

January 14, 2023

Ms. Martha Guzman
Regional Administrator
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105
guzman.martha@epa.gov

Dear Regional Administrator Guzman:

The California Air Resources Board (CARB) is submitting to the United States Environmental Protection Agency (U.S. EPA) the San Joaquin Valley Air Pollution Control District's (District) *2022 Quantitative Milestone Report for the 2012 PM_{2.5} Annual National Ambient Air Quality Standard (2022 Report)*. The 2022 Report addresses the Clean Air Act (Act) requirements for reporting on quantitative milestones for a Moderate nonattainment area for the 2012 12 microgram per cubic meter ($\mu\text{g}/\text{m}^3$) fine particulate matter (PM_{2.5}) national ambient air quality standard (standard).

On May 10, 2019, CARB submitted the *2016 Moderate Area Plan for the 2012 PM_{2.5} Standard (2016 Moderate Plan)* for the San Joaquin Valley (Valley) to U.S. EPA for inclusion in the California State Implementation Plan (SIP). On November 26, 2021, U.S. EPA approved the 2016 Moderate Plan (except for contingency measures) as meeting Moderate area requirements and reclassified the Valley to Serious nonattainment for the 12 $\mu\text{g}/\text{m}^3$ standard. The 2016 Moderate Plan addressed the Act requirements for the 12 $\mu\text{g}/\text{m}^3$ standard including reasonable further progress (RFP) emissions targets and a quantitative milestone for the RFP milestone year of 2022. The Act requires PM_{2.5} nonattainment areas to submit a quantitative milestone report within 90 days of each RFP milestone year—in this instance, by January 15, 2023.

The enclosed 2022 Report documents implementation of CARB rules that provided the emissions reductions needed from the beginning of 2020 through 2022 to meet the 2022 RFP emissions targets. The 2022 Report also demonstrates that the 2022 quantitative milestone has been met.

CARB is committed to working with U.S. EPA staff to provide any additional clarifying information needed. If you have any questions, please contact Ms. Edie Chang, Deputy Executive Officer, at (916) 445-4383, or have your staff contact Dr. Michael Benjamin, Chief of the Air Quality Planning and Science Division, at (916) 201-8968.

Sincerely,



Steven S. Cliff, Ph.D., Executive Officer

Ms. Martha Guzman
January 14, 2023
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Enclosure

cc: Elizabeth Adams, Director, Region 9 U.S. Environmental Protection Agency
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Samir Sheikh, Executive Director, San Joaquin Valley Air Pollution Control District
samir.sheikh@valleyair.org

Edie Chang, Deputy Executive Officer

Michael T. Benjamin, Chief, Air Quality Planning and Science Division



January 6, 2023

Dr. Michael Benjamin
Division Chief, Air Quality Planning and Science Division
California Air Resources Board
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P.O. Box 2815
Sacramento, CA 95812

Dr. Benjamin:

Enclosed is the 2022 Quantitative Milestone Report for the 2012 PM2.5 National Ambient Air Quality Standards (NAAQS). The Clean Air Act requires states to identify quantitative milestones to be achieved every three years which demonstrate reasonable further progress, and provide a report after the milestone due date. Quantitative milestones are a mechanism to provide an objective means to track progress towards attainment.

The attached quantitative milestone report satisfies the reporting requirement and demonstrates that reasonable further progress has been achieved for the 2012 PM2.5 NAAQS. We request that the California Air Resources Board transmit this report and the appropriate documentation to the United States Environmental Protection Agency.

If you have any questions regarding this report, please contact Patrick Houlihan at patrick.houlihan@valleyair.org or (559) 230-6000. The District thanks you and your staff for your assistance and collaboration during the preparation of this report.

Sincerely,

Sheraz Gill
Digitally signed by Sheraz Gill
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Sheraz Gill
Deputy Air Pollution Control Officer

Attachments

cc: Sylvia Vanderspek

Samir Sheikh
Executive Director/Air Pollution Control Officer

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San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

**2022 Quantitative Milestone Report for the
2012 PM_{2.5} National Ambient Air Quality Standard**
January 6, 2023



2022 QUANTITATIVE MILESTONE REPORT FOR THE 2012 PM_{2.5} NAAQS

Consistent with Clean Air Act (CAA or Act) section 189(c)(1), the state must submit in each attainment plan for a PM_{2.5} (particulate matter that is 2.5 microns or less in diameter) nonattainment area specific quantitative milestones that demonstrate Reasonable Further Progress (RFP) toward attainment of the applicable PM_{2.5} National Ambient Air Quality Standards (NAAQS). A quantitative milestone report must be submitted following each quantitative milestone period.

