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Samir Sheikh
Executive Director
Air Pollution Control Officer

Northern Region Office
4800 Enterprise Way
Modesto, CA 95356-8718
(209) 557-6400 • FAX (209) 557-6475

Central Region Office
1990 East Gettysburg Avenue
Fresno, CA 93726-0244
(559) 230-6000 • FAX (559) 230-6061

Southern Region Office
34946 Flyover Court
Bakersfield, CA 93308-9725
(661) 392-5500 • FAX (661) 392-5585

www.valleyair.org

DATE: November 4-5, 2026

TO: SJVUAPCD Governing Board



FROM: Samir Sheikh, Executive Director/APCO
Project Coordinator: Timothy Franquist

RE: **ITEM NUMBER 8: CLEAN AIR ACT
IMPLEMENTATION CHALLENGES AND
OPPORTUNITIES**

RECOMMENDATION:

Receive an update on challenges to meeting federal fine particulate matter (PM2.5) and ozone standards and discuss opportunities at the local, state, and federal levels to reduce emissions in the near and long-term.

BACKGROUND:

The San Joaquin Valley (Valley) faces unique and difficult air quality challenges, and for decades, has developed and implemented innovative air quality attainment plans (State Implementations Plans or SIPs) to address federal national ambient air quality standards (NAAQS), resulting in significant air quality improvements and associated health benefits. While the Valley has met a number of federal standards, it continues to face significant challenges in meeting the latest federal standards. Due to both the Valley's successes in reducing precursor emissions and its ongoing air quality challenges, the Valley and other areas of California are frequently on the leading edge of critical Clean Air Act (CAA) policy issues.

The San Joaquin Valley, the South Coast Air Basin, and other regions cannot meet the latest PM2.5 and ozone standards without significant additional investments and actions to reduce emissions from mobile sources under state and federal jurisdiction. In the absence of clear, innovative, and collaborative guidance and actions from the California Air Resources Board (CARB) and the federal U.S. Environmental Protection Agency (EPA), the Valley and other nonattainment areas face the risk of delayed public health benefits and devastating sanctions under the CAA. The purpose of this item is to provide updated information on the status of the Valley's

attainment plans and receive feedback on strategies for addressing these regulatory and policy needs.

DISCUSSION:

Under the federal CAA, EPA is required to review and set the National Ambient Air Quality Standards (NAAQS) for ozone, particulate matter (PM), and other criteria air pollutants at least every five years to ensure they continue to reflect the latest scientific understanding of public health and environmental impacts. Over the past two decades, advances in scientific research have contributed to increasingly stringent health-based air quality standards, requiring corresponding advancements in local and state emission control programs and attainment strategies. As these standards have become more protective, the District, in close partnership with the CARB and EPA, has continued to strengthen and refine its air quality programs and develop comprehensive SIPs to address evolving federal requirements, achieve the necessary emission reductions, and sustain progress toward attainment of federal air quality standards and the protection of public health.

After each plan adoption, the District and CARB implement plan strategies through regulatory development, outreach, continued research, and incentive programs. Over the past decades, through various attainment plans, the District has implemented generations of emissions control measures for stationary and area sources under its jurisdiction. Similarly, CARB has adopted wide-ranging regulations for mobile sources. Together, these efforts represent the nation's most stringent air pollution emissions controls. In addition to the Valley's regulatory control program, the District also operates the most effective and efficient incentive grants program, investing over \$7.9 billion in public/private funding towards clean air projects to date that have achieved over 300,000 tons of emissions reductions.

The District's success in achieving substantial air quality improvements over the past several decades also presents new challenges in identifying and implementing the next generation of effective attainment strategies. The Valley's unique geography, surrounded by mountain ranges that restrict air movement, combined with meteorological conditions that frequently result in stagnant air, temperature inversions, and limited atmospheric dispersion, creates some of the most challenging conditions in the nation for achieving federal air quality standards. These inherent challenges are further compounded by the fact that many of the Valley's stationary and area sources are already subject to some of the nation's most stringent emission control requirements, leaving increasingly limited opportunities for additional reductions through traditional regulatory approaches.

Compounding these challenges are recent federal actions disapproving California's mobile source emission standards, creating significant uncertainty and substantial shortfalls in the emission reductions previously anticipated and relied upon in the Valley's attainment plans. Given the significant contribution of mobile sources to the

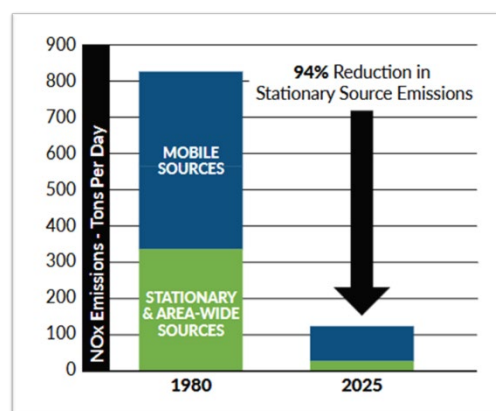
Valley's emissions inventory, the loss of these anticipated reductions presents a major obstacle to achieving federal air quality standards and places additional pressure on already highly regulated stationary and area sources. These challenges are further exacerbated by declining incentive funding for accelerating the turnover of older, higher-emitting vehicles and equipment, continued impacts from pollution transported into the Valley from upwind regions, and the growing challenges associated with wildfires and prescribed burning.

These circumstances underscore the critical importance of implementing effective state and federal mobile source emission reduction strategies, sustaining and expanding incentive funding, and identifying innovative, science-based approaches capable of delivering meaningful additional improvements. As demonstrated by the Valley's positive air quality trends, the District's longstanding regulatory and incentive-based efforts, in partnership with state and federal agencies, have produced substantial progress toward meeting federal air quality standards. Building upon this progress will require continued collaboration, sustained investment, and renewed commitments from state and federal partners to address the emission reduction shortfalls and other challenges that remain.

Air Quality Progress

Over the past four decades, the San Joaquin Valley has achieved substantial improvements in air quality, with dramatic reductions in emissions of key pollutants despite significant growth in the region's population and economic activity. These achievements reflect decades of sustained implementation of increasingly stringent regulatory requirements, innovative emission reduction strategies, strong partnerships with CARB and local stakeholders, and significant investments in clean-air technologies through the District's incentive programs. Figure 1 illustrates the magnitude of these emission reductions since 1980, highlighting the Valley's remarkable progress while also underscoring the additional reductions that will be necessary to achieve the federal PM_{2.5} and ozone air quality standards.

Figure 1 – Emissions Reductions Achieved

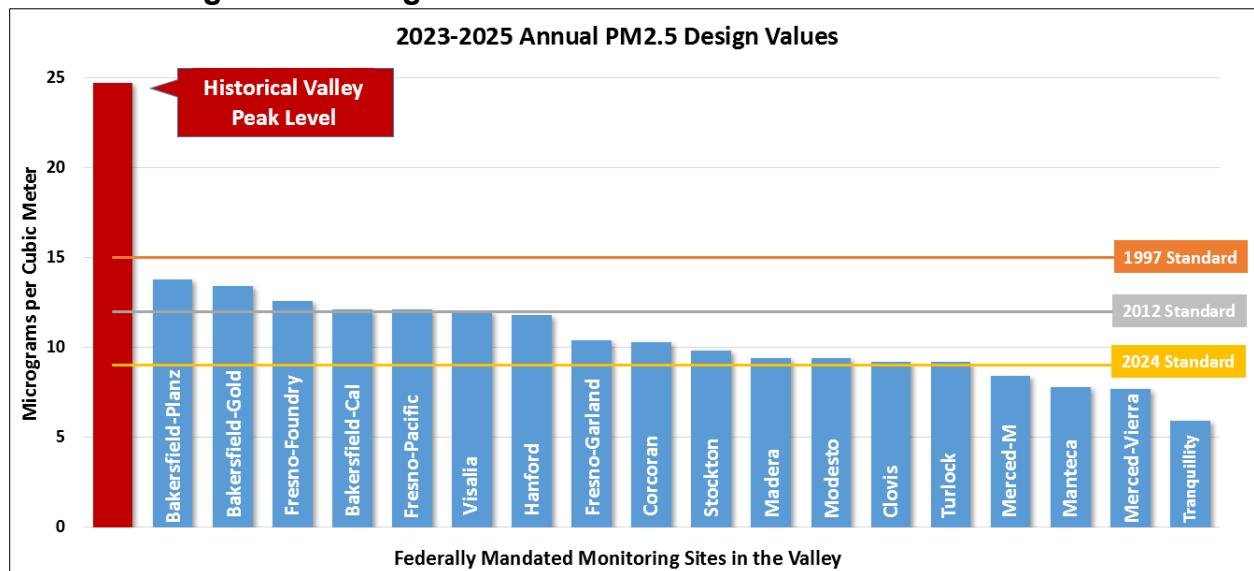


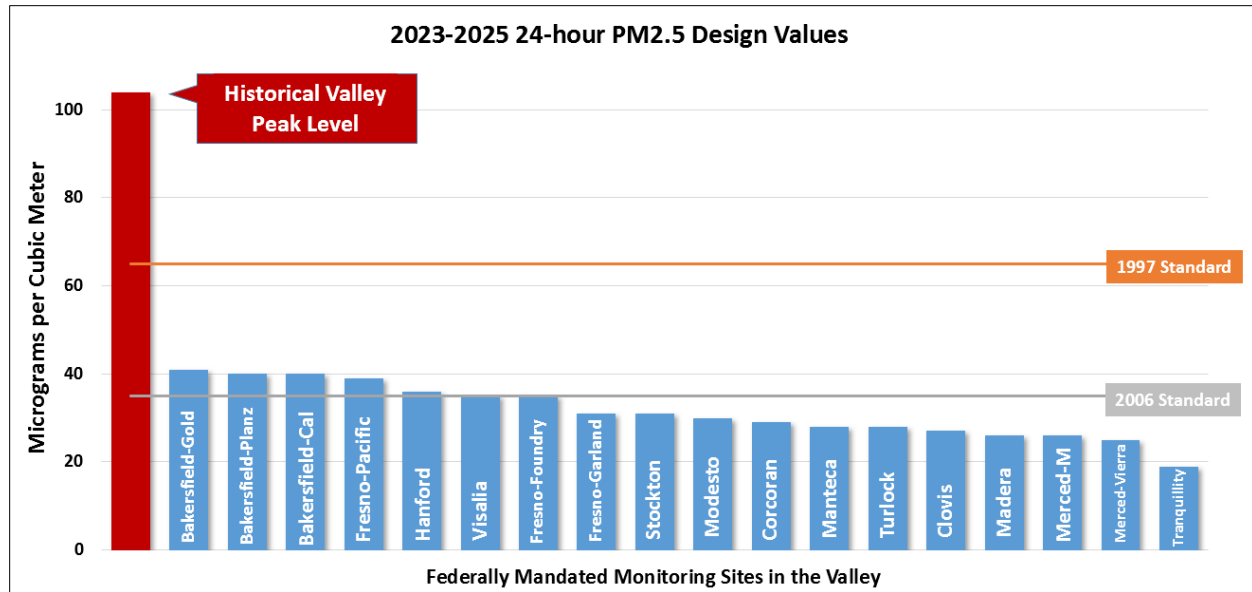
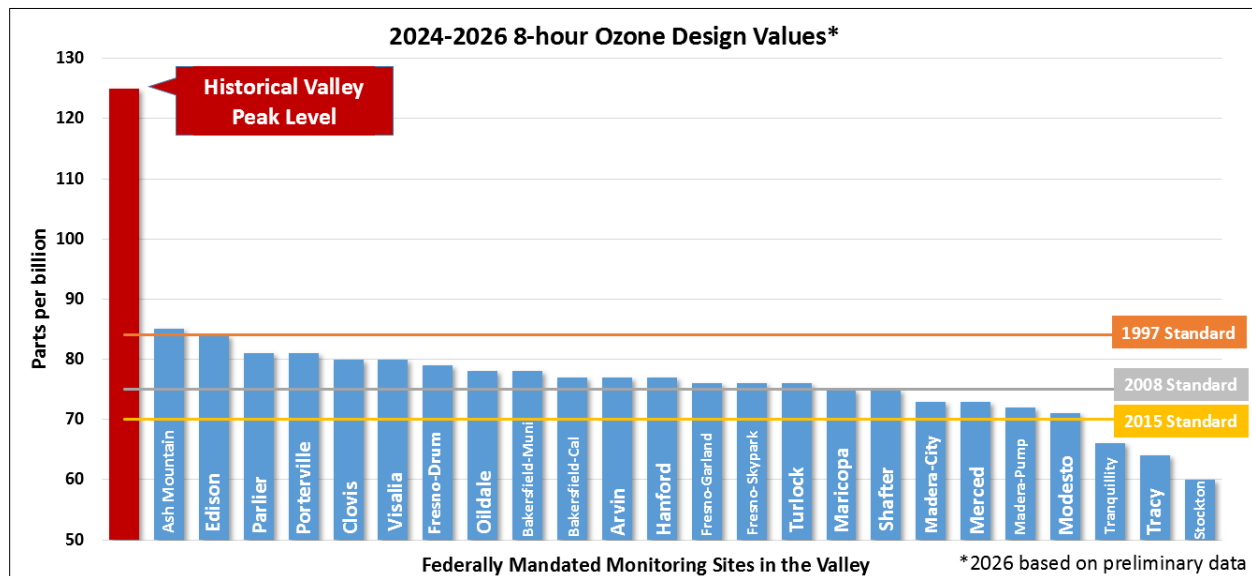
Continuing this success, the District has recently achieved significant milestones in improving air quality. On July 16, 2025, EPA announced a proposed clean data determination and a determination of attainment by the attainment date for the 1997 annual PM_{2.5} standard, and took final approval action on January 29, 2026. Additionally, on September 25, 2025, EPA took final action to approve the *2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard* and determined that the applicable statutory criteria for redesignation had been met for the 1979 1-hour ozone NAAQS.

