Staff Report

ARB Review of the San Joaquin Valley 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard

Release Date: September 16, 2016
Hearing Date: October 20, 2016

California Environmental Protection Agency
Air Resources Board

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EXECUTIVE SUMMARY

This report presents the Air Resources Board staff's assessment of the San Joaquin Valley Air Pollution Control District *"2016 Moderate Plan for the 2012 $PM_{2.5}$ Standard"* (2016 Plan). The District prepared the 2016 Plan to address requirements under the Clean Air Act for a Moderate nonattainment area for the national annual average $PM_{2.5}$ standard of 12 micrograms per cubic meter ($\mu g/m^3$) established by the U.S. Environmental Protection Agency (U.S. EPA) in 2012.

The Clean Air Act establishes planning requirements for areas that exceed health-based standards. These nonattainment areas must develop and implement State Implementation Plans (SIPs) that demonstrate how they will attain the standard by specified dates. For ozone standards, classifications and attainment dates are tied to the severity of the problem and are established at the time an area is designated nonattainment. However for $PM_{2.5,}$ establishing an appropriate attainment date is a step-wise process. The process begins with a Moderate area SIP with an initial attainment date six years after the area is designated nonattainment. If attainment within six years is impracticable given the severity of the $PM_{2.5}$ problem, U.S. EPA classifies the area as Serious and establishes requirements for a second SIP submittal that must show attainment within 10 years.

In April 2015, U.S. EPA designated the San Joaquin Valley as a Moderate nonattainment area for the annual 12 $\mu g/m^3$ standard with an initial attainment date of December 2021. $PM_{2.5}$ levels in the San Joaquin Valley have shown overall improvement since 2001, however stagnant weather conditions and persistent lack of rainfall associated with California's recent drought has held up progress towards attainment. Although implementation of ARB and District control programs will continue to reduce emissions, the severity of drought impacted concentrations makes it infeasible to attain by the 2021 Moderate area deadline. The 2016 Plan was therefore developed to fulfill the first step in the Clean Air Act planning process. The plan includes an impracticability demonstration and a request that the Valley be reclassified as a Serious nonattainment area. A reclassification to Serious will establish a new attainment deadline of December 2025.

The 2016 Plan also includes other elements required in a Moderate area SIP, including comprehensive emission inventories; a reasonable further progress (RFP) demonstration and quantitative milestones; an assessment of reasonably available control measures and technologies plus additional reasonable measures; motor vehicle transportation conformity budgets reflecting latest planning assumptions; and identification of contingency measures if the Valley fails to meet an RFP milestone. This ARB staff report also includes contingency measure emission reductions for 2022, augmenting those in the 2016 Plan.

The District Governing Board adopted the 2016 Plan on September 15, 2016. ARB staff recommends that the Board approve the San Joaquin Valley 2016 Plan and

request for reclassification as a Serious nonattainment area, and direct ARB staff to submit the 2016 Plan to U.S. EPA as a revision to the California SIP.

Looking forward, modeling efforts are underway to evaluate the magnitude of reductions needed to reach the 12 μg/m^3 $PM_{2.5}$ standard by the Serious area attainment deadline of 2025. Based on their contribution to ambient $PM_{2.5}$ levels in the Valley, additional reductions of both directly emitted $PM_{2.5}$ from sources under local district control, as well as oxides of nitrogen from mobile sources will be critical. Development of a comprehensive attainment strategy will be coordinated with SIP planning efforts to meet the 35 μg/m^3 24-hour standard in the same time frame.

I. BACKGROUND

Exposure to $PM_{2.5}$ is associated with increased risk of hospitalization for lung and heart-related illnesses and premature mortality, especially in children, the elderly, and people with existing health problems. The Act requires U.S. EPA to establish national ambient air quality standards to protect public health and regularly update them to reflect new health information. U.S. EPA first established a $PM_{2.5}$ standard in 1997, consisting of a 24-hour $PM_{2.5}$ standard of 65 $\mu g/m^3$ and an annual standard of 15 $\mu g/m^3$. Based on an extensive assessment and scientific review of the health impacts of $PM_{2.5}$ pollution, U.S. EPA strengthened the 24-hour $PM_{2.5}$ standard to 35 $\mu g/m^3$ in 2006, and the annual standard to 12 $\mu g/m^3$ in 2012. Meeting these standards provides critical public health protection, especially in the San Joaquin Valley which experiences the highest $PM_{2.5}$ levels in the nation.

ARB and the District have developed SIPs defining the actions needed to meet these air quality standards, with each SIP and the corresponding control programs providing the foundation for subsequent planning efforts. These include the 2008 $PM_{2.5}$ Plan for the 1997 standards and the 2012 $PM_{2.5}$ Plan for the 24-hour standard of 35 $\mu g/m^3$.