This 2022 Quantitative Milestone Report addresses the federal annual PM_{2.5} standard of 12 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), established in 2012. The San Joaquin Valley Air Pollution Control District (District) was designated Moderate nonattainment for the 2012 PM_{2.5} standard effective April 15, 2015. The District was redesignated to Serious nonattainment for the 2012 PM_{2.5} standard effective December 27, 2021. Each attainment plan submission for an area initially classified as moderate nonattainment for the 2012 PM_{2.5} NAAQS must contain quantitative milestones to be achieved no later than 4.5 and 7.5 years from the date of designation of the area.¹ As such, the second quantitative milestone date for the standard is October 15, 2022. Each quantitative milestone report is to be submitted to the United States Environmental Protection Agency (EPA) no later than 90 days after the applicable milestone date.

Each quantitative milestone report submitted by a state must include, at minimum²:

- A certification by the Governor or Governor's designee that the State Implementation Plan (SIP) control strategy is being implemented consistent with the RFP plan, as described in the applicable attainment plan;
- Technical support, including calculations, sufficient to document completion statistics for appropriate milestones and to demonstrate that the quantitative milestones have been satisfied and how the emissions reduction achieved to date compare to those required or scheduled to meet RFP;
- A discussion of whether the area will attain the applicable PM_{2.5} NAAQS by the projected attainment date for the area.

EPA requires that the RFP demonstration for milestone years include direct PM_{2.5}, as well as particulate matter (PM) precursors that have been determined to be significant. As demonstrated in Section 3.5 of the District's *2016 Moderate Area Plan for the 2012 PM_{2.5} Standard (2016 PM_{2.5} Plan)*, modeling conducted by the California Air Resources Board (CARB) determined that ammonia, volatile organic compounds (VOCs), and sulfur oxides (SO_x) do not contribute significantly to PM_{2.5} levels that exceed the 1997, 2006, or 2012 NAAQS in the Valley. As such, this report appropriately only addresses direct PM_{2.5} and oxides of nitrogen (NO_x) emissions.

The direct PM_{2.5} and NO_x control strategy developed to meet the federal air quality

¹ 40 CFR 51.1013(a)(1). The Valley was designated nonattainment for the 2012 PM_{2.5} standard effective April 15, 2015.

² 40 CFR 51.1013(b)

standards for PM_{2.5} in the Valley includes commitments for emission reductions from both stationary sources under the jurisdiction of the District, as well as emission reductions from mobile sources, regulated by CARB. As such, quantitative milestones have been established to report progress towards emission reductions committed to occur from the implementation of both stationary and from mobile source control measures. These milestones are outlined in Chapter 3 of the *2016 PM_{2.5} Plan*.

The District and CARB collaboratively developed this report to demonstrate that reasonable further progress has been made towards attainment of the 2012 NAAQS in 2025. Based on guidance received from EPA, this report will address progress towards attainment achieved for each quantitative milestone in the period between 2013 (the base year of the *2016 PM_{2.5} Plan*), through the quantitative milestone date of October 15, 2022. Further details about progress made to date from the implementation of both District and CARB control measures are provided in the following report sections.

1. CONTROL MEASURE IMPLEMENTATION

1.1 STATIONARY SOURCE RULES AND REGULATIONS

The District has one of the most stringent regulatory programs that have set benchmarks for California and the nation for a wide variety of sources, including boilers, steam generators, internal combustion engines, refineries, residential fireplaces, glass manufacturing, and agricultural burning. Only states and the federal government can directly regulate tailpipe emissions from mobile sources. However, the District has also adopted innovative regulations such as Indirect Source Review and Employer Based Trip Reduction to reduce emissions from mobile sources within the District's limited jurisdiction over these sources. Additionally, the District has an extremely successful incentive program that has achieved significant emissions reductions from sources outside of the District's regulatory purview.

Quantitative milestones provide an objective way to ensure that reasonable progress towards attainment of federal air quality standards is being achieved as expected and outlined in attainment plans. Significant emissions reductions have been achieved to date through the implementation of control measures outlined in attainment plans, including the District's *2016 PM_{2.5} Plan* addressing the 2012 PM_{2.5} NAAQS. In the reporting period of 2013 to 2022, direct PM_{2.5} and NO_x emissions in the Valley have been reduced by 3.9 tons per day (tpd) and 132.9 tpd, respectively.