The Valley is also approaching attainment of the 84 parts per billion (ppb) ozone standard, and for the first time in its history, based upon preliminary air quality data from 2026, recorded two years in a row with a regulatory value below the standard. In addition, the year 2026 to date has recorded the fewest days exceeding the 84 ppb standard in history, and is also the first year in history where zero exceedances of the 84 ppb standard were recorded on the Valley floor. Achieving these milestones demonstrates positive progress toward cleaner air and improved public health.

As depicted in the following figures, the Valley is also progressing in meeting the remaining federal PM_{2.5} standards of 35 µg/m³ (24-hour average) and 12 µg/m³ (annual average). Continued improvements will be needed to meet these remaining standards by their applicable deadlines.

Figure 2 – Design Value Trends for PM_{2.5} and 8-hour Ozone





Collectively, these milestones demonstrate the substantial and sustained progress achieved in improving air quality throughout the San Joaquin Valley and reflect the effectiveness of decades of increasingly stringent emission control programs, strategic investments in cleaner technologies, and coordinated efforts among the District, CARB, EPA, and Valley stakeholders.

While attainment of the remaining federal ozone and PM_{2.5} standards will require continued emission reductions and innovative strategies to address increasingly complex air quality challenges, the Valley's positive air quality trends provide a strong foundation for future attainment planning efforts.

Upcoming Challenges for Valley Attainment Planning Efforts

The San Joaquin Valley faces some of the most challenging air quality conditions in the nation due to the unique interaction of its geography, meteorology, emission sources, and atmospheric chemistry. Surrounded by the Sierra Nevada to the east, the Coast Ranges to the west, and the Tehachapi Mountains to the south, the Valley forms a large, partially enclosed air basin that limits the natural dispersion of air pollutants. Although the Valley receives airflow through the Sacramento, San Joaquin Delta and other regional transport pathways, the surrounding mountain ranges restrict ventilation and can contribute to the accumulation and recirculation of emissions. These geographic conditions, combined with the Valley's substantial population, commercial activity, transportation corridors, and other emission sources, create an environment where pollutants can accumulate and undergo chemical transformations over extended periods.

These geographic constraints are further compounded by the Valley's unique meteorological conditions, including frequent periods of atmospheric stagnation, persistent temperature inversions, limited wind circulation, and seasonal conditions that favor the formation and accumulation of air pollution. During the summer, abundant sunshine and high temperatures accelerate the photochemical reactions that produce ground-level ozone, while wintertime stagnation, temperature inversions, and high humidity can promote the accumulation and secondary formation of fine particulate matter (PM_{2.5}). Combined with emissions from the Valley's population centers, major transportation corridors, agricultural operations, and industrial and commercial activities, these conditions create an environment where pollutants can remain trapped, recirculate, and undergo complex atmospheric chemical reactions. As a result, the Valley's air quality challenges are driven not only by the magnitude and composition of emissions, but also by natural geographic and meteorological factors that can significantly amplify their impacts, making attainment of federal ozone and PM_{2.5} standards particularly challenging even as emissions continue to decline.

Meteorology and Topographic Influences

During the summer months, the Valley experiences prolonged periods of intense solar radiation, elevated temperatures, and atmospheric conditions that favor the formation and accumulation of ground-level ozone. Often during the summer season, atmospheric high-pressure systems become stationary over the Valley for long periods of time, placing a dome of pressure over the region, and placing a strong lid over the bowl of the Valley. With emissions not having a place to escape and disperse either horizontally or vertically during these periods, pollution can build over time and lead to high concentrations of ozone.

Ozone is not emitted directly into the atmosphere but forms through complex photochemical reactions involving oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight. High temperatures accelerate many of these reactions. The Valley's topography further complicates ozone formation by

influencing regional wind patterns and pollutant transport. Daytime heating promotes upslope winds that transport ozone and its precursors toward the surrounding foothills and mountain slopes, while nighttime cooling can produce downslope flows that return portions of the polluted air mass toward the Valley floor. These recurring circulation patterns, together with prevailing northwesterly winds and periods of limited atmospheric ventilation, can transport and redistribute ozone and its precursors throughout the air basin. As a result, emissions generated in one portion of the Valley may contribute to elevated ozone concentrations in communities located considerable distances downwind, while pollutants transported into the Valley from neighboring air basins can further influence regional air quality.

During the winter months, the Valley experiences a different set of meteorological conditions that are particularly conducive to elevated fine particulate matter (PM_{2.5}) concentrations. Extended periods of high atmospheric pressure, relatively calm winds, and persistent temperature inversions can severely restrict vertical mixing and prevent pollutants from dispersing into the atmosphere. Under these conditions, a layer of warmer air above the Valley acts as a barrier that confines cooler air and pollutants near the surface, allowing emissions to accumulate over multiple days. Wintertime conditions also favor the formation of secondary particulate matter, particularly ammonium nitrate, through atmospheric reactions involving NO_x-derived nitric acid and ammonia. Cooler temperatures and higher relative humidity (i.e., moisture) can transform these compounds into elevated PM_{2.5} concentrations even when direct particulate emissions remain relatively constant. Consequently, prolonged winter stagnation episodes can produce significant increases in ambient PM_{2.5} concentrations across the Valley, with air quality improvements often dependent on the arrival of stronger winds, precipitation, or other weather systems that restore atmospheric ventilation.

These meteorological and topographical influences present significant challenges for the Valley's attainment of federal ozone and PM_{2.5} standards and underscore the importance of comprehensive, science-based air quality planning. Unlike regions with more favorable atmospheric ventilation, the Valley can experience substantial pollutant accumulation and secondary pollutant formation under recurring seasonal conditions, increasing the emission reductions necessary to achieve comparable improvements in ambient air quality.

Furthermore, variations in temperature, wind patterns, atmospheric stability, wildfire activity, and regional pollutant transport can produce considerable year-to-year differences in monitored air quality, even as emissions continue to decline. Accordingly, the District and CARB rely on comprehensive emissions inventories, ambient monitoring, meteorological analyses, and sophisticated photochemical modeling to evaluate the effectiveness of control strategies and distinguish the influence of emission reductions from natural atmospheric variability. While these geographic and meteorological conditions cannot be controlled, understanding their influence is essential to identifying effective emission reduction opportunities, developing technically

sound State Implementation Plans, and demonstrating continued progress toward attainment of federal health-based air quality standards.

Upwind Pollution Transport

The Valley is increasingly affected by episodic pollution events, including wildfires, prescribed burning, and transported smoke and other pollutants (e.g., ozone/ozone precursors, PM_{2.5}, etc.), which can contribute to elevated pollutant concentrations independent of the Valley's ongoing emission reduction efforts.

Historical research and analyses have demonstrated that the Valley receives ozone, ozone-forming precursors, and other pollutants transported from upwind neighboring regions as well as international sources, such as the San Francisco Bay Area and, under certain meteorological conditions, other portions of Northern and Southern California. As discussed above, the Valley's unique topography and meteorology further compound these impacts, as pollutants entering the air basin can become entrained in regional circulation patterns, undergo additional atmospheric chemical reactions, and contribute to elevated ambient concentrations.

Transport can occur both near the surface and at higher elevations, where pollutants may travel considerable distances before mixing downward into the Valley. The magnitude and frequency of these contributions vary considerably depending on prevailing winds, atmospheric stability, regional circulation patterns, and the location and characteristics of upwind emission sources. Consequently, transported pollution can contribute to the Valley's ozone attainment challenges even as locally generated emissions continue to decline.

The District has long recognized that addressing regional pollution transport is an important component of a comprehensive attainment strategy. As early as the 1990s, the District pursued regulatory and legal actions to address emissions originating in neighboring air basins, while advocating for more comprehensive transport assessments and appropriate emission control requirements for upwind sources. As a key example of these efforts, the Bay Area has implemented additional smog check requirements and additional stationary source controls. Moving forward, it is important that upwind transport impacts and potential opportunities for addressing these impacts continue to be evaluated in coordination with CARB, U.S. EPA, neighboring districts, the research community, and stakeholders.

Mobile Source Regulatory Changes

Emission reductions from mobile sources, which account for more than 80 percent of the Valley's NO_x emissions and remain largely outside the District's direct regulatory authority, remain key to the Valley's future attainment efforts. While the District has implemented increasingly stringent controls on stationary and area sources, achieving the additional reductions necessary for attainment depends heavily on continued

advancements in state and federal mobile source regulations, accelerated turnover of older vehicles and equipment, and sustained investment in incentive programs.

However, recent federal actions affecting California's authority to implement more stringent mobile source standards, including the disapproval and withdrawal of several federal waivers and authorizations, have introduced significant uncertainty regarding emission reductions previously relied upon in the Valley's attainment plans. These challenges are further compounded by ongoing and anticipated changes to federal emission standards and regulatory requirements for light-, medium-, and heavy-duty vehicles, which could affect the timing and magnitude of future emission reductions. Collectively, these developments underscore the importance of maintaining effective state and federal mobile source control programs, securing sustained incentive funding, and identifying additional strategies to address potential emission reduction shortfalls.

In addition to reductions achieved through District measures, the most recent attainment plans for the 2015 8-hour ozone standard of 70 parts per billion (ppb) and 2012 annual PM_{2.5} standard of 12 µg/m³ rely on reductions achieved from stringent mobile source control measures from CARB that go beyond federal standards. The CAA provides California unique authority to regulate mobile sources more stringently than the federal government by providing a waiver of preemption for new vehicle emission standards for on-road vehicles and engines under Section 209(b), and authorizations for new off-road emission standards under Section 209(e)(2).

Due to the attainment challenges that the Valley and other California air districts face, CARB has consistently sought and obtained waivers and authorizations for its new motor vehicle and off-road regulations under Section 209(b) of the CAA. On January 13, 2025, CARB withdrew its previously submitted waiver requests for the Advanced Clean Fleets and In-Use Locomotive regulations. Additionally, on June 12, 2025, a number of mobile source waivers, including those used for the attainment demonstration of the *2022 Ozone Plan* and the *2024 PM_{2.5} Plan*, were disapproved under the Congressional Review Act (CRA).

The federal actions affecting California's mobile source programs have continued to expand. Following the 2025 Congressional Review Act (CRA) disapproval of EPA waivers for California's Advanced Clean Cars II, Advanced Clean Trucks, and Heavy-Duty Omnibus Low-NO_x programs, EPA transmitted four additional California waiver decisions to Congress on June 12, 2026, and two additional waiver decisions on July 22, 2026.

These actions involve previously granted waivers and authorizations covering a broader range of mobile source programs, including passenger vehicles, heavy-duty vehicles, small off-road engines and equipment, and marine and port sources. EPA maintains that these waiver decisions constitute rules subject to congressional review under the CRA and that prior administrations had not transmitted them to Congress as required. Congress subsequently introduced a new series of CRA resolutions in August 2026 seeking to disapprove several of these additional California waiver decisions.

The new round of congressional review is particularly significant because it extends beyond recently adopted California regulations and reaches previously granted waivers underlying longer-standing portions of California's mobile source control program. This creates additional uncertainty regarding the emission reductions that may remain available for inclusion in California air quality plans and future attainment demonstrations.

For the Valley, where mobile sources constitute a substantial portion of the remaining NO_x emissions inventory, continued changes to state mobile source authority or federal vehicle emission standards could further affect the timing and magnitude of reductions relied upon to attain increasingly stringent federal ozone and particulate matter standards. Emissions reductions from withdrawn and CRA-disapproved measures represent significant reductions from "new" mobile source measures in the Valley's SIPs, and these developments have significantly impacted the Valley's attainment strategy for both the Ozone and PM_{2.5} standards.

Given the current status of the waivers, enhanced mobile source strategies will be necessary to achieve additional near to mid-term emission reduction programs in addition to the zero-emission transitions (e.g., low NO_x and near zero emission vehicle programs). Regardless of whether future reductions are achieved through California-specific programs or nationally applicable federal standards, continued and effective mobile source emission reductions will be necessary for the Valley and many other nonattainment areas to achieve federal air quality standards.

In addition to impacts to the state's mobile source strategy, the Federal mobile source programs are also undergoing significant changes that could affect the timing and magnitude of emission reductions previously anticipated from the on-road vehicle fleet. As noted above, mobile source related emission reduction changes are particularly important for areas such as the San Joaquin Valley, where mobile sources represent a substantial portion of the remaining NO_x emissions inventory and where attainment of federal ozone and particulate matter standards depends upon continued reductions from sources that are primarily regulated by the state and federal governments. With key CARB mobile source waivers disapproved or withdrawn, achieving necessary emission reductions from mobile sources under federal jurisdiction has become an increasingly important backstop for meeting air quality attainment needs.