Under Subpart 4 of the Act, each nonattainment area begins with a Moderate SIP due in 18 months to evaluate whether the standard can be met within six years of designations. If attainment within the six years cannot be demonstrated, U.S. EPA classifies the area as Serious and establishes requirements for a second SIP submittal that must show attainment within 10 years. To provide further guidance on the SIP requirements, U.S. EPA promulgated the 2016 Fine Particulate Matter National Ambient Air Quality Standard State Implementation Plan Requirements Rule (Implementation Rule)[1],

The San Joaquin Valley was designated as a Moderate nonattainment area in April 2015. The District prepared the 2016 Plan to address requirements under the Act for a Moderate area consistent with the Implementation Rule.

[1] 81 FR 58010 https://www.gpo.gov/fdsys/pkg/FR-2016-08-24/pdf/2016-18768.pdf

II. NATURE OF THE $PM_{2.5}$ PROBLEM IN THE SAN JOAQUIN VALLEY

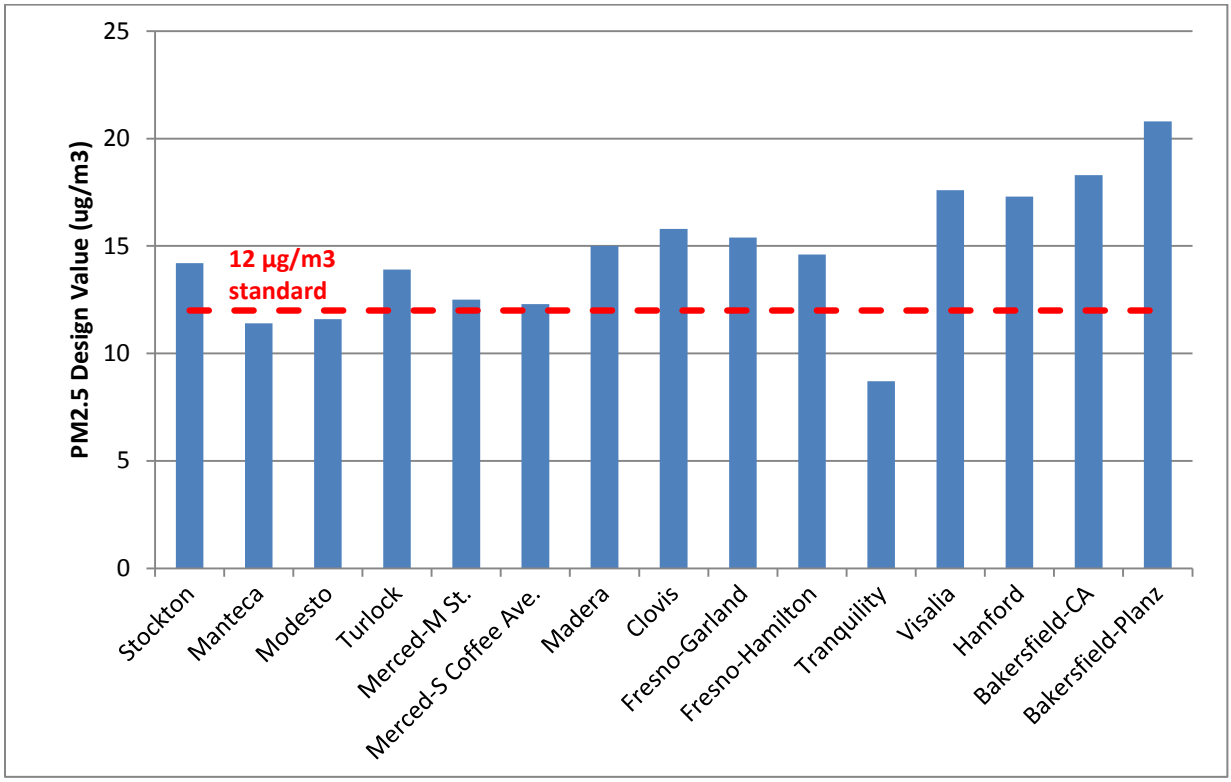
$PM_{2.5}$ is a complex mixture of many different species generated from a wide array of emission sources. $PM_{2.5}$ may be emitted directly into the air in the form of soot, smoke, or dust, or can be formed in the atmosphere as secondary particles from the reactions of precursor gases, including NOx, sulfur oxides (SOx), reactive organic gases (ROG), and ammonia. The relative mixture of these constituents in a region drives the nature of the needed control strategy.