1.2 CARB MOBILE SOURCE QUANTITATIVE MILESTONES

The RFP demonstration in the 2016 PM_{2.5} Plan relied, in part, on reductions from California mobile source regulations that reduce NO_x and direct PM_{2.5} emissions. The State mobile source milestones focus on those CARB regulations that provide the most significant emission reduction benefits to meeting the 2022 RFP targets.

The mobile source emissions control program in California is the most stringent in the nation due to the severity of California's air quality challenges, the need for ongoing

emission reductions, and the unique authority allowed by the CAA. California's comprehensive mobile source control program relies on four fundamental approaches:

- Stringent emissions standards that minimize emissions from new vehicles and equipment;
- In-use programs that target the existing fleet and require the use of the cleanest vehicles and emission control technologies;
- Cleaner fuels that minimize evaporative and combustion emissions; and,
- Incentive programs that remove older, dirtier vehicles and equipment and pay for early adoption of the cleanest available technologies.

This multifaceted approach has spurred the development of increasingly cleaner technologies and fuels and achieved emissions reductions across all mobile source sectors that go far beyond national programs or programs in other states. Since California mobile source programs account for a significant part of the emissions reductions in the RFP demonstration, it is appropriate to include milestones for implementation of mobile source regulations.

On May 10, 2019, CARB submitted the 2016 PM_{2.5} Plan for the San Joaquin Valley to U.S. EPA for inclusion in the California SIP. On November 26, 2021, U.S. EPA approved³ portions of the *2016 PM_{2.5} Plan*, including RFP emissions targets and a quantitative milestone for the RFP milestone year of 2022, and reclassified the Valley to Serious nonattainment for the 12 µg/m³ standard.

For the 12 µg/m³ annual PM_{2.5} standard 2022 quantitative milestones, CARB is reporting on the following Milestone included in the 2016 PM_{2.5} Plan:

1. Compliance milestones in the *On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation* (Truck and Bus Regulation) and related implementation or enforcement actions that CARB will complete in 2022.

On-Road Heavy-Duty Diesel Vehicles Regulation Requirements from the beginning of 2020 through 2022

Since the previous Quantitative Milestone Report for the annual PM_{2.5} standard (2019 Quantitative Milestone Report for the 2012 PM_{2.5} NAAQS) reported on the status of measures through the end of 2019, this report covers progress on the 2022 mobile source milestone from the beginning of 2020. The Truck and Bus Regulation provides substantial reductions in the years 2020 through 2022. The Truck and Bus Regulation, first adopted in 2008, represents a multi-year effort to turn over the legacy fleet of heavy-duty truck and bus engines and replace them with the cleanest technology available. Starting in 2012, the Truck and Bus Regulation included phase--in requirements applicable to an increasingly larger percentage of the heavy-duty truck and bus fleet over time; by 2023, nearly all vehicles with a pre-2010 engine must be upgraded to have exhaust emissions meeting 2010 model year engine emissions levels.

³ 86 Fed. Reg. 67343. <https://www.govinfo.gov/content/pkg/FR-2021-11-26/pdf/2021-25616.pdf>

The 2010 model year engine includes a particulate filter and selective catalytic reduction (SCR) catalyst technology in addition to a cleaner performing engine and therefore provides both PM2.5 and NOx benefits. The Truck and Bus Regulation applies to nearly all diesel -fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds (lbs.), including school buses and some off-road agricultural yard trucks.

CARB implementation of the Truck and Bus Regulation provided PM2.5 emission benefits that began in 2012. By 2016, the particulate filter requirement for heavy-duty trucks and buses with a GVWR of greater than 26,000 lbs. was fully implemented in the San Joaquin Valley. The 2010 model-year engine requirement in the Truck and Bus Regulation also provided NOx reductions. By January 1, 2021, all trucks and buses with a GVWR of greater than 26,000 lbs. (Heavy-Duty) and originally equipped with a 2004 or older model year engine were required to have a 2010 engine installed or have been replaced by a truck with a 2010 model year engine (Table 1). By January 1, 2022, all Heavy-Duty trucks and buses equipped with a 2006 and older model year engine were required to have a 2010 engine installed.