Changes to Federal Emission and Fuel Economy Standards

In February 2026, EPA finalized the rescission of the federal greenhouse gas Endangerment Finding for motor vehicles and, as a consequence, repealed federal greenhouse gas emission standards for light-, medium-, and heavy-duty highway vehicles and engines. This action eliminated the federal greenhouse gas requirements that had supported EPA's Model Year 2027 and later light- and medium-duty vehicle standards and the heavy-duty Phase 3 greenhouse gas program. While these greenhouse gas requirements are distinct from the federal criteria pollutant standards

governing NO_x, particulate matter, and other pollutants, the changes may affect the rate at which zero- and lower-emission vehicles enter the fleet and therefore may also affect future projections of criteria pollutant emissions.

Federal fuel economy requirements have also been substantially revised. In June 2024, the National Highway Traffic Safety Administration (NHTSA) finalized Corporate Average Fuel Economy (CAFE) standards projected to require an industry-wide average of approximately 50.4 miles per gallon by Model Year 2031. On September 28, 2026, NHTSA announced the final SAFE Vehicles Rule III, subsequently published in the Federal Register on September 30, 2026, which substantially revised CAFE requirements for Model Years 2022 through 2031. Under the revised standards, NHTSA projects an industry-wide average requirement of approximately 34.9 miles per gallon by Model Year 2031. The rule also eliminates the generation of new inter-manufacturer tradable compliance credits beginning in Model Year 2028 and modifies passenger-car and light-truck classifications beginning in Model Year 2030. Although CAFE standards regulate fuel economy rather than NO_x, VOC, or particulate matter emissions directly, these changes may influence vehicle technology, fleet composition, fuel consumption, and the pace of electrification, which in turn can directly and/or indirectly increase emissions from mobile sources. Consequently, the revised requirements could affect future mobile source emission projections and the reductions anticipated in the Valley's attainment plans, requiring continued coordination with CARB to evaluate potential impacts on the District's attainment strategies.

EPA is separately reconsidering the federal criteria pollutant standards applicable to new light- and medium-duty vehicles. EPA's 2024 Tier 4 program established progressively more stringent standards for NO_x and non-methane organic gases (NMOG) beginning with Model Year 2027, including a light-duty fleet-average NMOG+NO_x standard that would ultimately decline to 15 milligrams per mile. On May 14, 2026, EPA proposed to delay the beginning of the Tier 4 program by two model years, maintaining the existing Tier 3 requirements for Model Years 2027 and 2028 and beginning Tier 4 implementation in Model Year 2029. EPA stated that the delay would provide manufacturers additional lead time while the Agency conducts a second rulemaking to reconsider the longer-term Tier 4 standards and associated program requirements. If finalized, the proposal would defer criteria pollutant reductions that had previously been expected to begin with the Model Year 2027 fleet.

EPA is also reconsidering portions of its Model Year 2027 and later heavy-duty highway engine program. The underlying federal heavy-duty rule established substantially more stringent NO_x requirements beginning in Model Year 2027, together with longer regulatory useful-life and emissions warranty requirements intended to maintain low emissions throughout a vehicle's operating life. Unlike the light- and medium-duty Tier 4 proposal, EPA has not proposed simply postponing the heavy-duty NO_x standards to Model Year 2029. Instead, on July 14, 2026, EPA proposed a series of amendments to the Model Year 2027 program, including revisions to useful-life and warranty requirements, compliance and testing provisions, and selective catalytic reduction system requirements.

Of particular significance, EPA has proposed making nonconformance penalties available beginning in Model Year 2027 for medium and heavy heavy-duty diesel engines. Nonconformance penalties (NCP) are a Clean Air Act compliance mechanism that can allow qualifying manufacturers to sell engines that exceed an otherwise applicable emission standard by paying a monetary penalty, subject to specified upper emission limits and other requirements. EPA's proposal does not establish a fixed sunset date for the availability of NCPs, and it remains uncertain how many manufacturers may utilize this compliance option or for how long.

Beginning in Model Year 2027, the applicable heavy-duty NO_x standard is 35 mg/hp-hr; however, EPA's proposed NCP provisions would establish an upper limit of 200 mg/hp-hr for qualifying engines (Note: 200 mg/hp-hr is the 2010-2026 heavy duty truck standard). While NCPs are structured to become increasingly costly with continued use, significant or prolonged reliance on this compliance option could result in higher NO_x emissions than would otherwise occur under full compliance with the Model Year 2027 standard, potentially affecting anticipated mobile source emission reductions in nonattainment areas.

EPA's proposal is intended to provide a compliance pathway where technological or lead-time constraints prevent a manufacturer from immediately meeting the new standard while avoiding competitive disadvantages among manufacturers. The proposal would therefore retain the Model Year 2027 heavy-duty NO_x program but could allow some engines with emissions above the otherwise applicable standard to enter the fleet during the transition. EPA has also proposed replacing certain diesel exhaust fluid inducements, such as engine derates and vehicle speed restrictions, with audible or visual notifications. EPA has not yet finalized the changes.

Taken together, these federal actions create uncertainty regarding the timing and magnitude of future mobile source emission reductions. For the Valley and other areas with significant mobile source emissions, the issue extends beyond any individual state or federal regulatory program. Attainment demonstrations depend on achieving the emission reductions assumed in applicable air quality plans. If previously anticipated reductions from one mobile source program, are delayed, modified, or eliminated, equivalent reductions may need to be achieved through other state or federal mobile-source measures, incentive programs, technological advancement, or other SIP-credible strategies. With local stationary and area sources already subject to extensive and stringent controls, continued progress toward attainment will depend on effective mobile source emission reductions being delivered through the agencies that possess the legal authority to regulate those sources.

Exceptional Events Demonstrations – Technical and Regulatory Obstacles

As the Valley continues to make progress toward attainment of increasingly stringent federal particulate matter and ozone standards, individual high concentration days can have an increasingly significant effect on whether the region demonstrates attainment.

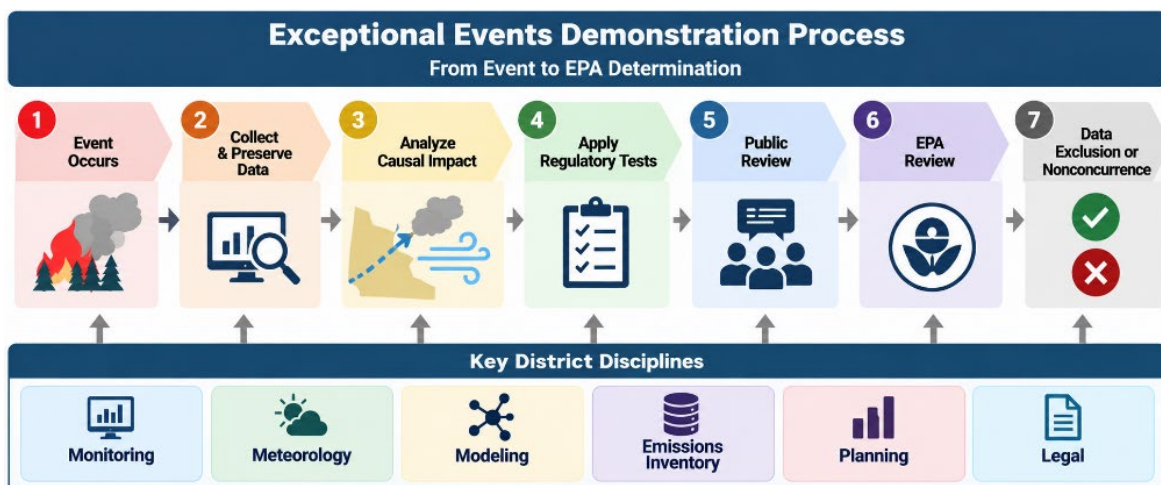
This creates a particular challenge when elevated concentrations are substantially influenced by wildfires, transported smoke, high-wind dust events, or other extraordinary events that are outside the reasonable control of the District and are not representative of the emissions conditions that the Valley's long-term attainment strategies are designed to address.

Congress recognized this issue in Clean Air Act Section 319(b) by establishing a process through which air quality monitoring data influenced by qualifying exceptional events may be excluded from certain regulatory determinations. To qualify, an event must affect air quality, be not reasonably controllable or preventable, and constitute either a natural event or a human-caused event that is unlikely to recur at a particular location. The Clean Air Act specifically excludes routine meteorological conditions such as stagnation, inversions, high temperatures, and lack of precipitation from being treated as exceptional events.

While this statutory framework is intended to ensure that extraordinary events do not inappropriately determine an area's regulatory attainment status, obtaining EPA concurrence on an exceptional event is not automatic. Under EPA's Exceptional Events Rule at 40 CFR Sections 50.1 and 50.14, an air agency must establish a clear causal relationship between the specific event and the monitored exceedance or violation and demonstrate that the event satisfies the applicable regulatory criteria. EPA evaluates the complete body of evidence before determining whether the affected monitoring data may be excluded from a regulatory determination.

Developing this causal demonstration can require a substantial technical investigation extending well beyond identifying that a wildfire or other extraordinary event occurred on the same day as an exceedance. EPA's regulations and guidance contemplate a weight-of-evidence analysis that may require development of a conceptual model explaining how emissions from the event were generated, transported, mixed into the Valley atmosphere, and ultimately affected a specific regulatory monitor (See Table 1).

Table 1 – Generalized Exceptional Event Process



This issue is particularly important for the San Joaquin Valley due to the region's meteorology and atmospheric chemistry. For ozone, wildfire emissions can contribute ozone precursors and alter atmospheric chemistry while regional recirculation and transport can further complicate the relationship between the original event and the concentration ultimately measured at a Valley monitoring station. As a result, an event that is readily apparent from satellite imagery or regional smoke observations may nevertheless require extensive analysis to establish the regulatory clear causal relationship required for exclusion of a particular monitored concentration.

EPA regulations additionally require specific procedural elements, including an initial event description and flagging of potentially affected monitoring data, coordination with EPA regarding the agency's intent to prepare a demonstration, preparation of the technical demonstration, and an opportunity for public review and comment prior to submission. Collectively, these requirements can make an exceptional event demonstration comparable to a significant technical planning project.

The resource implications become increasingly important as attainment deadlines approach. District staff must evaluate potential exceptional events against their actual regulatory significance and determine whether pursuing a demonstration is warranted. The District therefore must balance the substantial resources necessary to develop a technically defensible demonstration against the probability that exclusion of the affected data will materially affect the Valley's regulatory outcome.

This challenge is becoming more consequential as the Valley approaches attainment of the 1997 Ozone Standard, 2006 24-hr PM_{2.5} Standard, and 2012 Annual PM_{2.5} Standard. After decades of emission reductions, the distinction between recurring Valley air quality conditions and episodic impacts from exceptional events becomes increasingly important. Where only a small number of monitoring days separate attainment from nonattainment, an extraordinary wildfire or other qualifying event can have regulatory consequences disproportionate to the event's relationship to the Valley's long-term emissions trajectory.

EPA has recently recognized the burden associated with this process and, in June 2026, released enhanced tools intended to help state, local, and Tribal air agencies identify event affected monitoring data and streamline preparation of exceptional events demonstrations. These tools may improve efficiency, but they do not eliminate the underlying statutory requirement to establish that a qualifying event caused the monitored concentration or the need to develop a technically defensible record supporting exclusion of the data.

As the Valley moves closer to attainment and individual monitoring days carry greater regulatory significance, maintaining the scientific capability and resources necessary to make that distinction will become increasingly important to ensuring that federal

attainment determinations accurately reflect the effectiveness of the Valley's long-term air quality strategy.

Impacts of Increased Prescribed Burns and Wildfire Mitigation

The prescribed burning and wildfire mitigation challenge is becoming increasingly significant as California shifts from treating prescribed fire as a relatively limited land management activity toward using beneficial fire as a central component of the state's wildfire prevention and landscape resilience strategy. California has substantially increased funding and policy support for forest health treatments, hazardous fuel reduction, prescribed and cultural burning, and other wildfire mitigation activities.

Recent state actions have also sought to streamline project approvals and prescribed fire implementation, expand the trained workforce available to conduct burns, improve smoke management coordination, and increase the number of acres treated during available burn windows. Prescribed fire treatments statewide have nearly doubled since 2021, with approximately 200,000 acres now being treated annually, and recent legislation and executive actions have further advanced state efforts to accelerate wildfire-prevention projects and expand beneficial fire. While these activities represent an important long-term strategy for reducing the frequency and severity of catastrophic wildfires, they also increase the potential for prescribed-fire smoke impacts within and surrounding California's air basins. As the scale and geographic distribution of prescribed burning expand, air districts may experience more frequent smoke episodes and additional challenges associated with air quality forecasting, public health protection, attainment planning, and exceptional-events demonstrations.