The San Joaquin Valley, encompassing 25,000 square miles in the central portion of California, is characterized by unique topography and meteorology. Mountains bound the area on the west (Coastal Mountain range), the east (Sierra Nevada range), and the south (Tehachapi Mountains). Together with the Valley's topography, the inversion-prone meteorology of the region restricts airflow and favors the accumulation of pollutants. Valley weather patterns are typically characterized by dry summers with moist winter months, which often include periods of heavy fog.

$PM_{2.5}$ concentrations in the Valley exhibit a strong seasonal pattern, with the highest concentrations between November and February during extended periods of stagnant weather. These conditions are conducive to the buildup of $PM_{2.5}$ over multiple days, as well as the formation of secondary ammonium nitrate. Episodic activities such as seasonal wood burning also add to the pollution burden during the winter. These elevated wintertime concentrations in turn drive annual average levels.

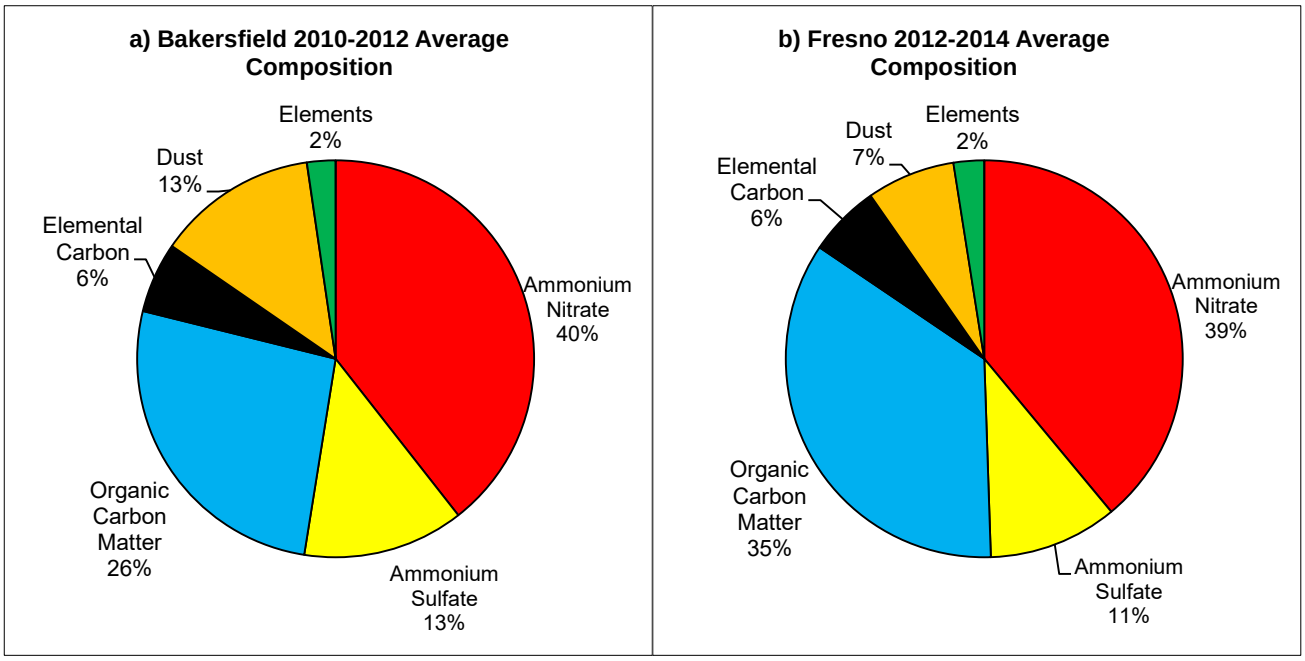
Figure 1 depicts annual average $PM_{2.5}$ design values for each monitoring location in the Valley. The design value is the metric used for assessing compliance with the annual standard and represents the average of three consecutive annual average concentrations. Three locations currently meet the annual standard. In the remaining locations, annual design values range from 12.3 $\mu g/m^3$ to 20.8 $\mu g/m^3$, with highest values recorded in the Bakersfield area. This reflects the impact of weather and topography which allows for greater pollutant buildup in the southern portions of the Valley.

