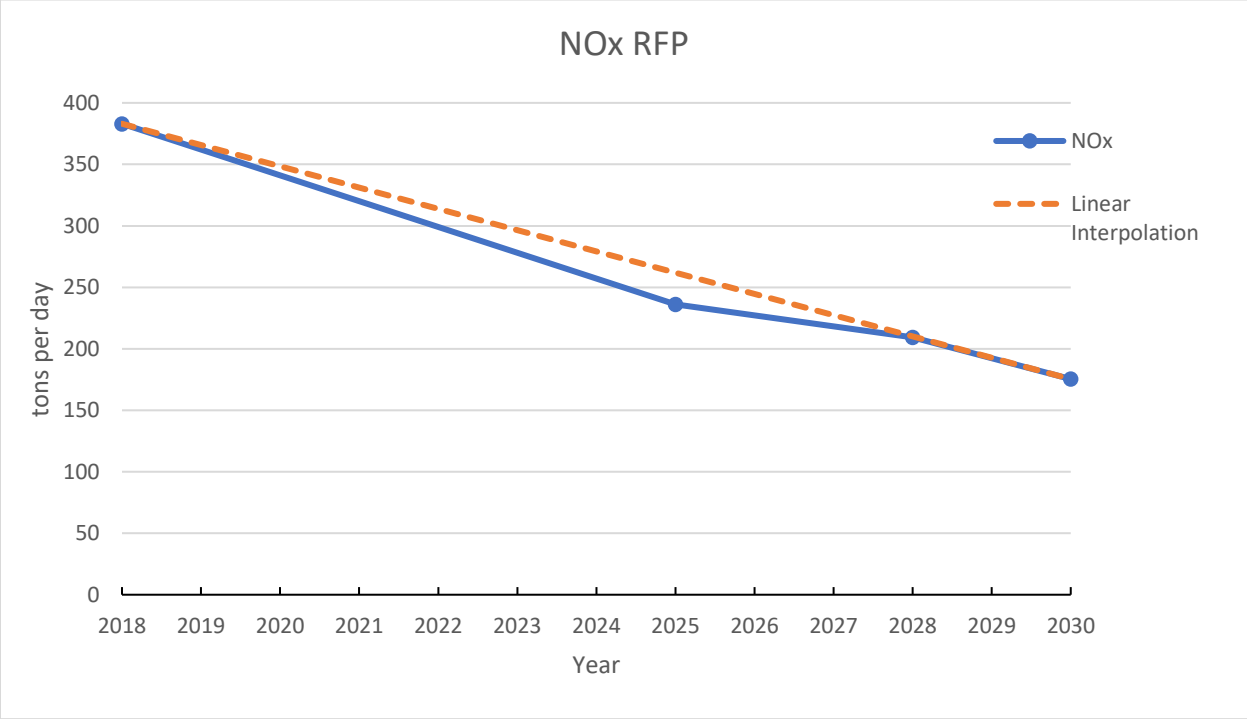


**FIGURE 6-1**
**NOX RFP TOWARD ATTAINMENT:**
**ORANGE DASHED LINE PRESENTS THE LINEAR INTERPOLATION FROM BASE YEAR TO ATTAINMENT SCENARIO EMISSIONS AND BLUE SOLID LINE PRESENTS ANTICIPATED PROGRESS TOWARD ATTAINMENT**

## *PM2.5*

Direct PM2.5 emissions are expected to decrease in a generally linear fashion from the base year to the attainment scenario, as shown in Figure 6-2. The direct PM2.5 emission reductions anticipated from the baseline reductions and line item adjustments are sufficient to meet or exceed the RFP targets. Therefore, direct PM2.5 is determined to meet the RFP requirements.