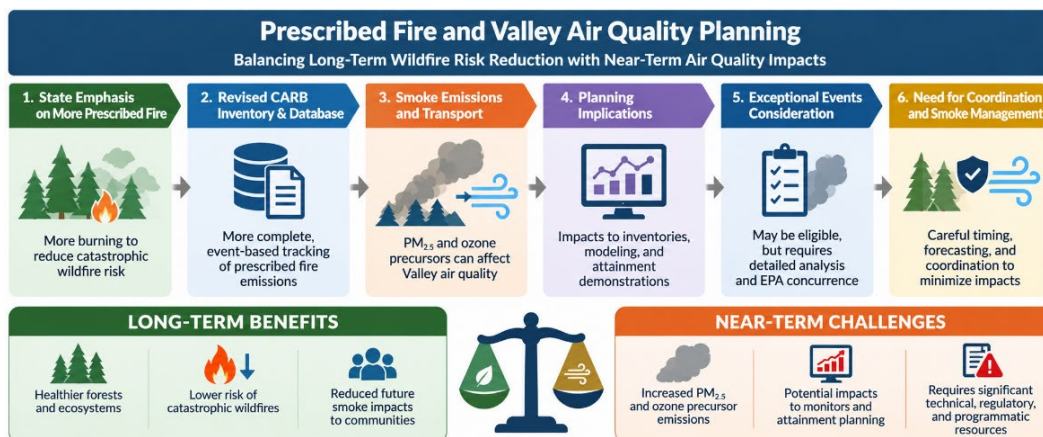
These challenges are particularly significant for the San Joaquin Valley, where surrounding mountain ranges, prevailing transport patterns, and meteorological conditions can contribute to the accumulation of particulate matter within the air basin. Expanded prescribed burning within and surrounding the Valley could result in additional smoke impacts, including during periods when atmospheric stagnation, temperature inversions, and limited dispersion already contribute to elevated PM_{2.5} concentrations. Although prescribed burning is intended to reduce fuel accumulation and the potential severity of future wildfires, its near-term emissions must also be considered in the context of the Valley's ongoing efforts to attain increasingly stringent federal air quality standards. This creates an important distinction between the long-term air quality benefits potentially associated with reducing catastrophic wildfire risks and the near-term impacts of intentionally generated smoke. Increasing prescribed-fire acreage does not necessarily result in proportional increases in emissions, as actual emissions depend on fuel loading, vegetation type, moisture conditions, combustion characteristics, and treatment methods. Nevertheless, the expansion of prescribed burning presents additional considerations for smoke management, emissions accounting, and federal attainment planning.

At the same time that the state is substantially expanding prescribed fire, CARB has significantly revised how these emissions are quantified and incorporated into

California's emissions inventory. During the 2025–2026 inventory cycle, CARB revamped the methodology and underlying data sources used to develop its statewide Prescribed Fire Emission Inventory, including publication of an updated inventory for 2023. The revised methodology integrates prescribed fire activity information compiled from local, state, and federal air and land management agencies, reconciles multiple datasets, incorporates satellite fire detections where burn date information is incomplete, applies more refined fuel-consumption assumptions, and distinguishes emissions based upon burn type and combustion phase. Importantly, the revised approach produces a more spatially and temporally resolved, event-based inventory that identifies estimated emissions on individual fire days and at specific geographic locations.

CARB's more event-specific inventory could become an important scientific resource for identifying source contributions, evaluating smoke transport, developing air quality conceptual models, and supporting the clear causal relationship analyses required under EPA's Exceptional Events Rule. Although emissions estimates alone do not establish impacts at ambient air quality monitoring locations, the improved information could strengthen evaluations when combined with meteorological observations, air quality monitoring data, satellite imagery, and atmospheric transport modeling. The enhanced inventory therefore has the potential to support both attainment planning and exceptional-events demonstrations, particularly in evaluating the contribution of prescribed-fire emissions to monitored PM_{2.5} concentrations in the San Joaquin Valley (See Figure 3).

Figure 3 – Generalized Prescribed Fire Planning



Under EPA's existing Exceptional Events Rule, certain prescribed fires on wildland may already qualify as exceptional events when applicable regulatory criteria are satisfied and an adequate technical demonstration is submitted. However, establishing the required evidence, demonstrating a clear causal relationship between emissions and monitored exceedances, and obtaining EPA concurrence can require substantial technical and administrative resources. As prescribed burning expands, these requirements may present additional challenges for air districts seeking to distinguish

prescribed-fire smoke impacts from other sources contributing to elevated pollutant concentrations.

Federal legislation currently under consideration could provide additional regulatory flexibility for prescribed burning conducted to reduce wildfire risks. On September 29, 2026, the U.S. Senate unanimously passed the Wildfire Emissions Prevention Act of 2026 (S. 5045), while the House of Representatives previously passed related legislation, the Fire Improvement and Reforming Exceptional Events (FIRE) Act (H.R. 6387), on April 22, 2026. The proposed legislation seeks to clarify the treatment of prescribed fires under the Clean Air Act's exceptional-events provisions, streamline demonstration requirements, reduce the technical and administrative burden associated with exceptional-events petitions, and establish more predictable procedures for EPA review. These changes could have important implications for air districts, including the San Joaquin Valley, where wildfire and prescribed-fire smoke can contribute to elevated particulate matter concentrations and complicate federal attainment determinations. However, neither bill has been enacted, and additional congressional action is necessary before any changes to the Clean Air Act become effective.

The continued expansion of prescribed burning also highlights the importance of coordination among CARB, local air districts, federal and state land management agencies, and other entities responsible for wildfire prevention and smoke management. In particular, improved advance notification, emissions forecasting, burn scheduling, and information sharing will be increasingly important to minimize smoke impacts during periods of poor atmospheric dispersion. For the San Joaquin Valley, these efforts will be critical to balancing the state's long-term wildfire resilience objectives with the District's responsibility to protect public health, reduce particulate matter exposure, and achieve federal air quality standards.

In the meantime, EPA's existing Exceptional Events Rule continues to require that prescribed fires satisfy applicable statutory and regulatory criteria before affected monitoring data may be excluded from certain regulatory determinations. These requirements include demonstrating a clear causal relationship between prescribed-fire emissions and affected monitoring data, as well as satisfying applicable smoke management and documentation requirements. Consequently, as prescribed burning expands, it will become increasingly important that burn activities, emissions estimates, meteorological conditions, smoke transport, and resulting air quality impacts are consistently documented and preserved to support potential exceptional-events demonstrations.

These developments create a growing tension between California's wildfire resilience objectives and federal air quality attainment requirements. While expanded prescribed burning is intended to reduce catastrophic wildfire risks and potentially avoid substantially greater future emissions, it also introduces additional PM_{2.5} and other combustion-related emissions into an air basin already facing significant challenges in attaining federal air quality standards. The federal attainment framework generally evaluates actual monitored concentrations rather than weighing near-term prescribed-

fire impacts against anticipated long-term wildfire benefits. Unless prescribed-fire-influenced monitoring data satisfy EPA's Exceptional Events requirements and EPA concurs with their exclusion, those concentrations may continue to affect the Valley's regulatory attainment status.

Going forward, successfully balancing these objectives will require closer coordination among CARB, the District, and state and federal land management agencies. As California accelerates prescribed burning, the state should also provide corresponding technical resources and support for emissions characterization, meteorological forecasting, smoke impact minimization, monitoring, and exceptional-events documentation. A coordinated statewide approach to emissions accounting and regulatory evaluations will be increasingly important to ensure that the state's wildfire resilience efforts are implemented in a manner that protects public health while supporting the Valley's continued progress toward attainment of federal air quality standards.

As the Valley approaches attainment, meteorological and topographic factors, upwind pollution transport (including wildfire and prescribed burning smoke), decrease funding for incentive programs, together with evolving state and federal regulatory requirements, and uncertainties surrounding mobile source emission reductions, present significant challenges for future air quality planning.

Valley Air Quality State Implementation Plans

Over the years, the District and CARB have adopted numerous SIPs, which serve as the primary mechanism for improving air quality in the Valley. These SIPs use extensive science and research, state-of-the-art air quality modeling, and the best available information to develop a strategy to bring the Valley into attainment with federal health-based air quality standards. Following the adoption of each attainment plan, the District implements plan strategies through regulatory development, outreach, continued research, and incentive programs.

Each successive attainment plan builds upon the emission reduction strategies and regulatory programs established through previous planning efforts, reflecting the District's long-term, cumulative approach to improving air quality throughout the San Joaquin Valley. Rather than representing emission reductions limited to a single planning period, these plans establish and strengthen programs that deliver sustained and additional emission reductions over time, often extending decades beyond their initial implementation. Consequently, each attainment plan represents an important milestone in the District's ongoing efforts to achieve federal air quality standards, with the collective benefits of past and current strategies continuing to support future attainment planning and long-term air quality improvements.

The attainment plans that the District has adopted in partnership with CARB are highlighted below, representing the exhaustive effort made to develop strategies to improve air quality in the Valley.

- **2003 Plan for the 1987 PM₁₀ Standards** – The *2003 PM₁₀ Plan* was a milestone for the Valley, bringing forward a broad suite of measures to reduce directly emitted particulate matter and precursor emissions to attain the federal standards for particulate matter 10 micrometers or less in diameter (PM₁₀). The plan included stringent controls on open burning, residential wood combustion, and fugitive dust from agricultural and construction activities. Among its most significant innovations was the establishment of the District's Conservation Management Practices approach for agricultural sources, the first of its kind in the nation, under which agricultural operations implement practices tailored to their individual operations to reduce fugitive PM₁₀ emissions. This approach has since served as a model for other air districts seeking effective, adaptable approaches to controlling agricultural emissions. The plan also included significant enhancements to Regulation VIII, the District's comprehensive fugitive dust control program. With these actions, the Valley achieved significant reductions and ultimately reached attainment of the particulate matter 10 microns or less in diameter (PM₁₀) standard leading to one of the most important public health achievements in the District's history.
- **2004 Plan for the 1979 1-Hour Ozone Standard** – The District's *2004 Extreme Ozone Attainment Demonstration Plan* was developed in response to EPA's classification of the San Joaquin Valley as an "Extreme" nonattainment area for the federal 1-hour ozone standard of 0.12 parts per million, and included a comprehensive strategy to achieve attainment by the extended 2010 deadline. Importantly, modeling indicated that the emission reductions needed to attain the standard were beyond what the District, CARB, or EPA could accomplish individually; consequently, attainment depended on a coordinated, multi-agency strategy. The plan included a suite of stringent control measures targeting stationary, area, and mobile sources, including vehicle standards, industrial controls, and agricultural best practices, along with contingency measures in case targets were not met. This division of responsibility reflected the reality that achieving the Valley's air quality goals required sustained action across all levels of government and continued reductions from every major source category. Despite subsequent regulatory and legal challenges to the plan, including EPA withdrawal of approval and CARB's later withdrawal, the plan laid the foundation for ongoing air quality improvements, contributing to the Valley's eventual attainment of the 1-hour ozone standard.
- **2006 Plan for the 1987 PM₁₀ Standards** – The *2006 PM₁₀ Plan* marked an important transition in the Valley's long-running effort to address particulate matter pollution. Building on the comprehensive controls adopted through the *2003 PM₁₀ Plan*, the 2006 Plan documented continued reductions in PM₁₀ emissions and ambient concentrations that indicated the District's adopted

strategy should succeed in helping the District attain and maintain the PM₁₀ standards in the Valley. This success demonstrated the effectiveness of the District's comprehensive approach to controlling fugitive dust across construction, agricultural, and other sources. The plan helped establish the foundation for EPA's subsequent formal attainment determination and the Valley's eventual redesignation to attainment, marking an important milestone in the Valley's long-term effort to address particulate matter pollution.

- **2007 Plan for the 1997 8-Hour Ozone Standard** – This plan addressed EPA's 1997 8-hour ozone standard of 84 parts per billion and established an ambitious strategy to achieve attainment by 2024. This plan marked a turning point in the Valley's approach, focusing on deep reductions in NO_x, the primary ozone-forming pollutant in the region. The plan contained an ambitious regulatory agenda for stationary and area sources, with the District committing to 19 new control measures targeting NO_x and VOCs. These measures included new and strengthened requirements for sources such as requiring further controls on glass manufacturing, boilers, turbines, coatings, and agricultural operations, along with additional evaluations of potential controls as technology and information developed. These strategies, combined with state and federal mobile-source controls, incentive programs, and other innovative emission-reduction strategies, established a comprehensive approach to achieving the substantial NO_x reductions needed to attain the standard. The plan also included a "black box" commitment, representing the substantial additional emission reductions needed to demonstrate attainment that had not yet been fully assigned to specific control measures. The District and CARB later fulfilled this commitment through a combination of stringent District control measures, mobile-source measures, and the District's voluntary incentive programs. Together, these efforts contributed to the Valley's continued progress toward ozone attainment and demonstrated the importance of combining enforceable regulatory requirements with innovative approaches to achieving additional emission reductions.
- **2008 Plan for the 1997 Annual PM_{2.5} Standard** – The *2008 PM_{2.5} Plan*, adopted by the District Governing Board in April 2008 and approved by CARB in May 2008, established the initial comprehensive attainment strategy for the 1997 annual PM_{2.5} standard of 15 µg/m³. The plan built upon the District's successful PM control strategies established through previous PM₁₀ plans, while also leveraging the substantial NO_x reductions implemented through the 2007 Ozone Plan. The plan included additional controls on directly emitted PM_{2.5} and its precursors from residential wood combustion, agricultural operations, industrial sources, and other stationary and area sources, complemented by state and federal mobile-source programs and incentive-based emission reductions. The 2008 Plan established the foundation for subsequent PM_{2.5} planning efforts, with later plans building upon its regulatory commitments, emission reductions, and technical analyses as the Valley worked toward increasingly stringent federal PM_{2.5} standards.