Figure 1. 2015 Annual $PM_{2.5}$ Design Values



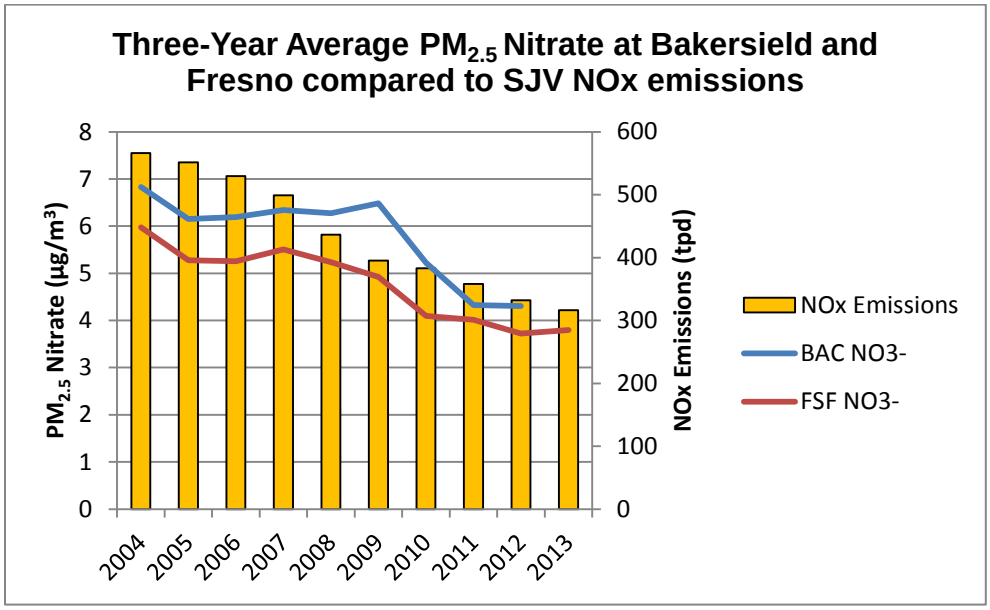
The results of extensive research studies and comprehensive air quality modeling have been used to understand the types of sources contributing to $PM_{2.5}$ and quantify the relative effectiveness of reducing different $PM_{2.5}$ precursors. Organic and elemental carbon and ammonium nitrate are the largest contributors to annual average concentrations in the Valley, accounting for approximately 70 to 80 percent of the total mass. The major sources of organic and elemental carbon in the Valley are residential wood burning, commercial cooking, and mobile sources. Ammonium nitrate is formed from emissions of NOx, and ammonia. Mobile sources are the largest source of NOx emissions, while animal feeding operations, composting, and fertilizer application are the largest ammonia sources. Fugitive dust can also be a significant contributor, particularly in the Bakersfield area.

Figure 2. Three-year Annual Average $PM_{2.5}$ Composition



Trends in ambient data and modeling assessments highlight the effectiveness of controlling different $PM_{2.5}$ precursors. Progress in reducing sources of directly emitted $PM_{2.5}$ has led to a 15 to 30 percent reduction in organic and elemental carbon concentrations between 2004 and 2012. Evaluation of both emissions inventory and modeling analysis suggest that in the Valley's ammonia-rich conditions, NOx, rather than ammonia controls are more effective in reducing ammonium nitrate. This strong linkage between NOx emission reductions and decreases in ammonium nitrate concentrations is illustrated in Figure 3 for the Bakersfield and Fresno monitoring sites. Between 2004 and 2012, Valley-wide NOx emissions were reduced approximately 40 percent, with a commensurate reduction in ammonium nitrate concentrations.

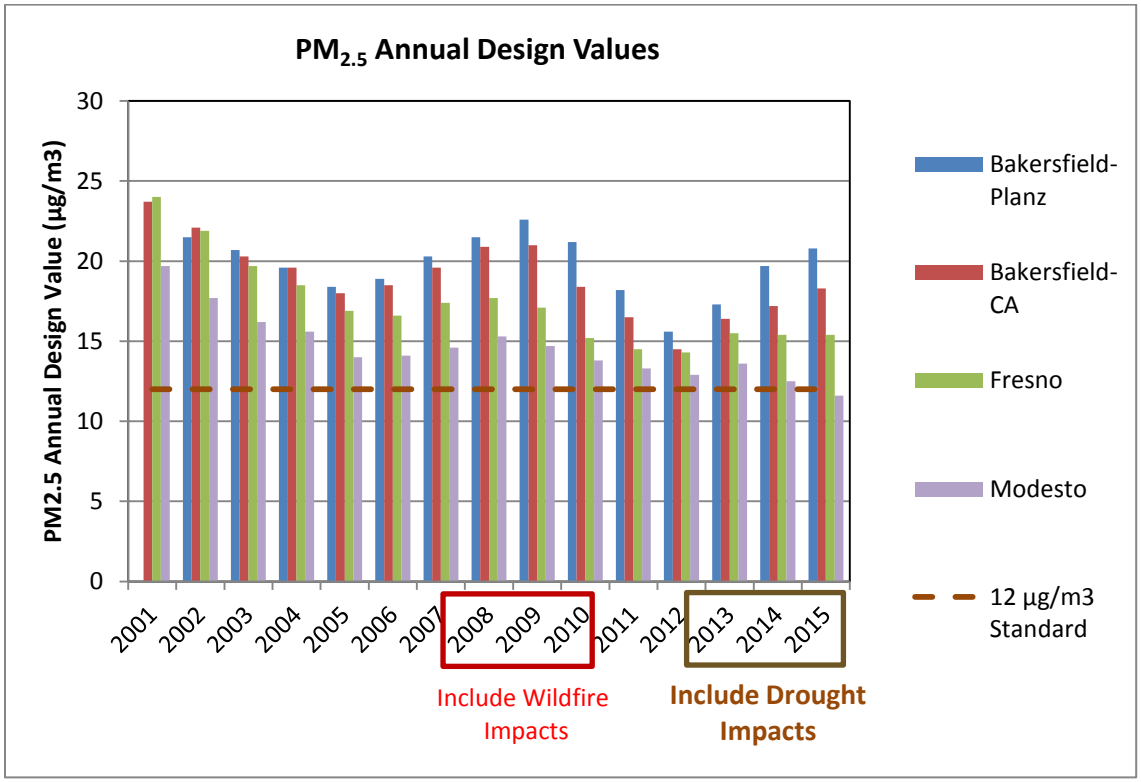
Figure 3. NOx Emissions vs Ammonium Nitrate Trends at Bakersfield and Fresno