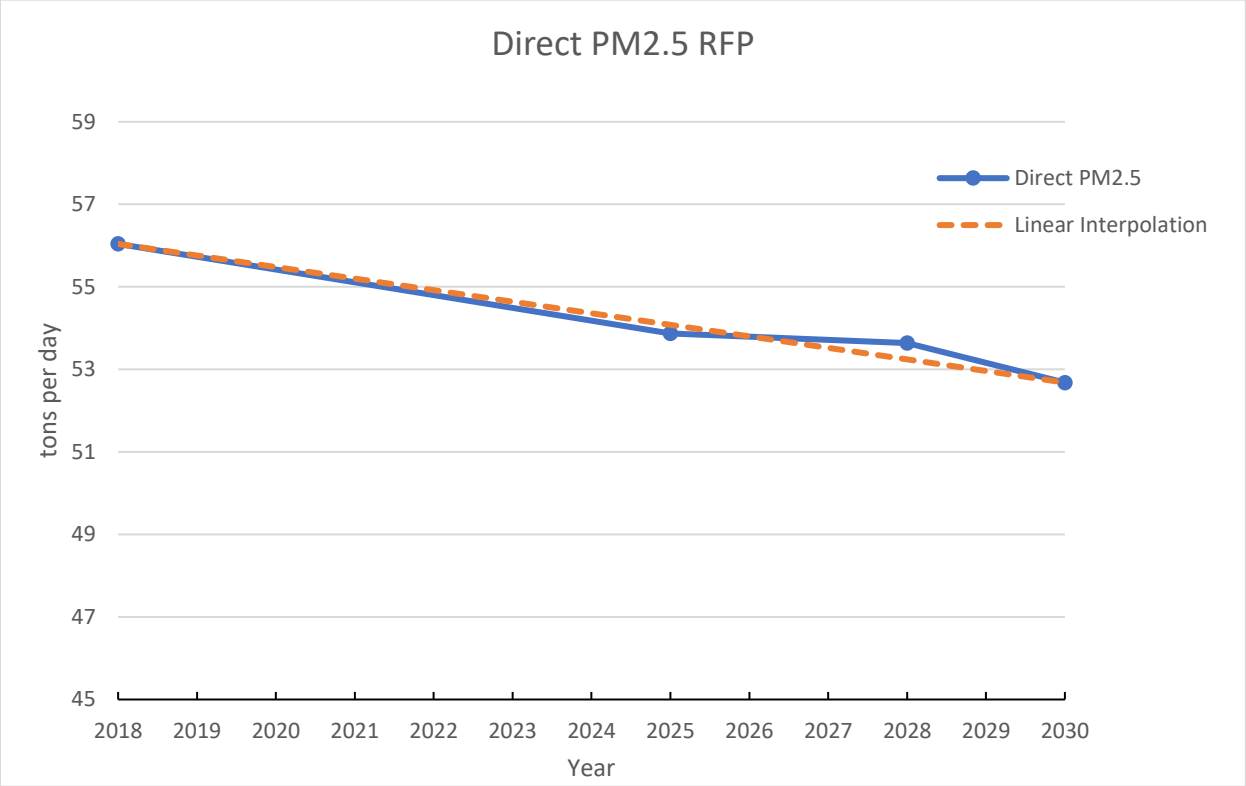


**FIGURE 6-2**
**DIRECT PM2.5 RFP TOWARD ATTAINMENT:**
**ORANGE DASHED LINE PRESENTS THE LINEAR INTERPOLATION FROM BASE YEAR TO ATTAINMENT SCENARIO EMISSIONS AND BLUE SOLID LINE PRESENTS ANTICIPATED PROGRESS TOWARD ATTAINMENT**

## *Ammonia*

RFP for ammonia utilizes a stepwise approach as justified earlier in this chapter. Figure 6-3 illustrates a parabolic ammonia trend. As explained in the stepwise justification, the projected growth in ammonia emissions between 2018 and 2025 is mainly driven by increases in the human and pet population that outpace emission reductions. However, the pace of ammonia emission reductions accelerates after 2025 due to increasing penetration of zero emission technologies especially in the on-road sector. CARB regulations such as Advanced Clean Cars II and Advanced Clean Fleets contribute to these emission reductions. The control strategy also includes South Coast AQMD's ammonia measures, BCM-08 through BCM-11, and CARB's Zero Emissions Truck Measure which are expected to further reduce ammonia emissions. In 2028 and 2030, these regulations result in ammonia reductions that outpace increases due to population growth. While 2030 is projected to have higher emissions than 2018, this marginal increase will not hinder attainment of the 2012 annual PM2.5 NAAQS in 2030. In addition, the implementation of zero emission vehicles and technologies will continue beyond 2030 and lower ammonia emissions even further. Therefore, ammonia is determined to meet the RFP requirements.