- **2012 Plan for the 2006 24-Hour PM2.5 Standard** – The *2012 PM2.5 Plan* addressed the 2006 24-hour PM2.5 standard of 35 µg/m³ and built upon the emission reductions and control strategies established through the *2008 PM2.5 Plan*. The plan incorporated a research-driven risk-based strategy designed to maximize public health improvements through the integration of emerging scientific knowledge into the District's control strategies, incentive programs, public communication, and enforcement actions. The plan included additional controls on residential wood combustion, agricultural sources, industrial operations, and other stationary and area sources, while placing increased emphasis on the need for mobile-source emission reductions and incentive programs to accelerate turnover of older, higher-emitting vehicles and equipment. The plan also incorporated extensive evaluations of potential control measures, as well as commitments for continued rule development, technology advancement, incentive funding, and public outreach. The plan represented an important step toward addressing the increasingly stringent PM2.5 standards and further established the cumulative, multi-sector approach that would be expanded in subsequent PM2.5 plans.
- **2013 Plan for the 1979 1-Hour Ozone Standard** – The District's *2013 Plan for the Revoked 1-Hour Ozone Standard* addressed remaining CAA requirements associated with the 1979 1-hour ozone standard, despite EPA's revocation of the standard in 2005. The plan provided an updated assessment of the Valley's progress toward attainment of the 0.12 parts per million standard. The plan was developed as the Valley was achieving significant improvements in ozone air quality; notably, 2013 marked the first year in recorded history with zero violations of the 1-hour ozone standard. EPA subsequently determined in 2016 that the Valley had attained the standard based on 2012-2014 monitoring data, marking the culmination of decades of increasingly stringent ozone control efforts and an important milestone in the Valley's long-term progress toward cleaner air.
- **2015 Plan for the 1997 Annual and 24-Hour PM2.5 Standards** – This plan provided the strategy for attaining the 1997 federal annual and 24-hour PM2.5 standards of 65 µg/m³ and 15 µg/m³, addressing the Valley's status as a Serious nonattainment area. Developed in partnership with CARB and adopted by the District Governing Board in April 2015, the plan built upon the control measures and emission reductions established through earlier PM2.5 planning efforts and set out additional strategies to achieve the reductions needed for attainment. The plan included a detailed emissions inventory and a comprehensive suite of control measures targeting key sources such as residential wood burning, agricultural operations, industrial processes, and mobile sources. It emphasized both regulatory and incentive-based programs to achieve significant reductions in direct PM2.5 and precursor pollutants, supported by air-quality modeling that demonstrated compliance with federal deadlines. The plan was crafted through extensive public outreach and stakeholder engagement, reflecting the Valley's commitment to meeting health-based air-quality standards and protecting public

health. Together, these efforts reinforced the Valley's multi-sector approach to PM_{2.5} attainment and provided an important foundation for subsequent plans addressing more stringent federal particulate matter standards.

- **2016 Plan for the 2012 Annual PM_{2.5} Standard** – The *2016 Moderate Area Plan for the 2012 PM_{2.5} Standard*, adopted by the District's Governing Board on September 15, 2016, addressed the CAA requirements for areas designated as Moderate nonattainment for the federal annual PM_{2.5} standard of 12 µg/m³. The plan evaluated the Valley's ability to attain the standard within the applicable timeframe and identified the additional emission reductions that would be needed to attain the standard. Building upon the District's existing stringent control strategy, this plan evaluated additional measures targeting direct PM_{2.5} and NO_x. The plan demonstrated that even with implementation of existing and additional reasonably available controls, attainment by the Moderate area deadline was impracticable. Recognizing the significant challenges associated with attaining the 12 µg/m³ PM_{2.5} standard, the plan formally requested that the Valley be reclassified from Moderate to Serious nonattainment. The plan consequently served as an important bridge between the initial Moderate-area planning requirements and more comprehensive Serious-area planning framework that followed, which required more extensive technical demonstrations, additional control measures, and a longer-term strategy for achieving attainment.
- **2016 Plan for the 2008 8-Hour Ozone Standard** – This plan established the District's strategy for achieving the 2008 ozone standard of 75 parts per billion, with a continued focus on deep reductions in NO_x emissions. Building on decades of developing and implementing stringent District rules, which had already achieved substantial emission reductions from stationary and area sources, the plan recognized the significant progress made under the Valley's existing control strategy and demonstrated that the District's regulatory measures met and exceeded CAA requirements. The plan established a particularly ambitious long-term trajectory, projecting more than a 60 percent reduction in Valley-wide NO_x emissions between 2012 and 2031 and providing for attainment of the 2008 ozone standard no later than December 31, 2031. The plan recognized that a substantial majority of remaining NO_x emissions would come from mobile sources outside the District's direct regulatory authority and therefore relied on a combination of continued implementation of the District's established control strategy, CARB mobile-source programs, incentive funding, technology advancement, transportation control measures, and state and federal advocacy. Its incentive strategy specifically considered heavy-duty trucks and other high-emitting mobile equipment, while also incorporating health benefits, environmental justice, community involvement, and cost-effectiveness into the evaluation of potential projects.
- **2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards** – This plan represented one of the most comprehensive and aggressive planning efforts

undertaken by the District, covering the 1997 annual PM_{2.5} standard of 15 µg/m³ and 24-hour PM_{2.5} standard of 65 µg/m³; the 2006 24-hour PM_{2.5} standard of 35 µg/m³; and the 2012 annual PM_{2.5} standard of 12 µg/m³. The plan included a robust set of stationary source measures, commitments for additional rule development, and reliance on both CARB's mobile source strategy and future federal action. Importantly, the plan emphasized the critical role of incentive funding, with billions of dollars necessary to replacing or retrofitting heavy-duty trucks, tractors, locomotives, and other equipment. The plan also included a five-year extension attainment date request for the 2006 24-hour standard.

Subsequent implementation has continued to build on this framework, including additional SIP revisions and incentive commitments as emission-reduction opportunities have evolved.

- **2022 Plan for the 2015 8-Hour Ozone Standard** – This plan builds on decades of regulatory actions, and includes a variety of measures targeting further NO_x and VOC emissions reductions from mobile and area sources, as well as a number of areas of further study to determine whether additional reductions may be possible in the future as technology advances. This plan included transportation control measures from regional planning organizations, robust mobile-source regulations from CARB, and District-level stationary and area source rules. The plan phases in more stringent standards for heavy and light-duty fleets and off-road equipment, while leveraging incentive programs and other innovative strategies to close remaining gaps. Recognizing that the remaining reductions are increasingly challenging to achieve, the plan also identifies opportunities for additional measures and further technological development, including areas for continued study as cleaner technologies become more available. Together, these strategies provide a roadmap for continued progress toward attainment of the 2015 8-hour ozone standard of 70 parts per billion, and reflect the District's ongoing commitment to pursuing every feasible opportunity to improve air quality and protect public health. Since adoption, federal actions affecting key mobile source programs have prompted CARB to revise its emission reduction commitments through the *2026 Extreme Ozone SIP Revision*, which is discussed in greater detail later in this document.
- **2023 Contingency Measure SIP Revision for the 1997, 2006, and 2012 PM_{2.5} Standards** – This SIP revision addressed CAA contingency measure requirements for the 1997 annual, 2006 24-hour, and 2012 annual PM_{2.5} standards. The revision was developed in response to EPA's disapproval of the Valley's previously approved contingency measure elements for these standards, and provided a comprehensive evaluation of potential contingency measures under the District's regulatory authority. The District Governing Board adopted the revision on May 18, 2023, along with amendments to Rule 4901 (Wood-Burning Fireplaces and Wood-Burning Heaters) and subsequently adopted amendments to Rule 8051 (Open Areas) on September 21, 2023. The SIP revision also incorporated a contingency measure under CARB's authority through the statewide Smog Check program. Together, these measures

provided additional reductions in directly emitted PM_{2.5} and PM_{2.5} precursors while establishing an enforceable mechanism to achieve reductions if the Valley failed to meet specified CAA milestones. The District and CARB also conducted an extensive infeasibility analysis to identify and evaluate other potential contingency measures, reflecting the increasingly limited availability of additional locally controlled measures as the District's rules have become progressively more stringent. EPA approved the SIP revision October 4, 2024, however, on August 5, 2026, the Ninth Circuit Court of Appeals issued a decision in *Committee for a Better Arvin v. EPA*, remanding EPA's approval without vacatur, finding that the Clean Air Act does not authorize EPA to exempt contingency measures from emission reduction requirements based on infeasibility. The court's decision and its implications for the District's contingency measure SIP revision are discussed later in this document.

- **2024 Contingency Measure SIP Revision for the 2008 and 2015 8-Hour Ozone Standards** – Adopted by the District on April 25, 2024, this SIP revision addressed contingency measure requirements for the 2008 and 2015 8-hour ozone standards. The revision built upon the District's existing architectural coatings contingency measure and CARB's statewide Smog Check contingency measure. This SIP revision provided an extensive analysis of potential additional contingency measure opportunities across stationary, area, and mobile source categories, considering existing regulatory requirements, technological feasibility, implementation timelines and potential for additional emission reductions. Despite difficulty in identifying additional measures, the District committed to adopt five additional contingency measures related targeting VOC emissions from coating operations. Together, the revision and associated commitments strengthened the District's contingency measure strategy while documenting the challenges of identifying additional qualifying measures under increasingly stringent federal requirements and an established emissions-control program.
- **2024 Plan for the 2012 Annual PM_{2.5} Standard** – This plan represents the latest step in the region's ongoing effort to meet federal health-based standards for PM_{2.5}. Adopted by the District Governing Board in June 2024, this plan established an updated strategy for attaining the 2012 federal annual PM_{2.5} standard of 12 µg/m³ throughout the San Joaquin Valley. Building upon decades of progressively more stringent control measures, the plan included District commitments to achieve additional emissions reductions from regulatory and incentive-based measures, and included innovative further study measures to evaluate additional opportunities and technologies as they become available through the plan's attainment year of 2030. In addition to the District's strategies, the plan incorporated CARB's *2022 State Strategy for the State Implementation Plan*, which includes a number of commitments to reduce emissions from mobile sources. The plan also incorporates a health-risk reduction strategy and continued evaluation of emerging technologies and additional control opportunities, recognizing the challenges of achieving further reductions after decades of increasingly stringent controls. Together, these measures establish a

coordinated, multi-sector framework for addressing the remaining emissions needed to attain the federal standard and improving public health throughout the Valley. Since adoption, federal actions affecting certain state mobile source programs and associated waivers have created uncertainty regarding some of the emission reductions anticipated in the plan, as discussed in greater detail later in this document.

Through commitments from past attainment plans, the District and CARB have adopted numerous control measures that have significantly reduced emissions from sources in the Valley, including a number of recent measures adopted by the Board to fulfill commitments from the *2018 PM2.5 Plan*, the *2022 Ozone Plan*, and the *2024 PM2.5 Plan*. Importantly, the benefits of these regulatory programs extend beyond the reductions already achieved, as ongoing implementation, increasingly stringent compliance requirements, and future implementation milestones will continue to deliver additional emission reductions in the coming years. These sustained and anticipated reductions provide an important foundation for the Valley's current and future attainment strategies and continued progress toward meeting federal ozone and PM2.5 air quality standards.

Continuing the Valley's Air Quality Progress: The Path Ahead for Attainment

Finding approvable strategies for these plans are essential to avoid CAA induced economic sanctions and loss of local regulatory control. For decades, the District has worked with CARB and EPA to adopt attainment plans for a number of federal ambient air quality standards, with focus in recent years on addressing the latest 8-hour ozone and PM2.5 standards promulgated by EPA. The District has worked to implement the strategies included within these plans to improve the Valley's air quality, and is continually working with EPA to address applicable requirements and obtain the necessary approvals required under the CAA. Air quality planning and regulatory efforts have become increasingly complex as federal air quality standards grow more stringent, guidance remains limited or unclear, and courts continue to issue rulings that shape implementation across multiple areas.

In addition to the public health importance of meeting health-based air quality standards, ensuring that state and federal mandates are adequately addressed is critical to avoiding major punitive consequences for the Valley under the CAA. EPA disapproval or inaction causes regulatory uncertainty, leading to inefficiencies and confusion, and can also result in consequences to public health and the economy. Under the CAA, local jurisdictions could be subject to devastating federal sanctions even though failure to attain the standards may be due to emissions from sources under federal jurisdiction. These federal sanctions include:

- Permitting barriers for new and expanding businesses (2:1 offset requirement)
- Loss of federal highway funds (\$4.6 billion and numerous jobs lost in the San Joaquin Valley)

- Federal takeover and loss of local control
- Expensive federal nonattainment penalties

As the District moves forward in addressing CAA mandates, it is imperative that adequate state and federal support be provided in identifying feasible solutions, particularly as it relates to mobile sources, to ensure that the Valley is well positioned to meet its mandates and meet clean air goals.

Active District Plan Development

Below is a detailed overview of the District's air quality plans currently under development, highlighting attainment strategies, key emission reduction challenges, and the coordinated approaches being pursued to close existing emission gaps and achieve federal standards.

2022 Ozone Plan and 2026 Extreme Ozone SIP Revision for the 2015 Ozone Standard – The District's *2022 Ozone Plan* was developed to demonstrate attainment of the 2015 8-hour ozone standard by 2037 and relied on substantial additional emission reductions from state-regulated mobile sources and augmented by local control measures for stationary and area sources. Since the District Governing Board's adoption of the plan, however, several key CARB mobile source programs have been affected by federal actions, including the Congressional Review Act disapproval of waivers and authorizations for the Advanced Clean Trucks, Heavy-Duty Omnibus, and other regulations; withdrawal of waiver or authorization requests for other programs; and EPA's partial SIP disapproval of CARB's Heavy-Duty Inspection and Maintenance program. As a result, reductions originally attributed to several specific mobile source regulations can no longer be relied upon for SIP credit as originally contemplated.