As discussed earlier, weather plays a significant role in Valley $PM_{2.5}$ concentrations. Beginning in 2013, persistently high atmospheric pressure over the northeastern Pacific Ocean prevented winter storms from reaching the west coast, resulting in severe drought conditions in California. The stagnant weather conditions associated with lack of rainfall during the winter of 2013/14 drove an increase in $PM_{2.5}$ levels in all three regions of the Valley. Due to nearly two months without rainfall, a majority of days during December 2013 and January 2014 recorded $PM_{2.5}$ concentrations greater than the 35 µg/m^3 $PM_{2.5}$ 24-hour standard, a nearly threefold increase over the prior winter. These elevated wintertime concentrations affected both 24-hour and annual average design values, especially in the central and southern Valley.

Figure 4 illustrates the trend in annual $PM_{2.5}$ design values at four sites representing the northern, central, and southern portions of the Valley. While annual $PM_{2.5}$ design values have been decreasing over time, Figure 3 shows the considerable year-to-year variability that occurs in the Valley. The 2013-2015 $PM_{2.5}$ design values are highlighted to show the impacts of the drought related weather conditions. These weather conditions interrupted progress in $PM_{2.5}$ air quality by causing increases in 2013 through 2015 design values as compared to 2012, most prominently in the central and southern Valley. In the southern Valley, the design value increased approximately 5 µg/m^3 between 2012 and 2015, making attainment of the 12 µg/m^3 standard more difficult.

Figure 4. $PM_{2.5}$ Annual Design Value Trends



III. IMPRACTRICABILITY DEMONSTRATION AND RECLASSIFICATION REQUEST

Following provisions of the Clean Air Act and the Implementation Rule, ARB and District staff evaluated the feasibility of the San Joaquin Valley attaining the 12 μg/m^3 annual $PM_{2.5}$ standard by the 2021 Moderate area attainment deadline. The analysis included the benefits of current ARB and District control programs, which provide ongoing emission reductions. The evaluation demonstrates it is impracticable for the Valley to attain the standard by 2021. Thus, following the step-wise process established under the Act, the 2016 Plan requests the San Joaquin Valley be reclassified as a Serious nonattainment area with an attainment deadline of 2025.

A. Photochemical Modeling Approach and Results

The Act requires the use of air quality modeling to relate $PM_{2.5}$ levels to emissions in a region and simulate future air quality based on changes in emissions. ARB staff conducted the modeling for the 2016 Plan. The modeling approach draws on the products of large-scale scientific studies in the region, as well as collaboration between technical staff of ARB and the District. The modeling uses emission inventories, with measurements of meteorology and air quality, to establish the relationship between emissions and air quality. This modeling is used to identify the benefits of controlling directly emitted $PM_{2.5}$ and the different $PM_{2.5}$ precursors, and the most expeditious attainment date.

ARB staff followed U.S. EPA modeling guidance[2] in evaluating the feasibility of attainment in 2021. The year 2013 was chosen as the modeling base (or reference) year based on analysis that meteorology in 2013 was particularly conducive to $PM_{2.5}$ formation and accumulation, the availability of a detailed emissions inventory, and its inclusion as one of the years that provided the basis for designating the region as nonattainment. The modeling included the benefits of all adopted regulations. Table 1 shows the 2013 and 2021 annual emissions in the San Joaquin Valley for the five $PM_{2.5}$ precursors. NOx emissions show the largest relative reduction, decreasing nearly 40 percent between 2013 and 2021. Smaller reductions occur for ROG, SOx, ammonia, and directly emitted $PM_{2.5}$, ranging from one to seven percent. The modeling evaluation also includes the benefits of additional reductions from enhancements to the District's commercial charbroiling rule, tentatively scheduled for adoption in 2016.