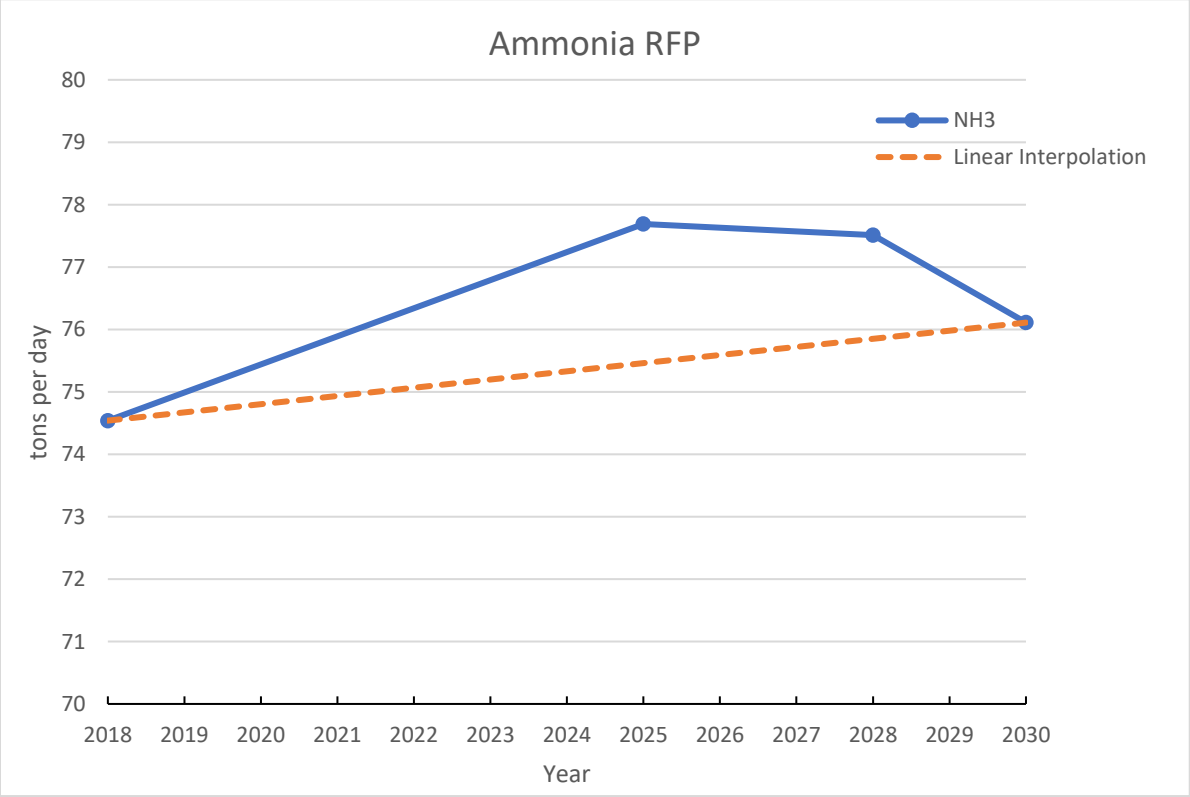


**FIGURE 6-3**
**AMMONIA RFP TOWARD ATTAINMENT:**
**ORANGE DASHED LINE PRESENTS THE LINEAR INTERPOLATION FROM BASE YEAR TO ATTAINMENT SCENARIO EMISSIONS AND BLUE SOLID LINE PRESENTS ANTICIPATED PROGRESS TOWARD ATTAINMENT**

# Quantitative Milestones for South Coast AQMD Stationary Source Regulations

The RFP and quantitative milestone demonstrations in this Plan rely, in part, on NOx reductions from South Coast AQMD rules, the most significant of which is Rule 1109.1. South Coast AQMD will also report on the adoption and implementation of stationary source measures as specified in Chapter 4.

The applicable quantitative milestone years for the 2012 12 µg/m3 annual PM2.5 standard are 2025, 2028, and 2031.

For the 2025 milestone year, South Coast AQMD will report on the following:

- Implementation from 2022 through 2025 of Rule 1109.1, which establishes NOx and CO emission limits for combustion equipment at petroleum refineries and facilities with operations related to petroleum refineries.
- Adoption and implementation of applicable PM2.5 Plan measures according to the schedule specified in Chapter 4.

For the 2028 milestone year, South Coast AQMD will report on the following:

- Implementation from 2026 through 2028 of Rule 1109.1, which establishes NOx and CO emission limits for combustion equipment at petroleum refineries and facilities with operations related to petroleum refineries.
- Adoption and implementation of applicable PM2.5 Plan measures according to the schedule specified in Chapter 4.

For the 2031 milestone year, South Coast AQMD will report on the following:

- Implementation from 2029 through 2031 of Rule 1109.1, which establishes NOx and CO emission limits for combustion equipment at petroleum refineries and facilities with operations related to petroleum refineries.
- Adoption of applicable PM2.5 Plan measures since the 2028 milestone year.
- Demonstration of implementation of all PM2.5 Plan measures with committed adoption and implementation schedules.
- Demonstration that the aggregate emission reduction commitment was achieved for the 2030 attainment year.

## Quantitative Milestones for State Mobile Source Regulations

CARB will work closely with South Coast AQMD to report on the milestones identified in this Plan for the applicable milestone years. CARB will report on milestones for implementation of mobile source measures that contribute significant emissions reductions included in the reasonable further progress demonstration through the 2031 milestone year. These regulations were originally set forth as measure commitments in the 2016 State Strategy for the State Implementation Plan (2016 State SIP Strategy) and the 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy).