To address these changes and support EPA approval of the 2022 Ozone Plan, CARB adopted the 2026 Extreme Ozone SIP Revision on July 23, 2026, which was submitted to EPA on September 23, 2026. The Revision updates the state's emission reduction commitments (including addition of advanced technology emissions reduction commitments under 182(e)5 of the Clean Air Act), planning emission inventories, reasonable further progress demonstration, and motor vehicle emission budgets, while maintaining the overall level of emission reductions relied upon in the Valley's original attainment demonstration. The District and CARB are awaiting final EPA approval on this submittal and is expecting EPA to act by the court ordered deadline of January 15, 2027.

2024 PM_{2.5} Plan for 2012 Annual PM_{2.5} Standard – The District Governing Board adopted the *2024 Plan for the 2012 Annual PM_{2.5} Standard (2024 PM_{2.5} Plan)* on June 20, 2024, establishing a comprehensive strategy to attain the 12 µg/m³ annual PM_{2.5} standard. CARB adopted the plan on July 25, 2024, and submitted it to EPA on August 22, 2024. The plan requests the maximum five-year attainment date extension available under Clean Air Act section 188(e) and demonstrates attainment by December 31, 2030.

The plan relies on the District's stringent stationary and area source control program (i.e., constituting Most Stringent Measures), continued implementation of existing state and federal mobile source programs, and additional emission reduction commitments necessary to achieve attainment. Since adoption of the plan, however, changes to state mobile source programs and the withdrawal of associated federal waivers have created uncertainty regarding some of the NO_x emission reductions anticipated in the attainment strategy.

This issue is particularly significant for PM_{2.5} because, unlike the Clean Air Act provisions applicable to Extreme ozone areas, there is no comparable Section 182(e)(5) "black box" authority for PM_{2.5} that allows unidentified future technologies or control strategies to satisfy an attainment plan emission reduction commitment at a later date. Consequently, reductions that can no longer be credited from individual mobile source programs may need to be addressed through other enforceable state or federal measures while maintaining the aggregate reductions necessary to demonstrate attainment.

This distinction places increased importance on identifying replacement mobile source reductions. The District will continue to evaluate opportunities for further reductions from stationary and area sources; however, the District's regulatory program already reflects extensive controls developed through successive PM_{2.5} attainment plans. Accordingly, continued reductions from sources primarily regulated by CARB and EPA will remain important to maintaining the emission reduction trajectory necessary to attain the 2012 annual PM_{2.5} standard.

On June 11, 2026, EPA proposed to approve the five-year attainment date extension, which would establish December 31, 2030, as the applicable attainment date. Separately, environmental organizations filed litigation on May 5, 2026, seeking to compel EPA to take final action on the entire Plan. Given the potential for EPA action on the plan in 2027, CARB and the District are working closely to evaluate the implications of the withdrawn waivers, identify additional emission reduction opportunities, and develop the technical analyses necessary to support EPA approval of the plan or any subsequent revisions.

Importantly, although the withdrawal of federal waivers creates a potential shortfall in anticipated NO_x reductions, there are several encouraging developments and additional opportunities that could help address this challenge. The Valley's observed annual PM_{2.5} concentrations have been improving at a faster rate than originally projected in the plan through implementation of existing District and CARB emission reduction measures that continue to achieve new reductions, providing a potentially stronger foundation for demonstrating attainment by 2030. In addition, several contingency measures have recently been triggered that were not fully reflected as implemented measures in the original attainment modeling. These include strengthened residential wood burning restrictions under District Rule 4901, which lower the Level One curtailment threshold to 12 µg/m³ throughout the Valley and eliminate the previous

distinction between hotspot and non-hotspot counties; expanded fugitive dust control requirements for rural open areas under Rule 8051; and additional emission reductions anticipated from implementation of CARB's Smog Check contingency measure.

Beyond these regulatory measures, the District and CARB are evaluating additional opportunities to achieve reductions beyond those currently reflected in the Plan. These include further reductions through the District's residential wood burning incentive programs, whose full potential benefits have not been credited in the attainment demonstration, opportunities to direct additional incentive funding toward cost-effective PM_{2.5} and precursor emission reductions, and additional mobile source control strategies being evaluated by CARB. The District and CARB are also assessing how the Valley's improving ambient air quality trends, updated emissions inventories, and other available technical information may strengthen the attainment demonstration and help address potential emission reduction shortfalls.

While additional analysis will be necessary to determine the extent to which these improvements and measures can be incorporated into a revised attainment demonstration, they provide meaningful opportunities to address the challenges created by the withdrawn waivers. The District and CARB remain committed to pursuing all available emission reduction strategies and strengthening the technical foundation of the Plan, with the goal of demonstrating attainment of the 2012 annual PM_{2.5} standard by the December 31, 2030 deadline.

2027 PM_{2.5} Plan for the 2006 24-hour PM_{2.5} Standard – On July 22, 2020, EPA approved portions of the District's *2018 PM_{2.5} Plan* and CARB's *San Joaquin Valley Supplement to the 2016 State Strategy* for the 2006 24-hour PM_{2.5} standard and granted California's request under Clean Air Act section 188(e) to extend the Valley's Serious area attainment date from December 31, 2019, to December 31, 2024. In *Medical Advocates for Healthy Air v. EPA*, the Ninth Circuit subsequently upheld EPA's approval of the District's most stringent measures analysis but vacated EPA's approval of CARB's aggregate emission reduction commitment. Because EPA had relied upon approval of that aggregate commitment in granting the attainment date extension, EPA subsequently determined that its approval of the extension was in error.

EPA finalized an error correction on June 11, 2026, denying the previously approved extension and reestablishing December 31, 2019, as the applicable attainment date. EPA concurrently determined, based on certified 2017–2019 monitoring data, that the Valley failed to attain the standard by that date. EPA's error correction creates an unusual planning timeline because the statutory deadline that ordinarily would have applied to the resulting plan had already passed.

Clean Air Act section 189(d) generally requires a Serious PM_{2.5} nonattainment area that fails to attain to submit a new attainment plan within twelve months of the applicable attainment date. Restoring the Valley's attainment date to December 31, 2019, would therefore have produced a plan submittal deadline of December 31, 2020, more than five years before EPA made the determination that triggered the requirement.

EPA concluded that applying this deadline retroactively would be impracticable and instead applied the general nonattainment provisions of section 179(d), providing California one year from publication of EPA's June 11, 2026 final action to submit the new plan, with a June 11, 2027 submittal designation.

The resulting plan, commonly referred to as a "5% Plan," must demonstrate attainment of the 2006 24-hour PM_{2.5} standard as expeditiously as practicable and provide for annual emission reductions of not less than five percent in either direct PM_{2.5} or a PM_{2.5} plan precursor pollutant for each year from plan submittal until attainment. Importantly, the 5% requirement is an emissions reduction calculation, not a 5% annual reduction in ambient PM_{2.5} concentrations. The annual reduction is calculated against the amount of direct PM_{2.5} or the selected PM_{2.5} plan precursor (NO_x) reported in the area's most recent emissions inventory. EPA's failure to attain determination also triggered implementation of the previously approved contingency measures in District Rules 4901 and 8051 and CARB's Smog Check Contingency Measure.

In addition to the 5% emission reduction requirement, EPA's final action requires the new SIP revision to include an attainment demonstration showing expeditious attainment, reasonable further progress, contingency measures, and updated quantitative milestones to be achieved every three years until the Valley is redesignated to attainment.

The District is working closely with CARB to develop the new 5% Plan, including updated emissions inventories and modeling, evaluation of the appropriate pollutant or precursor for demonstrating the required annual reductions, control measure analysis, and establishment of the earliest practicable attainment date. This evaluation will inform the development of an approvable strategy that accounts for ongoing emission reductions and satisfies both the annual 5% requirement and the requirement for expeditious attainment.

In terms of initial projections, the applicable federal PM_{2.5} implementation rule provides flexibility through a "stepwise" approach for demonstrating the required annual 5% emission reductions. Given the Valley's continued downward trend in PM_{2.5} concentrations, substantial emission reductions achieved in recent years, and additional reductions projected from existing and anticipated programs, including incentives, preliminary analyses suggest a potentially favorable pathway for demonstrating the required annual 5% reductions within the Clean Air Act's ten-year attainment planning timeframe. While additional technical analyses and emissions inventory updates are necessary to confirm these projections, the initial results provide an encouraging indication that the required reductions may be achievable.

As the District and CARB continue developing the 2027 PM_{2.5} Plan, a comprehensive public engagement process will be undertaken to provide opportunities for input from residents, community organizations, environmental groups, regulated industries, local governments, and other interested stakeholders. The District and CARB recognize the importance of an open and collaborative planning process to identify potential emission

reduction opportunities, consider stakeholder recommendations, and develop a technically sound and approvable plan. The District and CARB are currently developing a public outreach and engagement strategy, which will be shared in the near future and will include opportunities for stakeholder participation in the plan development process.

Regulatory Measures Achieving Ongoing and Future Emission Reductions – The District’s regulatory authority is limited to stationary sources and area-wide sources. Since 1992, the District has adopted over 670 rules to implement an aggressive on-going control strategy to reduce emissions in the Valley from these sources. Many current rules are fourth- or fifth-generation, meaning that they have been revised and emission limits have been lowered, as new emission control technologies become available, technologically feasible, and cost-effective. Additionally, the District has adopted many technology-forcing rules, including amendments to District rules for boilers, steam generators, and process heaters. The District has also adopted innovative regulations such as the Indirect Source Review and Employer-based Trip Reduction rules to reduce emissions from mobile sources.

The stringent regulations adopted under the District’s attainment plans serve as the foundation of future control strategies. These rules provide ongoing emission reductions as facilities and operations comply with established requirements, implement cleaner technologies, and meet phased-in compliance schedules. In addition to reductions already being achieved, adopted requirements with future implementation dates are expected to provide further benefits as compliance milestones take effect. This continued progress is particularly important for reducing NO_x and PM_{2.5} emissions from stationary and area sources (See Table 2).

Table 2 – Emissions Reduction Rules (Ongoing and Future Implementation)

District Rule		Action Date	Implementation Begins
Adopted Regulations Achieving Reductions on and after 2017			
2201	New and Modified Stationary Source Review Rule	2023	Ongoing
4103	Open Burning	2021	2021-2025
4308	Boilers, Steam Generators, and Process Heaters - 0.075 MMBtu/hr to Less than 2.0 MMBtu/hr	2013	2015-2034
4311	Flares	2020	2024
4306/4320	Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr	2020	2024
4352	Solid Fuel Fired Boilers, Steam Generators, and Process Heaters	2021	2024
4354	Glass Melting Furnaces	2021	2024, 2030
4550	Conservation Management Practices	2004	Ongoing
4702	Internal Combustion Engines	2021	2024, 2030
4901	Wood Burning Fireplaces and Wood Burning Heaters	2023	2019
4902	Residential Water Heaters	2009	2010-2024
4905	Natural Gas-Fired, Fan-Type Central Furnaces	2024	2015-2045
9510	Indirect Source Review	2017	Ongoing
9610	State Implementation Plan Credit for Emission Reductions Generated Through Incentive Programs	2013	Ongoing
Reg. VIII	Fugitive PM ₁₀ Prohibitions	2004	Ongoing
New Regulatory and Incentive-Based Commitments			
4550	Conservation Management Practices	2026	2028
4901	Residential Wood Burning	2025	2026
-	Fireplace and Woodstove Change-Out Program	Ongoing	Ongoing
-	Low-Dust Nut Harvester Replacement Program	Ongoing	Ongoing

*2024 Plan for the 2012 Annual PM_{2.5} Standard, Chapter 4, Table 4-2

Building on the existing stringent regulatory program, the District continues to evaluate and pursue additional emissions reductions from industrial and other sources under its jurisdiction. Based on ongoing review and feedback from the Board and public, some ongoing efforts include:

- Additional emissions reduction opportunities for stationary sources
- Enhancements to Conservation Management Practice requirements, including addressing fallowed lands in the context of Sustainable Groundwater Management Act (SGMA) implementation, and increasing incentives for the deployment of conservation tillage practices
- Enhancements to the underfired charbroiler emission reduction strategy, including technology advancement opportunities, additional pilot deployment of new technologies with focus on large operations near sensitive receptors, and opportunities for addressing new large sources (e.g. enhanced land use agency engagement, incentive programs, etc.)
- Enhancements to residential wood smoke reduction requirements that build on existing stringent requirements
- Ongoing evaluation of emerging alternatives to open burning through the adopted phase-out strategy

Continued implementation of the District's regulatory program is essential to realizing the emission reduction benefits anticipated in the Valley's attainment plans. Maintaining compliance with existing requirements, completing future implementation milestones, and building upon proven control strategies will help preserve and accelerate emission reduction progress. Together with sustained investment in incentive-based programs and continued state and federal action, the District's local regulatory measures remain a critical component of the Valley's comprehensive strategy to attain federal ozone and PM2.5 standards and protect public health.

Additional Planning and Regulatory Requirements

Transportation Conformity – The federal Clean Air Act requires the transportation conformity process to ensure that federally funded or approved transportation plans, programs, and projects are consistent with the applicable SIP and do not cause or contribute to a new air quality violation, worsen an existing violation, or delay attainment of a federal air quality standard. Before federally supported transportation projects can proceed, the applicable regional transportation plan and Federal Transportation Improvement Program must demonstrate conformity with the SIP.