[2] U.S. EPA, 2014, *Draft Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5 and Regional Haze*, available at https://www.epa.gov/ttn/scram/guidance/guide/Draft_O3-PM-RH_Modeling_Guidance-2014.pdf

Table 1. 2013 and 2021 Annual Emission Inventories (tpd)

Category	NO_x	ROG	$PM_{2.5}$	SO_x	Ammonia
2013 (tons/day)					
Stationary	38.6	85.1	8.9	7.2	13.8
Area	8.1	150.3	42.3	0.3	310.7
On-road Mobile	183.2	49.9	6.4	0.6	4.5
Other Mobile	88.3	33.9	5.8	0.2	0.0
Total	318.2	319.2	63.5	8.4	329.1
2021 (tons/day)					
Stationary	29.8	90.5	9.1	6.9	15.3
Area	8.1	152.4	41.9	0.3	306.4
On-road Mobile	88.0	23.3	3.3	0.6	4.2
Other Mobile	70.2	26.7	5.0	0.3	0.0
Total	196.1	292.8	59.3	8.2	325.9
Change in total emissions in 2021 compared to 2013	-38%	-8%	-7%	-2%	-1%

Table 2. Modeled 2021 Annual $PM_{2.5}$ Design Values (DVs) Demonstrate Impracticability to Attain by Moderate Attainment Deadline

Site	Base Year DV [(1)] ($\mu g/m^3$)	2021 DV ($\mu g/m^3$)
Bakersfield-Planz	17.3	14.8
Madera	16.9	14.4
Hanford	16.5	13.4
Corcoran	16.3	14.4
Visalia	16.2	13.7
Clovis	16.1	14.1
Bakersfield-California	16.0	13.6
Fresno-Garland	15.0	12.9
Turlock	14.9	12.8
Fresno-Hamilton & Winery	14.2	12.2
Stockton	13.1	11.7
Merced-S Coffee	13.1	11.2
Modesto	13.0	11.2
Merced-Main Street	11.0	9.7
Manteca	10.1	8.8
Tranquility	7.7	6.5

(1) U.S. EPA guidance specifies that an average of three design values can be used to account for year-to-year variability in meteorology in modeling demonstrations. The average of 2012, 2013, and 2014 design values was used for this modeling analysis.

Although projected design values for all monitoring locations decrease substantially, the modeling results shown in Table 2 demonstrate it is impracticable for Valley to attain the annual standard by 2021, with design values predicted to be over the 12 µg/m^3 standard at 10 of the 16 monitoring sites. The Bakersfield-Planz site has the highest projected future year design value at 14.8 µg/m^3.

Further information on the modeled demonstration, modeling protocol, and other analyses is included in Chapter 2 and Appendix A of the 2016 Plan. The Serious area reclassification request is included in Chapter 2 of the 2016 Plan.

B. Precursor Demonstration

The purpose of the $PM_{2.5}$ precursor assessment is to determine the significant precursors to be addressed in meeting Act requirements, such as Reasonably Available Control Measures (RACM), RFP, and contingency measures, and for developing inter-pollutant trading ratios. To evaluate the significance of reducing emissions from the different $PM_{2.5}$ precursors on the future modeled $PM_{2.5}$ design values, ARB staff followed the comprehensive precursor analysis option provided for in the Implementation Rule. ARB staff collaborated with the District on this analysis, as well as consulted with U.S EPA staff. A series of model sensitivity simulations were conducted, where emissions of the precursor species were scaled by ±15 percent from future year, 2025 baseline emissions. An overall 30 percent change in emissions is appropriate, as it reflects an assessment of the reasonable potential for further emission reductions within this timeframe. For each precursor, only anthropogenic emissions in California were assessed in the sensitivity analysis.

ARB established a threshold of 0.2 µg/m^3 for the annual $PM_{2.5}$ design value after consulting with U.S. EPA staff. If a 30 percent change in precursor emissions leads to a change in component design value greater than 0.2 µg/m^3, then the precursor is deemed significant. Based on the sensitivity analysis, directly emitted $PM_{2.5}$ and NOx emissions were determined to be significant $PM_{2.5}$ precursors, while ammonia, ROG, and SOx were not significant. Further information on the precursor analysis, as well as supporting discussion based on the review of information reported in recent literature, including publications from various field studies conducted in the San Joaquin Valley is found in Appendix A of the 2016 Plan.