Table 1: Truck and Bus Regulation Implementation Deadlines from 2020 through 2022 for Trucks and Buses greater than 26,000 GVWR

Implementation Deadline	Vehicle Engine Year	Implementation Requirement
January 1, 2021	2004 & older	2010 Engine
January 1, 2022	2006 & older	2010 Engine

Source: CARB, Truck and Bus Regulation Compliance Requirement Overview, June 18, 2019.

[ComplianceOverview.pdf \(ca.gov\)](#)

By January 1, 2022, all trucks and buses with a GVWR of 14,001 to 26,000 lbs. and originally equipped with a 2004-2006 model year engine were required to have a 2010 engine installed or have been replaced by a new truck with a 2010 model year engine (Table 2).

Table 2: Truck and Bus Regulation Implementation Deadlines from 2020 through 2022 for Trucks and Buses with GVWR from 14,001 to 26,000 lbs

Implementation Deadline	Vehicle Engine Year	Implementation Requirement
January 1, 2021	2004-2006	2010 Engine

Source: CARB, Truck and Bus Regulation Compliance Requirement Overview, June 18, 2019.

[ComplianceOverview.pdf \(ca.gov\)](#)

The Truck and Bus Regulation is designed to achieve reductions of both NOx and PM2.5. NOx emissions in the San Joaquin Valley from vehicles regulated by the Truck and Bus Regulation were 74.8 tons per day (tpd) in 2019 and had decreased to 59.1 tpd in 2022, a reduction of 15.8 tpd or 21.1 percent. PM2.5 emissions from the same vehicle categories were 1.16 tpd in 2019 and 0.90 tpd in 2022, a 0.26 tpd or 22.2 percent reduction. The Truck and Bus Regulation provided a significant portion of these reductions.

CARB has implemented all of the Truck and Bus Regulation requirements through 2022 and has met the Milestone.

Mobile Source Program Conclusion

CARB has met the 2022 quantitative milestone for the $12 \mu\text{g}/\text{m}^3$ annual PM_{2.5} standard, ensuring that emissions were reduced through 2022. CARB's mobile source control program will continue to provide emission reductions beyond 2022, ultimately contributing to attainment of the standard.

2. DEMONSTRATION OF REASONABLE FURTHER PROGRESS

RFP means such annual incremental reductions in emissions of the relevant air pollutant as are required or may reasonably be required by EPA for the purposes of ensuring attainment of the applicable national ambient air quality standard by the applicable date. Each attainment plan for a PM_{2.5} nonattainment area is required to include an RFP plan that demonstrates that sources in the area will achieve such annual incremental reductions in emissions of direct PM_{2.5} and PM_{2.5} plan precursors as are necessary to ensure attainment of the applicable PM_{2.5} NAAQS as expeditiously as practicable.^{4,5}

Quantitative milestone reports are submitted to EPA to document milestones achieved, as committed to in attainment plans, and to show RFP towards attainment. Historically, EPA's interpretation of the RFP requirement has been "generally linear progress" from the base year to the attainment year, demonstrated at RFP milestone years.⁶

The table below demonstrates that the RFP target emissions levels, calculated in Chapter 3 of the *2016 PM_{2.5} Plan*, have been satisfied through the emission reductions that have been achieved up to the year 2022, as reflected in the emissions inventory for the *2016 PM_{2.5} Plan*, California Emission Projection Analysis Model (CEPAM), 2016 SIP Baseline Emission Projections, Version 1.04.

Table 7: RFP Target Analysis for the 2012 PM_{2.5} NAAQS

Pollutant	2022 RFP Target Emissions Level (tpd)	2022 Attainment Emissions Inventory (tpd)	RFP satisfied?
Direct PM _{2.5}	59.5	59.5	YES
NO _x	185.2	185.2	YES

3. SUMMARY AND CONCLUSIONS

This quantitative milestone report demonstrates that the emission reductions needed for RFP have been achieved, that the 2022 quantitative milestones have been met for the *2016 PM_{2.5} Plan*, and thus that ongoing progress is being made to attain the 2012 NAAQS. Emission reductions will continue through the implementation of both District and CARB control measures to move the Valley towards attainment of the health-protective federal PM_{2.5} air quality standards as expeditiously as practicable.

⁴ 40 CFR §51.1012 Reasonable further progress requirements.

⁵ Clean Air Act Section 171(1)

⁶ 72 FR 20633, codified at 40 CFR 51 Subpart Z §51.1000 (definitions)