A key component of this process is the Motor Vehicle Emissions Budget (MVEB). Developed by CARB as a required element of the SIP and ultimately approved or found adequate by EPA for conformity purposes, an MVEB establishes the maximum amount of emissions from on-road motor vehicles that can be accommodated while remaining consistent with the SIP's air quality planning requirements. For ozone, separate

budgets are established for NO_x and reactive organic gases (ROG) for applicable reasonable further progress milestone years and the attainment year. MPOs must demonstrate that projected emissions associated with their transportation plans and programs do not exceed these budgets.

The 2026 Extreme Ozone SIP Revision updates the Valley's MVEBs to use EMFAC2021, EPA's currently approved California motor vehicle emissions model, and to account for recent federal actions affecting several California mobile source regulations. Importantly, the previous budgets incorporated emission reductions from regulations subsequently affected by federal waiver actions and EPA's partial SIP disapproval of the Heavy-Duty Inspection and Maintenance program. CARB therefore revised the budgets to remove reductions that can no longer be credited for SIP purposes and to incorporate updated transportation activity data.

The Revision provides two approaches for demonstrating transportation conformity in the San Joaquin Valley: individual MPO-specific budgets and a combined, Valley-wide budget. Under the MPO specific approach, each of the Valley's eight MPOs evaluates its Regional Transportation Plan and Federal Transportation Improvement Program against its own NO_x and ROG budgets, allowing conformity to be demonstrated independently within each MPO jurisdiction. Under the combined, or area-wide, approach, emissions associated with the transportation plans and programs of all eight Valley MPOs are evaluated collectively against a single San Joaquin Valley emissions budget. Each MPO continues to make its own conformity determination, but the eight MPOs must coordinate their regional emissions analyses so that their combined emissions remain within the Valley-wide budget.

Because some individual Valley MPOs currently cannot demonstrate conformity using their respective MPO-specific budgets at this time, the combined Valley-wide budget is expected to provide the primary conformity pathway for the foreseeable future. Continuing to resolve these conformity issues is critical to protecting access to billions of dollars in federal and state transportation funding supporting congestion relief, public safety improvements, and transportation projects that can themselves provide important air quality and emissions reduction benefits.

In addition to the updated ozone MVEBs, the District and CARB are developing the *2027 PM_{2.5} Plan for the 2006 24-hour PM_{2.5} standard*, which will require updated MVEBs consistent with the Plan's revised emissions inventories, attainment strategy, and applicable transportation conformity requirements. Potential technical updates or revisions to the *2024 PM_{2.5} Plan for the 2012 annual PM_{2.5} standard* may also necessitate revisions to the associated MVEBs to reflect updated emissions projections and planning assumptions.

As these planning efforts proceed, it will be important to ensure that the resulting budgets are technically justified, consistent with federal conformity requirements, and provide feasible pathways for the Valley's eight Metropolitan Planning Organizations (MPOs) to demonstrate transportation conformity. The District will continue working

closely with CARB and EPA to advocate for the development and approval of MVEBs that satisfy federal air quality planning requirements while accommodating the Valley MPOs' transportation planning needs and preserving access to critical transportation funding.

Contingency Measures – Contingency measures required under the federal Clean Air Act have historically presented a significant challenge for nonattainment areas. Section 172(c)(9) requires SIPs to include specific measures that take effect if an area fails to make reasonable further progress or attain the applicable air quality standard by the required attainment date. Developing measures that satisfy these requirements is particularly challenging in the San Joaquin Valley, given the extensive controls already adopted and the limited opportunities to identify additional measures capable of providing timely, quantifiable emission reductions.

PM2.5 Contingency Measures – 1997, 2006, and 2012 Standards - Over the past several years, the District, in coordination with CARB, has developed and adopted contingency measures addressing the Valley's PM2.5 standards. These efforts included a contingency measure SIP revision adopted in May 2023, amendments to Rule 4901 establishing additional residential wood-burning restrictions, and amendments to Rule 8051 expanding fugitive dust control requirements for rural open areas. CARB also adopted a Smog Check contingency measure applicable to the Valley. In October 2024, EPA approved the District's PM2.5 contingency measure SIP revisions, including Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters) and Rule 8051 (Open Areas) measures and consideration of emission reductions from CARB's separately approved Smog Check contingency measure, as satisfying the applicable requirements for the 1997 annual, 2006 24-hour, and 2012 annual PM2.5 standards.

However, on August 5, 2026, the Ninth Circuit issued its decision in *Committee for a Better Arvin v. EPA*, concluding that EPA had improperly interpreted Section 172(c)(9) to allow a feasibility-based exemption from the statutory contingency measure requirements. The court determined that the Clean Air Act does not authorize EPA to take “feasibility” into account when evaluating potential contingency measures. Importantly, the court remanded EPA's approval without vacating it, allowing the existing contingency measures to remain in place while EPA reconsiders its action.

The decision creates additional regulatory uncertainty for the Valley and other nonattainment areas that have already implemented extensive emission controls. The District will continue coordinating with CARB and EPA to evaluate the implications of the decision. A petition for rehearing en banc has been filed by EPA, CARB and the District, to urge the Ninth Circuit to re-hear and reconsider the contingency measure ruling. Several states, including Alaska, Alabama, Arkansas, Idaho, Indiana, Louisiana, Missouri, Montana, Nebraska, and Colorado, as well as the South Coast Air Quality Management District, have filed amicus briefs in support of the petition for rehearing.

2008 Ozone Contingency Measures - In April 2024, the District adopted the *2024 Ozone Contingency Measure SIP Revision* addressing the 2008 and 2015 8-hour ozone standards. The revision included existing contingency measures, commitments to develop additional measures, and analyses of other potential emission reduction opportunities.

In June 2026, EPA finalized conditional approval of the contingency measure submission for the 2008 ozone standard. The conditional approval recognizes existing contingency measures and relies on commitments to develop additional VOC emission reductions through amendments to five District coating rules. The District has initiated the rule development process, including technical evaluations and stakeholder engagement, to fulfill these commitments and support Governing Board consideration by the applicable June 2027 deadline.

EPA's conditional approval also provides important regulatory protections, including relief from previously triggered federal sanctions associated with deficiencies in the Valley's 2008 ozone contingency measure SIP. Successful adoption and submission of the committed rule amendments will be important to maintaining this approval and fully resolving the outstanding contingency measure requirements.

2015 Ozone Contingency Measures - EPA has not yet taken final action on the 2015 ozone portion of the *2024 Ozone Contingency Measure SIP Revision*. Under the revised schedule associated with ongoing legal proceedings, EPA is expected to take final action in early 2027. The pending action presents additional regulatory considerations, particularly in light of recent judicial decisions addressing the Clean Air Act's contingency measure requirements.

The District continues to work closely with CARB and EPA to assess the implications of recent judicial decisions, evaluate available regulatory and SIP planning options, and identify a viable path forward for addressing the outstanding 2015 ozone contingency measure requirements. These efforts are focused on developing an approach that is consistent with evolving federal requirements, recognizes the extensive emission controls already implemented in the Valley, and provides a practical and legally defensible framework for resolving the outstanding contingency measure issues. The District will continue to monitor developments and provide updates to the Board as appropriate.

SIP Emissions Inventory – Emissions inventories are one of the fundamental building blocks of air quality planning. An emissions inventory estimates the amount of air pollution emitted from sources within a defined geographic area and period of time; it is distinct from ambient air quality monitoring, which measures pollutant concentrations in the air. For SIP purposes, the inventory provides the emissions data used as a primary input to air quality modeling and attainment demonstrations, to identify and evaluate potential control strategies, to demonstrate Reasonable Further Progress (RFP), to

establish Motor Vehicle Emissions Budgets for transportation conformity, and to track progress toward required emission reductions and attainment.

The Valley's emissions inventory encompasses the full range of emission generating activities, including:

- Stationary sources, such as industrial facilities and power generation
- Area-wide sources, such as residential wood combustion, commercial cooking, agricultural operations, road dust, and consumer products
- On-road mobile sources, including passenger vehicles and heavy-duty trucks
- Off-road mobile sources, including agricultural and construction equipment, locomotives, aircraft, and other equipment.

CARB and the District share responsibility for developing and maintaining these inventories. For permitted stationary sources, the District annually collects and reviews facility-specific activity data, emission factors, source-test information, and, where applicable, continuous emissions monitoring data, with additional quality assurance performed by CARB before incorporation into the statewide emissions inventory.

The District and CARB have been working throughout 2025 and 2026 to develop an updated emissions inventory. This effort is more than simply updating the year of the inventory. CARB and the District are incorporating the latest available activity information, emission factors, regulatory requirements, control efficiencies, and improved estimation methodologies so the inventory reflects the best current understanding of emissions in the Valley. This updated inventory work includes updates to numerous important Valley source categories, including agricultural harvesting and land preparation, livestock and dairy operations, farm and non-farm road dust, paved road dust, construction, residential wood combustion, commercial cooking, and other area sources.

Several of these updates are particularly significant for the San Joaquin Valley. Residential wood combustion is being updated using more current census and survey information and updated wood-stove emission factors. Commercial cooking, including charbroiling, is being updated using information on the number and types of restaurants and cooking devices and the amount and type of food cooked. Agricultural inventory changes include updates to tilling/land preparation, harvesting, farm road dust, livestock and dairy operations, and related activity assumptions. CARB is also updating mobile source inventories, while the District updated the stationary source emissions using the most current facility specific information.

Fire related emissions also received significant methodological changes. During the 2025–2026 inventory cycle, CARB substantially revised its prescribed fire methodology for the 2023 emissions inventory, integrating activity information from local, state, and federal agencies, reconciling multiple datasets, using satellite fire detection information where burn dates are unavailable, refining fuel-consumption assumptions, and distinguishing emissions by combustion phase and burn type. The resulting inventory is

spatially and temporally resolved to provide day-by-day emissions and location information.

Importantly, changes to the emissions inventory do not necessarily represent actual increases or decreases in air pollution. Because an inventory is an estimate rather than an ambient measurement, an inventory value may change when improved activity data, emission factors, source characterization, or calculation methodologies become available. These refinements are important because a more accurate inventory improves the foundation for air quality modeling and helps ensure that future control strategies are directed toward the sources and activities that provide the greatest opportunity for measurable air quality improvement.

The updated emissions inventory will establish an important new planning foundation for the Valley's upcoming SIP work, including development of the newly required 5% Plan for the 2006 24-hour PM_{2.5} standard and future planning for the 2024 annual Federal PM_{2.5} standard. The District will continue working closely with CARB to understand the effects of individual methodology changes, ensure that Valley specific information is appropriately represented, and evaluate how updated emissions estimates affect modeling, control strategy development, reasonable further progress, transportation conformity, and future attainment demonstrations.

While emissions inventories provide an essential foundation for air quality planning by quantifying the emissions generated by various source categories, the relationship between emissions and ambient air quality concentrations is not necessarily proportional or one-to-one.

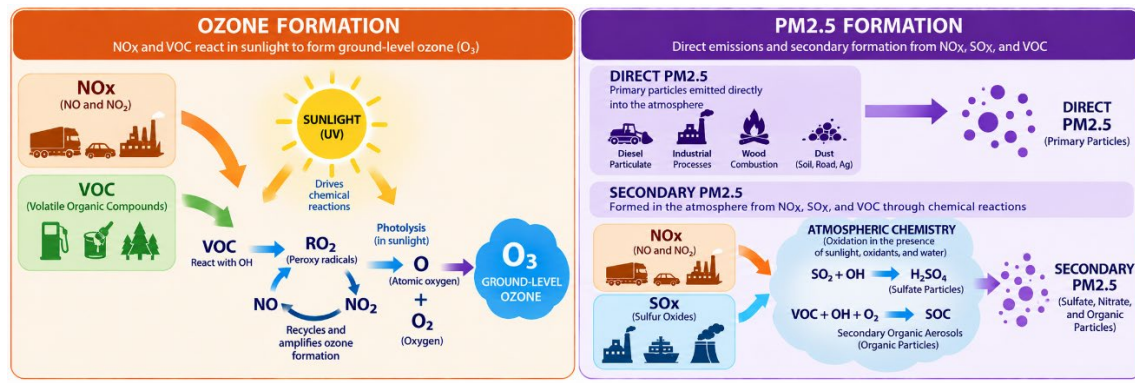
Ground-level ozone is formed through complex photochemical reactions involving NO_x and VOC in the presence of sunlight, while PM_{2.5} consists of both directly emitted particles and secondary particles formed through atmospheric reactions involving NO_x, and other precursors. Consequently, the percentage of total emissions attributed to an individual source category does not necessarily represent that category's proportional contribution to measured ozone or PM_{2.5} concentrations.

The formation and accumulation of these pollutants depend not only on the quantity and chemical composition of emissions, but also on where and when emissions occur, including their proximity to other precursor emissions, time of day, seasonal variations, atmospheric transport, temperature, sunlight, and meteorological conditions. For example, emissions occurring during periods of intense summer sunlight may have different ozone-forming impacts than comparable emissions occurring at night or during winter, while wintertime atmospheric stagnation and cooler temperatures can favor the formation and accumulation of secondary PM_{2.5}.

Accordingly, emissions inventory illustrate the relative contributions of source categories to total emissions, but do not independently establish their contributions to ambient pollutant concentrations or attainment challenges. This distinction underscores the importance of integrating detailed emissions inventories with ambient monitoring,

atmospheric chemistry, and photochemical modeling to accurately evaluate source contributions, identify effective emission reduction strategies, and develop scientifically supported attainment plans for the Valley (See Figure 4).