Results from sensitivity simulations involving ±15 percent scaling of controllable $PM_{2.5}$ precursors were also used to calculate inter-pollutant trading ratios. The inter-pollutant trading ratios (relative to NO*x*) were calculated as the ratio in the reduction of annual $PM_{2.5}$ design value at a particular location by reducing a ton of other $PM_{2.5}$ precursors (i.e., primary $PM_{2.5}$, SO*x*, ammonia, and ROG) emissions as compared to a ton of NO_x emission reductions. To be consistent with past trading ratio determination in the San Joaquin Valley, ARB staff focused on the response of $PM_{2.5}$ concentrations at the two Bakersfield sites to emission reductions. This analysis demonstrated that reductions in directly emitted $PM_{2.5}$ are approximately nine times more effective than equivalent NOx reductions. This is consistent with ratios developed as part of the 2008 $PM_{2.5}$ Plan. Further detail on inter-pollutant trading ratios is provided in Chapter 3 of the 2016 Plan.

IV. CLEAN AIR ACT REQUIREMENTS

In addition to the analysis related to the impracticability to attain by the Moderate deadline, the Act also requires SIPs for Moderate $PM_{2.5}$ areas to address the following elements.

- Base year emission inventories and future year forecasts for manmade sources of directly emitted $PM_{2.5}$ and $PM_{2.5}$ precursors;
- Demonstration that control measures meet Reasonably Available Control Measures (RACM) and additional reasonable measures level;
- Requirements for Reasonable Further Progress (RFP);
- Contingency measures for RFP;
- Quantitative milestones; and
- Transportation conformity emission budgets to ensure transportation projects are consistent with the SIP.

A. Emission Inventory

$PM_{2.5}$ SIPs must contain base year inventories of directly emitted $PM_{2.5}$, NOx, SOx, ROG and ammonia, as well as future year forecasts. An emission inventory consists of a systematic listing of sources of air pollutants with an estimate of the amount of pollutant emissions from each source category over a period of time.

ARB and District staff worked jointly to prepare an updated annual average emission inventory for the 2016 Plan. The base year inventory is 2013, one of the years used in designating San Joaquin Valley as nonattainment for the 12 $\mu g/m^3$ standard, as specified in the Implementation Rule. The inventory includes a category-by-category review and update using the most recent information available on emissions-generating activities and anticipated population and economic growth in the region. The reported $PM_{2.5}$ emissions for stationary source combustion categories include the condensable fraction of $PM_{2.5}$. Additional information on the emission inventory methodologies and resulting base and future year emissions can be found in Appendix B of the 2016 Plan

New Source Review rules require new and modified stationary sources that increase emissions in amounts exceeding specified thresholds to provide emission reduction offsets to mitigate the emissions growth. Emission reduction offsets represent either on-site emission reductions or use of banked emission reduction credits (ERCs). ERCs are voluntary, surplus emission reductions, which are registered, or banked, with the District for future use as offsets.

Per U.S. EPA policy, ERCs banked before the SIP emission inventory base year (2013 for this plan) must be explicitly treated as emissions. As shown in Table 3, projected ERC use between 2013 and 2022 is less than the 2016 Plan's estimated total growth in

emissions for each pollutant. Further detail on ERCs is provided in Appendix D of the 2016 Plan.

Table 3. Expected ERC Use

Pollutant	Expected ERC Use (tpd)	Growth (tpd)
$PM_{2.5}$	0.69	0.90
NOx	2.35	2.42
SOx	0.49	0.83
ROG	5.62	10.56

B. Reasonably Available Control Measures and Additional Reasonable Measures Demonstration

As specified in the Act, SIPs must provide for the implementation of RACM, including measures that qualify as Reasonably Available Control Technologies (RACT) for $PM_{2.5}$ and $PM_{2.5}$ precursors within 4 years after designation. The Implementation Rule also requires implementation of additional reasonable measures between 4 and 6 years after designation. Collectively, these requirements ensure that appropriate controls are in place within the 6 year timeframe of a Moderate nonattainment area. The U.S. EPA interprets RACM as those emission control measures that are technologically and economically feasible and when considered in aggregate, would advance the attainment date by at least one year. The 2016 Plan contains a RACM/RACT and additional reasonable measures demonstration for sources under the jurisdiction of State, District, and metropolitan transportation agencies. This analysis demonstrates that no new measures were identified that would advance attainment. Chapter 3 and Attachments 1 and 2 of the 2016 Plan present the measure evaluation.