For the 2025 milestone year, CARB is reporting on the following three milestones:

- Implementation from 2022 through 2025 of the Clean Truck Check Program, previously known as the Heavy-Duty Vehicle Inspection and Maintenance Program, which ensures that vehicles' emissions control systems are properly functioning when traveling on California's roadways;
- Implementation from 2022 through 2025 of the Advanced Clean Fleets Regulation which focuses on strategies to ensure that the cleanest vehicles are deployed by government, business, and other entities in California to meet their transportation needs; and
- Implementation from 2022 through 2025 of the In-Use Off-Road Diesel-Fueled Fleets Regulation which requires fleets operating in-use off-road diesel equipment to meet an annual fleet average emissions target that decreases over time.

For the 2028 milestone year, CARB is reporting on the following three milestones:

- Implementation from 2026 through 2028 of the Heavy-Duty Vehicle Inspection and Maintenance Program, also known as Clean Truck Check, which ensures that vehicles' emissions control systems are properly functioning when traveling on California's roadways;
- Implementation from 2026 through 2028 of the Advanced Clean Fleets Regulation which focuses on strategies to ensure that the cleanest vehicles are deployed by government, business, and other entities in California to meet their transportation needs; and
- Implementation from 2026 through 2028 of the In-Use Off-Road Diesel-Fueled Fleets Regulation which requires fleets operating in-use off-road diesel equipment to meet an annual fleet average emissions target that decreases over time.

For the 2031 milestone year, CARB is reporting on the following milestone:

- The status of new CARB SIP measures adopted between 2024 and 2030 per the schedule included in the adopted South Coast 12 $\mu g/m^3$ annual PM2.5 Plan that provide for attainment of the 12 $\mu g/m^3$ PM2.5 annual standard in 2030.

# Transportation Conformity

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

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

A SIP that analyzes the region's total emissions inventory from all sources is necessary for purposes of demonstrating RFP and attainment. The portion of the total emissions inventory from on-road highway and transit vehicles in these analyses becomes the Motor Vehicle Emissions Budget (MVEB).[16] Budgets are set for each criteria pollutant or its applicable precursor(s), for all RFP milestone years and the attainment year. Subsequent transportation plans and programs produced by transportation planning agencies are required to conform to the SIP by demonstrating that the emissions from the proposed plan, program, or project do not exceed the MVEB.

## PM2.5 Requirements for Conformity

The U.S. EPA has promulgated separate rules addressing the PM2.5 emission categories and precursors that must be considered in PM2.5 transportation conformity determinations.

### *PM2.5 Motor Vehicle Emission Category Requirements*

Guidance on the motor vehicle emission categories that must be considered in transportation conformity determinations can be found in the July 1, 2004, Final Rule amending the Transportation Conformity Rule to implement criteria and procedures for the 8-hour ozone and PM2.5 standards:[17]

> [A]ll regional emissions analyses in PM2.5 nonattainment and maintenance areas [must] consider directly emitted PM2.5 motor vehicle emissions from the tailpipe, brake wear, and tire wear…Sections IX. and X. [of the Final Rule] provide information on when re- entrained

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

[17] Transportation Conformity Rule Amendments for the New 8-hour Ozone and PM2.5National Ambient Air Quality Standards and Miscellaneous Revisions for Existing Areas; Transportation Conformity Rule Amendments: Response to Court Decision and Additional Rule Changes, 69 Fed. Reg. 40004 (July 1, 2004)

road dust and construction-related dust must also be included in PM2.5 conformity analyses…[T]he analysis for direct PM2.5 must include:

- tailpipe exhaust particles,
- brake and tire wear particles,
- re-entrained road dust, if before a SIP is submitted to U.S. EPA or the state air agency has made a finding of significance or if the applicable or submitted SIP includes re-entrained road dust in the approved or adequate budget, and
- fugitive dust from transportation-related construction activities, if the SIP has identified construction emissions as a significant contributor to the PM2.5 problem.[18]

## *PM2.5 Motor Vehicle Emission Precursor Requirements*

Following the July 1, 2004, Final Rule identifying the motor vehicle emission categories that must be considered in transportation conformity determinations, U.S. EPA issued the May 6, 2005, Final Rule[19] amending the Transportation Conformity Regulation. In this Final Rule, U.S. EPA identifies four transportation-related precursors that result in PM2.5 formation—nitrogen oxides (NOx), volatile organic compounds (VOCs), sulfur oxides (SOx),[20] and ammonia (NH3)—for consideration in the conformity process in PM2.5 nonattainment and maintenance areas.[21] Of these PM2.5 precursors, NOx must be included in the regional transportation conformity determination unless it is found to be an insignificant contributor to the formation of PM2.5 in the region, per Section 93.102(b)(2)(iv) of the Conformity Regulation. Conversely, VOCs, SOx, and NH3 are not required unless these precursors are found to be significant contributors to the formation of PM2.5 in the region or are included in the RFP demonstration.[22] In this plan, NH3 emissions are considered in the MVEB as NH3 emissions are included in the RFP demonstration.