Figure 4 – Ozone and PM2.5 Formation



District Air Quality Modeling – The District works with CARB to conduct the modeling and technical evaluations needed to develop federally-required attainment plans. While CARB is responsible for conducting overall regional modeling for plans, in support of locally-driven strategy development, the District uses its in-house state-of-the-art air quality modeling system to assist in verifying the accuracy of state modeling, understanding the extent of air quality challenge and needed emissions reductions, and evaluating the effectiveness of various emission reduction measures in the attainment strategy. The District Governing Board invested in establishing this modeling system a number of years ago, including staffing resources, which has provided critical support to establish air quality improvement strategies for ozone and PM2.5, working closely with CARB.

To support the current air quality planning efforts for the annual PM2.5 standard of 12 $\mu\text{g}/\text{m}^3$ and the 24-hour PM2.5 standard of 35 $\mu\text{g}/\text{m}^3$, the District is working closely with CARB to evaluate the effectiveness of various measures that could be included in the strategy of these plans. In more detail, the District's modeling system is being used to understand the PM2.5 benefits of emissions reductions from completed incentive projects not yet reflected in the baseline emissions inventories for these plans. This includes wood burning device change-outs, implementation of low-dust nut harvesters, and replacement of agricultural tractors with cleaner models. As a step further, the District is evaluating the effectiveness of emissions reductions from future incentive projects being completed with remaining available funding.

In addition to these potential measures, CARB is also considering what mobile measures could be included in the updated PM2.5 plans, in light of recent EPA and CRA actions described previously. CARB is working through strategic updates to its mobile source strategy, which could bring additional emissions reductions and be reflected in the PM2.5 SIPs under development.

Outside of the PM_{2.5} plans currently being developed, the District is also evaluating a number of key questions to support future planning efforts, including considerations of natural background levels of PM_{2.5}, transport of pollution from areas outside of the Valley, transport of international emissions from across the Pacific Ocean impacting the Valley's air quality, and the impact of significantly increased prescribed burning activity in the region to meet state fuel reduction goals. Additionally, the District continues to work with CARB to evaluate their modeling of potential mobile source emission reduction scenarios.

An additional consideration in evaluating future attainment strategies is the influence of changing climatic and meteorological conditions on atmospheric chemistry and modeled air quality concentrations. Changes in temperature, humidity, precipitation patterns, atmospheric stability, and mixing conditions can influence the formation, transport, transformation, and removal of ozone and PM_{2.5}. Changes in atmospheric moisture and oxidant concentrations can also affect the formation of secondary particulate matter, including ammonium nitrate and secondary organic aerosols. In addition, variations in atmospheric mixing, stagnation, and regional transport can influence pollutant accumulation and dispersion throughout the Valley.

Because these processes interact with precursor emissions and vary spatially and seasonally, their combined effects on ozone and PM_{2.5} concentrations are complex and may differ across urban and rural areas. Accounting for these atmospheric processes and evaluating the sensitivity of modeled concentrations to changing meteorological conditions will help the District better understand future air quality responses and distinguish the effects of emission reduction strategies from meteorological influences.

Sustaining the Resources Needed for Attainment

While efforts to aggressively pursue zero-emission vehicle (ZEV) adoption as a long-term strategy for reducing mobile source emissions remain critical, there are significant opportunities for concurrently pursuing cost-effective and technologically feasible near and mid-term emission reduction strategies for a wide variety of mobile source sectors. The need to address the emissions gap created by the withdrawal of California waivers and Congressional disapprovals puts the Valley at high risk of not meeting attainment deadlines and triggering CAA economic sanctions and loss of local regulatory control to EPA. Therefore, the need for continued and sustained incentive grant funding is and will be a critical element of the Valley's comprehensive attainment strategy.

To that end, meeting the near-term, time-sensitive attainment deadlines while also working towards achieving the transformational changes needed to meet zero-emissions goals requires leveraging feasible zero and near-zero emission solutions as soon as practical. Leveraging those technologies, namely battery electric, renewable natural gas, low-emission/renewable diesel, and hydrogen-powered technologies, will

require significant infrastructure development before full scale deployment and meaningful emission reductions can be realized.

Achieving clean-air standards will require an accelerated transition to the cleanest technologies, and incentive-based measures have historically and continue to provide tremendous opportunities for achieving SIP-creditable reductions. Programs like the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) and the FARMER program, achieve “SIP-Creditable” reductions due to the rigor of program guidelines developed in partnership with CARB.

For illustrative and discussion purposes, incentive funding investments in the following programs have the potential to achieve significant emission reductions in the near and mid-term timeframes required under the federal Clean Air Act.

- ***Agricultural Tractor Replacement (FARMER)*** – Replacing older diesel tractors with cleaner equipment remains one of the Valley’s most cost-effective NO_x controls. Emission reductions from diesel-powered agricultural equipment is considered SIP-creditable and can be used towards demonstration of attaining the NAAQS. The District has used these projects as a SIP-creditable measure in the past, so there is already an established understanding of how successful these projects are towards reducing emissions in the Valley. With more than 6,000 applications representing over \$600 million and an estimated over 4 tons per day (tpd) of NO_x reduction potential, this oversubscribed program directly targets a sector outside federal mobile source rules, ensuring surplus, SIP-creditable reductions critical for meeting attainment deadlines. Due to the efficiency and success of the program, the District has temporarily suspended acceptance of new applications because the volume of existing requests in queue far exceeds the projected available funding for the foreseeable future. Funding for the District’s FARMER Program has declined significantly, from a peak allocation of approximately \$168 million in Fiscal Year 2021–22 to approximately \$10 million this year. While this represents a significant reduction in funding from historical peaks, the District’s success in ensuring that substantial funding was still included in the 2026-27 state budget after two years of zero to little funding was a strong indicator that the Valley’s advocacy efforts were successful in making the public health and economic case for this important program.
- ***Heavy-Duty Truck Replacement*** – Trucks are essential to the movement of goods across industries such as agriculture, logistics, and food distribution, older diesel fleets continue to contribute significantly to emissions. Transitioning these trucks to near-zero and zero-emission technologies provides measurable emission reductions, supports public health, and advances progress toward attainment of state air quality standards. Recent changes to the Advanced Clean Fleets (ACF) regulation, including the withdrawal of the federal waiver, highlight the uncertainty of relying solely on regulatory measures to achieve these reductions. Despite these challenges, the District remains committed to

supporting the deployment of near zero and zero emission trucks. Voluntary incentive programs like the Truck Replacement Program provide a critical pathway to continue reducing emissions. These voluntary, incentive-based efforts not only deliver measurable SIP-creditable reductions and accelerate the transition to cleaner technologies, but also reduce barriers to entry, making it feasible for a wider range of Valley fleets to participate.

- **Locomotive Replacement** – The useful life of a locomotive operating in the San Joaquin Valley is generally estimated to be approximately 70 years, significantly longer than that of locomotives in other regions of the country, due primarily to the Valley's dry climate, which reduces corrosion and other weather-related wear. Typically, locomotives that the District replaces through the program commonly have engines that are upwards of 40 to 50 years old, meaning that they would still not be replaced under normal circumstances for several decades. With the withdrawal of CARB's In-Use Locomotive Regulation, locomotives are not currently subject to any rules or regulations that require them to be upgraded to cleaner technology or limit the amount of time they spend idling. The Locomotive Program provides incentive funds for the replacement of older high polluting locomotives to new Tier 4, hybrid, or zero emission units. Due to the large volume of emissions produced by locomotives relative to other mobile sources, replacing older switcher locomotives plays a significant role in reducing NOx and PM2.5 emissions and advancing attainment efforts and improving public health in the Valley. Projects funded through the Locomotive Program have historically delivered some of the District's most effective emission reductions while maximizing cost efficiency.
- **Zero-Emission Forklifts** – The Zero-Emission Forklift (ZEF) Replacement Program provides incentive funds for the replacement of in-use, Large Spark Ignition Forklifts (LSI) that are currently in compliance with the LSI regulation as defined by CARB. LSI forklifts are typically powered by gasoline, propane or CNG engines. CARB has not sought a waiver from EPA, and in May 2025, CARB issued an advisory clarifying that it will not enforce the ZEF regulation against privately-owned or operated fleets. Despite regulatory uncertainty, strong demand exists to replace propane and gasoline forklifts with zero-emission units.
- **Clean Vehicle Fueling Infrastructure Program (CVFIP)** – The District's Clean Vehicle Fueling Infrastructure Program plays a critical role in accelerating the transition of heavy-duty fleets to zero-emission technologies by addressing one of the most significant barriers to deployment: the availability and high cost of charging and fueling infrastructure. The program provides substantial financial incentives to public agencies, businesses, and fleet operators for the installation and expansion of heavy-duty electric vehicle charging and hydrogen fueling infrastructure, including private fleet depots, publicly accessible stations, shared truck charging facilities, and supporting energy systems. Through enhanced incentives for projects serving sensitive communities, integrating renewable

energy, and providing shared or publicly accessible infrastructure, CVFIP encourages strategic investments that expand access to zero-emission technologies while reducing the financial burden on Valley businesses and public fleets. These investments are particularly important as uncertainty surrounding state mobile source regulations increases the need for voluntary, incentive-based emission reductions. Continued and expanded state funding for CVFIP would enable the District to accelerate the deployment of critical infrastructure, support additional heavy-duty fleet conversions, and achieve meaningful reductions in diesel particulate matter and nitrogen oxides emissions necessary for continued progress toward federal air quality standards.

- ***Drive Clean in the San Joaquin (DCSJ)*** – DCSJ Replace program provides incentives for low-income Valley residents to replace older higher-polluting light-duty vehicles with newer zero-emission and plug-in hybrid vehicles. Since 2015, the District has received over \$119 million in state funding from CARB to support the implementation of the District's vehicle replacement program. To date, the vehicle replacement program has resulted in over 10,000 vehicles replaced throughout the Valley. Due to the overwhelming demand for this program, the District has received more applications than available funding and has to stop accepting new applications. Identifying a stable and long-term funding source for continued operation of the program will be important to bringing clean vehicle technology to realize both economic and public health benefits to the most disadvantaged communities and residents of the Valley.
- ***Ag Burn Alternatives Grant Program*** – This program provides incentives to agricultural operations located within District boundaries to chip, shred, or mulch agricultural material from orchard and vineyard removals as an alternative to open burning. Recognizing the variety of agricultural operations in the Valley, the program allows growers to select from several alternative practices, such as soil incorporation (whole orchard/vineyard recycling), on-site land application on agricultural land, off-site beneficial re-use (including mulching, composting, land application near roadways for dust suppression), and other District-approved beneficial reuse of the chipped material. The program also provides incentives for the use of air curtain burners as an alternative practice for the disposal of diseased agricultural material or material with embedded wire. Recognizing the unique difficulties of small growers, the program includes enhanced funding levels and other incentives for small growing operations. Securing additional state and federal funding is critical to ensuring the success of the agricultural open burning phase-out strategy through the ongoing development and deployment of chipping, composting, bioenergy, and other beneficial alternatives in the face of drought, decreasing biomass options, land and water use policy (e.g., SGMA), and other related challenges.
- ***Fireplace & Woodstove Change-Out Program*** – This program helps reduce particulate matter from older wood-burning devices that contribute significantly to air pollution in the Valley during the Fall and Winter months. The Fireplace &

Woodstove Change-Out Program has provided the resources necessary for thousands of Valley residents to make positive changes in their residential wood-burning practices, and is a significant part of the District's overall strategy to reduce the impacts of residential wood burning. Reducing emissions from residential wood-burning will directly protect public health, which makes the incentive funding provided through the program essential as it will help residents overcome some of the financial barriers in purchasing cleaner heating options, especially for low-income residents. Since 2009, the District has successfully issued almost 32,000 vouchers for over \$70 million to help Valley residents replace their old, uncertified wood-burning devices with cleaner heating options such as certified wood- or pellet-burning devices, natural gas devices, and electric heat pumps. Additional funding for the program is necessary to extend and expedite the District's ability to achieve cost-effective emission reductions through voluntary measures, and help the Valley attain federally mandated air quality standards.

- ***Low-Dust Nut Harvester Replacement Program*** – Since 2018, the District has been operating this first-of-its-kind voluntary incentive program to replace conventional nut harvesting equipment with new, low-dust equipment. This program initially started as a pilot program, and due to its success, was converted to a full program in late 2020. The program builds upon more than a decade of significant investment made in the San Joaquin Valley to develop low-dust nut harvesting technologies and to understand the potential benefits in reducing PM emissions from the use of these new technologies. Since its inception, the District has allocated \$23.6 million in federal, state, and local funding to the program, supporting the replacement of 270 pieces of equipment, resulting in 1,665 tons of fugitive PM, 423 tons of NOx and 32 tons of diesel combustion PM.

The Valley's mobile source incentive strategy must focus on achieving the greatest near- and long-term emission reductions by accelerating the turnover of the highest-emitting vehicles and equipment to cleaner technologies. A technology-neutral approach that supports zero-emission, near-zero emission, and other advanced technologies allows available resources to be targeted toward projects that achieve meaningful and measurable emission reductions, while recognizing infrastructure, operational, and regulatory constraints.

These investments can provide SIP-creditable reductions needed to address emission shortfalls and complement the District's stringent stationary and area source control programs. Sustained investment in proven and scalable mobile source strategies will be critical to maintaining emission reduction progress and supporting attainment of the federal ozone and PM_{2.5} standards and the Valley's broader clean air and public health goals.