[18] 69 FR 40331-40333. Codified in Sections 93.102(b)(1) and (3) and Section 93.122(f) of the Conformity Regulation.
[19] Transportation Conformity Rule Amendments for the New PM2.5 National Ambient Air Quality Standard: PM2.5 Precursors, 70 Fed. Reg. 24280 (June 1, 2005)
[20] U.S. EPA revised the transportation conformity rule to revise PM2.5 precursors from SOX to SO2 for consistency with the broader PM2.5 implementation strategy. (Transportation Conformity Rule Amendments To Implement Provisions Contained in the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU), 73 Fed. Reg. 4435 (Jan. 24, 2008))
[21] Transportation Conformity Rule Amendments for the New PM2.5 National Ambient Air Quality Standard: PM2.5 Precursors, 70 Fed. Reg. 24282 (June 1, 2005)
[22] 40 CFR 93.102(b)(2)(v)

# Conformity Budgets

## *Introduction*

The California Air Resources Board (CARB) has prepared the motor vehicle emissions budget (MVEB)[23] for the South Coast Attainment Plan for the 2012 Annual PM2.5 National Ambient Air Quality Standard (NAAQS).[24] The MVEB is the maximum allowable emissions from motor vehicles within a nonattainment area and is used to determine whether transportation plans and projects conform to the applicable state implementation plan (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 Clean Air Act (Act), 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 Southern California Association of Governments (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 South Coast Air Quality Management District's (District) annual PM2.5 attainment plan, the milestone years, attainment year of the SIP, and post-attainment milestone years (also referred to as the plan analysis years) are 2025, 2028, 2030, and 2031.

## *Methodology*

The MVEB for the South Coast annual PM2.5 attainment 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

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

[24] National Ambient Air Quality Standards for PM, https://www.epa.gov/pm-pollution/national-ambient-air-quality-standards-naaqs-pm#rule-summary

applicable Act requirements. Further, it should be consistent with the South Coast PM2.5 Attainment Plan's emission inventory and control measures.

The South Coast annual PM2.5 attainment plan establishes the MVEB only for primary emissions of PM2.5 from motor vehicle exhaust, tire and brake wear, and paved and unpaved road dust, as well as for the precursors of NOx and NH3. This section discusses budgets that have been set for annual average daily emissions in the analysis years 2025, 2028, 2030, and 2031. The MVEB presented below uses emission rates from California's motor vehicle emission model, EMFAC2021 (V.1.0.2),[25] with South Coast activity data (Vehicle Miles Traveled, i.e., VMT, and speed distributions), along with California Emissions Projection Analysis Model (CEPAM) 2022v1.01. The activity data are from the region's 2020 Regional Transportation Plan (RTP).[26] Thus, they are consistent with the attainment demonstration for the SIP.

On November 15, 2022, the U.S. EPA approved EMFAC2021 for use in SIPs and demonstrating transportation conformity.[27] 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,[28] the Advanced Clean Fleets (ACF) program,[29] the Advanced Clean Cars II (ACCII) program,[30] and the Clean Trucks Plan.[31]

The MVEB for the South Coast annual PM2.5 attainment plan was developed to be consistent with the on-road emissions inventory[32] and attainment demonstration using the following method:

(1) Used the EMFAC2021 model to produce the on-road motor vehicle emissions totals (average annual day) for the appropriate pollutants (NOx, NH3, and PM2.5)33 using the 2020 RTP activity data.
(2) Applied the off-model adjustments (HD I/M, ACF, ACCII, and Clean Trucks Plan) to account for recently adopted regulations.
(3) Used CEPAM2022 model to estimate on-road construction dust, paved road dust, and unpaved road dust for PM2.5.
(4) Rounded the totals for NOx, NH3, and PM2.5 to the nearest ton.

[25] 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
[26] SCAG 2020 RTP, https://scag.ca.gov/read-plan-adopted-final-connect-socal-2020
[27] U.S. EPA approval of EMFAC2021 can be found at 87 FR 68483: federalregister.gov
[28] Heavy-Duty Engine and Vehicle Omnibus Regulations, https://ww2.arb.ca.gov/rulemaking/2020/hdomnibuslownox
[29] Advanced Clean Fleet, https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets
[30] Advanced Clean Cars II, https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii
[31] Clean Trucks Plan, https://www.epa.gov/system/files/documents/2021-08/420f21057.pdf
[32] More information about the on-road motor vehicle emission budgets can be found in Chapter 3 of the plan
[33] More information about the significance of these pollutants can be found in Appendix VI of the plan

## *Motor Vehicle Emissions Budget*

The MVEB in Table 1 was established according to the methodology outlined above and in consultation with SCAG, the District, U.S. EPA, Federal Highway Administration (FHWA), and Federal Transit Administration (FTA). The MVEB is consistent with the emission inventories and control measures in the PM2.5 attainment plan. This budget will be effective once U.S. EPA determines it is adequate or approved.

Table 6-9 contains the Summary MVEB for the South Coast Air Basin. It includes pollutants of NOx, NH3, and PM2.5 emissions for milestone and attainment years using the EMFAC2021 model and 2020 RTP activity data.

**TABLE 6-9**
**SUMMARY MVEB FOR THE SOUTH COAST PM2.5 ATTAINMENT PLAN (TONS PER DAY)**

| | 2025 | | | 2028 | | | 2030 | | | 2031 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NOx | NH3 | PM2.5 | NOx | NH3 | PM2.5 | NOx | NH3 | PM2.5 | NOx | NH3 | PM2.5 |
| Vehicular Exhaust (including brake/tire wear for PM10) | 86.7 | 20.2 | 4.0 | 74.8 | 21.0 | 3.9 | 68.5 | 21.2 | 3.9 | 65.9 | 21.2 | 3.8 |
| Construction Road Dust | - | - | 0.3 | - | - | 0.3 | - | - | 0.3 | - | - | 0.3 |
| Paved Road Dust | - | - | 8.9 | - | - | 9.1 | - | - | 9.1 | - | - | 9.1 |
| Unpaved Road Dust | - | - | 1.7 | - | - | 1.7 | - | - | 1.7 | - | - | 1.7 |
| Reductions from HD I/M[a] | 14.2 | 0.0 | 0.1 | 17.5 | 0.0 | 0.2 | 18.5 | 0.0 | 0.2 | 18.8 | 0.0 | 0.2 |
| Reductions from Advanced Clean Fleets | 1.1 | 0.1 | 0.0 | 3.0 | 0.5 | 0.0 | 4.8 | 0.8 | 0.1 | 4.8 | 0.8 | 0.1 |
| Reductions from ACCII | - | - | - | 0.7 | 0.9 | 0.1 | 1.5 | 2.1 | 0.2 | 1.5 | 2.1 | 0.2 |
| Reductions from Clean Trucks Plan | - | - | - | 0.2 | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 |
| Total[b] | 71.36 | 20.14 | 14.73 | 53.36 | 19.58 | 14.69 | 43.10 | 18.25 | 14.46 | 40.24 | 18.29 | 14.44 |
| **Motor Vehicle Emission Budget** | 72 | 21 | 15 | 54 | 20 | 15 | 44 | 19 | 15 | 41 | 19 | 15 |

[a] Values may not add up due to rounding.
[b] Motor Vehicle Emission Budgets calculated are rounded up to the nearest ton.
Source: EMFAC2021 v1.02 and CEPAM2022 v1.01

# Fulfillment of New Source Review Requirements

CAA Section 172(c) requires permits for the construction and operation of new or modified major stationary sources. New Source Review (NSR) for major and in some cases minor sources of PM2.5 and its precursors is presently addressed through South Coast AQMD's NSR and RECLAIM programs (Regulations XIII and XX, respectively). Both programs are applicable to sources located in the South Coast AQMD jurisdiction, including the South Coast Air Basin and the Coachella Valley. Regulation XIII establishes the federal and State mandated pre-construction review program for new, modified, or relocated sources. The NSR program is a critical component of South Coast AQMD's attainment strategy and ensures that all new and modified sources install BACT and their emission increases are fully offset with creditable emission reductions.

The components of South Coast AQMD's NSR program are contained within Regulation XIII. Rule 1325 was adopted June 3, 2011 to incorporate the U.S. EPA's requirements for PM2.5 and its precursors into Regulation XIII. The rule mirrors federal requirements which include the definition of major source, significant emissions rate, offset ratios, and the applicability requirements of Lowest Achievable Emission Rate (LAER), facility compliance, offsets, and control of PM2.5 precursors. In 2021, U.S. EPA approved Rule 1325 as meeting all applicable NSR requirements.[34]

RECLAIM facilities are currently not subject to emission offsets for NOx and SOx under Regulation XIII, however, these facilities are instead subject to NOx and SOx emission offsets under Regulation XX. Under existing NSR in Regulation XIII and RECLAIM programs in Regulation XX, major stationary sources of NOx and SOx are already subject to emission offsets. The 2016 AQMP included a control measure, CMB-05 - Further NOx Reductions from RECLAIM Assessment, to achieve an additional five tons per day of NOx emissions as soon as practicable, but no later than 2025, and to transition RECLAIM to a command-and-control regulatory structure. The transition will include requiring former RECLAIM sources to be subject to Regulation XIII for NOx and SOx as applicable. Regulation XIII will be updated to reconcile the program with U.S. EPA's 2002 NSR Reform.[35]

VOC and ammonia emissions are also subject to BACT under existing NSR. VOC emissions are required to be offset when a new or modified source has the potential to emit 4 tons per year or more of VOC. Ammonia emission sources have not historically been subject to NSR offset requirements. However, for permitted ammonia sources, Rule 1303 (NSR Requirements) requires denial of "the Permit to Construct for any relocation, or for any new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia, unless BACT is employed for the new or relocated source or for the actual modification to an existing source." BACT shall be at least as stringent as LAER as defined in CAA Section 171(3); therefore, South Coast AQMD's current regulations requiring BACT

[34] Air Plan Approval; California; South Coast Air Quality Management District; Stationary Source Permits, 86 Fed. Reg. 58592 (Oct. 22, 2021)

[35] Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Baseline Emissions Determination, Actual-to-Future-Actual Methodology, Plantwide Applicability Limitations, Clean Units, Pollution Control Projects, 67 Fed. Reg. 80186 (Dec. 31, 2002)

comply with the federal LAER requirements.

## Major Source Threshold

The NSR permitting program relies on emissions thresholds to determine when certain requirements apply to new stationary sources and to modifications of existing stationary sources. If a new or modified facility will emit PM2.5 or PM2.5 precursor emissions greater than the major source threshold, the facility is considered a major source. Under a "serious" nonattainment classification, the major source threshold is defined as a potential to emit 70 or more tons per year of PM2.5 or PM2.5 precursors. To comply with federal requirements for "serious" nonattainment areas, Rule 1325 was amended on November 4, 2016 to update the Major Polluting Facility definition to align the associated major source emission threshold at 70 tons per year for PM2.5 and PM2.5 precursors. VOC and ammonia were added to the Rule 1325 definition of "precursors" and a VOC and ammonia threshold at 40 tons per year was added as part the definition of "significant" which is used in the determination of a "major modification." The SOx major polluting facility threshold defined in Rule 1302 was also lowered from 100 to 70 tons per year. While the 2016 amendment expanded the definition of "precursors," it did not expand the definition of "regulated NSR pollutant" to explicitly reference VOC and NH3 as PM2.5 precursor. For this reason, U.S. EPA conditionally approved Rule 1325 based on a commitment to amend Rule 1325 to expand the definition of "regulated NSR pollutant."[36] South Coast AQMD subsequently amended Rule 1325 on January 4, 2019 to correct this deficiency and U.S. EPA approved the amendment into the SIP.[37]

## PM Precursor Requirement in Nonattainment NSR

CAA Section 189(e) states that control requirements applicable to plans in effect for major stationary PM sources shall also apply to major stationary sources of PM precursors, except where such sources do not contribute significantly to PM levels which exceed the standard in the area. A state is required to conduct a Nonattainment NSR (NNSR) precursor demonstration, which evaluates the sensitivity of PM2.5 levels to an increase in emissions of a precursor, to exempt the precursor from NSR requirements.[38] This differs from a comprehensive precursor demonstration, which evaluates the sensitivity of PM2.5 levels to a decrease in emissions of a precursor. South Coast AQMD has not conducted an NNSR precursor demonstration and is not seeking to exempt precursors from NSR requirements. Therefore, Rule 1325 satisfies CAA Section 189(e) by addressing all precursors of PM2.5 including NOx, VOC, ammonia, and SOx.

[36] Revisions to California State Implementation Plan; South Coast Air Quality Management District; Stationary Source Permits, 83 Fed. Reg. 61551 (Nov. 30, 2018)
[37] Air Plan Approval; California; South Coast Air Quality Management District; Stationary Source Permits, 86 Fed. Reg. 58592 (Oct. 22, 2021)
[38] Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements, 81 Fed. Reg. 58010 (Aug. 24, 2016)

# Contingency Measures

Clean Air Act Section 172(c)(9) requires a SIP to provide for the implementation of specific measures to be undertaken if the nonattainment area fails to make RFP, or to attain the NAAQS by the applicable attainment date. Such contingency measures need to take effect within 60 days in any such case without further action by South Coast AQMD. Furthermore, contingency measures must achieve their full emission reductions within 2 years of being triggered. The U.S. EPA provides further details in its Draft Contingency Measures Guidance.[39]

## Rule 445 (Wood-Burning Devices)

To comply with PM2.5 contingency requirements, South Coast AQMD amended Rule 445 (Wood-Burning Devices) on June 5, 2020 to include multiple triggers for contingency measures. Rule 445 was subsequently approved by U.S. EPA, excluding paragraph (g) (Ozone Contingency Measures) and paragraph (k) (Penalties), as fulfilling PM2.5 contingency measure requirements.[40] Rule 445 contains four PM2.5 contingency measures, each of which impose lower curtailment thresholds upon any of U.S. EPA's findings of failure to comply or attain as specified in 40 CFR §51.1014(a). The first Rule 445 contingency measure was triggered upon U.S. EPA's finding of failure to attain the 2006 24-hour PM2.5 standard.[41] As a result, Rule 445 wood burning curtailment applies to the entire Basin when PM2.5 is forecast to be higher than 29 µg/m3 on any day during the wood-burning season.

Each subsequent finding by the U.S. EPA will trigger increasingly stringent requirements by lowering the curtailment threshold in the rule. The PM2.5 reductions for imposing the remaining thresholds of 28, 27, and 26 µg/m3 are expected to be 20.9, 13.9 and 19.1 tpy, respectively. If future amendments to Rule 445 modify the curtailment threshold, South Coast AQMD commits to consider retaining the existing structure for contingency measures.

## One Year's Worth of Emission Reductions

The reductions from contingency measures are required to satisfy U.S. EPA's definition of one year's worth (OYW) of reductions, which is given by the following equation:

$$\frac{(base\ year\ EI - attainment\ year\ EI)}{(attainment\ year - base\ year)} \div base\ year\ EI \times attainment\ year\ EI$$

Thus, OYW of reductions represents the average emission reductions expected per year over the planning

[39] 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, https://www.epa.gov/system/files/documents/2023-03/CMTF%202022%20guidance%203-17-23.pdf

[40] Air Plan Approval; California; Los Angeles — South Coast Air Basin, 87 Fed. Reg. 12866 (March 8, 2022)

[41] Finding of Failure To Attain the 2006 24-Hour Fine Particulate Matter Standards; California; Los Angeles- South Coast Air Basin, 85 Fed. Reg. 57733 (Sept. 16, 2020)

timeline, expressed as a percentage of the base year emission inventory (EI), applied to the attainment year EI. Table 6-10 provides the calculated OYW of reductions for PM2.5 and NOx. Ammonia is omitted from Table 6-10 as its emissions increase between 2018 and 2030 and it would be unreasonable to propose a contingency measure that results in an emissions increase.

**TABLE 6-10**
**OYW OF PM2.5 AND APPLICABLE PRECURSOR REDUCTIONS BASED ON 2018 BASE YEAR AND 2030 ATTAINMENT YEAR EI (TPD)**

| | NOx | PM2.5 |
|---|---|---|
| **2018 Base Year EI** | 383.02 | 56.04 |
| **2030 Attainment Year EI** | 175.37 | 52.68 |
| **OYW of Reductions** | 7.92 | 0.26 |

Reductions from the remaining contingency triggers in Rule 445 are compared to OYW's of reductions in Table 6-11. The difference between the cumulative reductions of all contingency triggers and OYW of reductions is also displayed for comparison.

**TABLE 6-11**
**RULE 445 CONTINGENCY MEASURE REDUCTIONS (TPY)**

| Pollutant | Rule 445 Curtailment Threshold | | | Cumulative Reductions | Difference [OYW Reductions – Cumulative Reductions] |
|---|---|---|---|---|---|
| | 28 µg/m$^3$ | 27 µg/m$^3$ | 26 µg/m$^3$ | | |
| **PM2.5** | 20.9 | 13.9 | 19.1 | 53.9 | 42.2 |
| **NOx** | 0 | 0 | 0 | 0 | 2,890.8 |

While Rule 445 satisfies the triggering mechanism requirement and results in PM2.5 reductions, it does not achieve OYW of reductions as required by U.S. EPA. Concurrent reductions of other pollutants are expected to be small and were not quantified. If contingency measures are unable to provide OYW of reductions, U.S. EPA requires that agencies provide a reasoned justification for achieving a lesser amount of reductions. While the Draft Contingency Measures Guidance outlines a process for developing such a justification, the guidance has not yet been finalized and is therefore subject to revision. Nevertheless, based on the Draft Contingency Measures Guidance and currently available information, staff developed a justification for achieving less than OYW of reductions and included it in Appendix V.

## *South Coast AQMD's Opportunities for Contingency Measures*

The South Coast Air Basin faces some of the most difficult air quality challenges in the nation and, accordingly, South Coast AQMD has one of the most stringent stationary source control programs in the country. South Coast AQMD recently expanded its regulatory activities to mobile sources using innovative approaches such

as indirect source rules, voluntary Memoranda of Understanding, and incentive measures. Due to the stringency of those existing requirements, further opportunities for a triggered contingency measure that can be implemented by South Coast AQMD and result in OYW of emission reductions within two years of triggering are non-existent. Even if there were measures capable of achieving this level of emission reductions, they would not be withheld for contingency purposes. Instead, they would be adopted to improve air quality in furtherance of the obligation to meet the NAAQS as soon as feasible. As demonstrated in Appendix V, staff did not identify any other feasible measures that satisfy contingency measure criteria.

# Conclusion

The PM2.5 Plan complies with all federal CAA requirements. The most significant CAA requirements, including the emissions inventory, control strategy, and attainment demonstration, are discussed in Chapters 3 through 5. This chapter demonstrates compliance with other CAA requirements. Further details showing compliance with control strategy and contingency measure requirements are provided in Appendices III, IV and V.