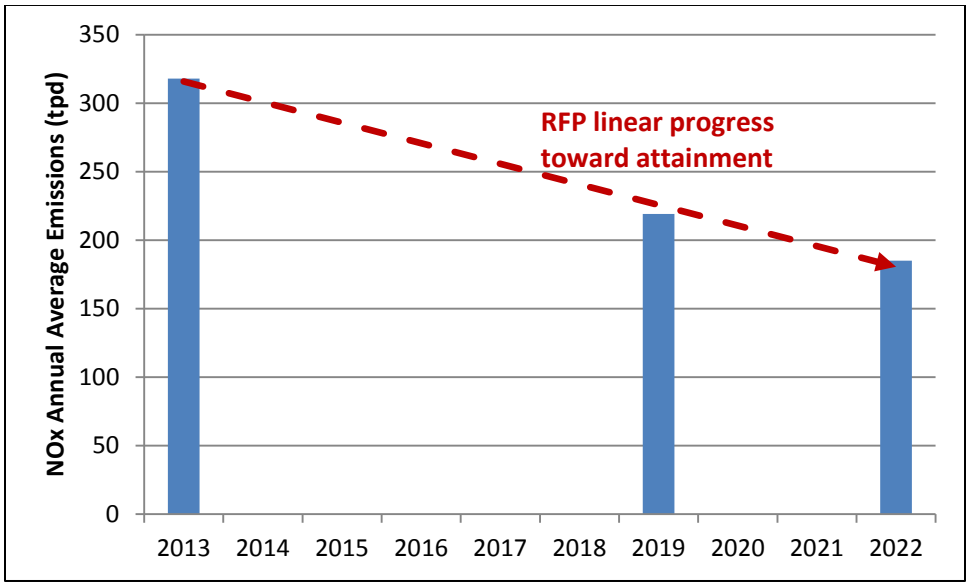
C. Reasonable Further Progress

The purpose of the RFP demonstration is to ensure that a nonattainment area makes steady progress towards attainment. RFP milestones are set in three year increments from submittal of a SIP. For the 2016 Plan, the RFP milestone years are therefore 2019 and 2022. Consistent with the Implementation Rule, the RFP demonstration in the 2016 Plan includes control measure implementation schedules for all District and ARB measures identified as RACM/RACT and additional reasonable measures; projected RFP emissions for the 2019 and 2022 milestone years for $PM_{2.5}$ and NOx, the 2016 Plan's significant $PM_{2.5}$ precursors; and demonstration that the schedule of aggregate emission reductions achieves sufficient progress.

Per the Implementation Rule, the Valley must demonstrate generally linear emission reductions of $PM_{2.5}$ and NOx from the base year to attainment. The RFP demonstration in Chapter 3 of the District 2016 Plan shows that NOx and $PM_{2.5}$ emission reductions are more than sufficient to meet the required 2019 RFP milestone as well as meet the

2022 milestone. Figure 5 illustrates the emission reductions in NOx achieved as compared to the linear progress toward attainment RFP targets.

Figure 5. NOx Emission Reductions Relative to RFP Targets(1)



(1) Graph from data in Table 3-6 of the *San Joaquin Valley 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard*.

D. Quantitative Milestones

The Act also requires $PM_{2.5}$ SIPs to include quantitative milestones that link actions in the control strategy to the emission levels established for the RFP milestone years of 2019 and 2022. Chapter 3 of the 2016 Plan describes these milestones. The milestones focus on implementation of ARB's Truck and Bus Regulation and the District's Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters). Quantitative milestone reports will be provided to U.S. EPA 90 days after the milestone date (in January 2020 and 2023).

E. Contingency Measures

The Act requires that SIPs contain contingency measures for both RFP and attainment. For areas that demonstrate impracticability to attain the standard by the Moderate area attainment deadline, contingency measures are only required in the event a nonattainment area fails to achieve RFP targets. Contingency measures must represent additional reductions not accounted for in setting RFP levels. U.S. EPA has interpreted the contingency requirement to represent one year's worth of emission reductions. These measures may already be in place or take effect without further rulemaking action. The 2016 Plan identifies contingency for the 2019 milestone year. Contingency for the 2022 milestone year is identified below.

The contingency demonstration for the 2019 milestone year is included Chapter 3 of the 2016 Plan. As summarized in Table 4, the 2019 contingency requirements are met based on emission reductions that go beyond those needed for RFP, amendments of the District Rule 4905, inter-pollutant trading of $PM_{2.5}$ emission reductions for NOx reductions, and SIP-creditable incentive-based emission reductions. Documentation for the SIP creditable incentive-based emission reductions is provided in Appendix C of the 2016 Plan.

Table 4. 2019 RFP Milestone Contingency Reductions[(1)]

$PM_{2.5}$	**2019 (tpd)**
Contingency required (1 year of RFP)	0.4
"Surplus" from RFP	0.6
Used for $PM_{2.5}$ contingency	0.4
Used to trade for NOx	0.2
NOx	**2019 (tpd)**
Contingency required (1 year of RFP)	14.8
"Surplus" from RFP	9.7
From amendments to District Rule 4905	0.3
Trade $PM_{2.5}$ for NOx (1:9 trading ratio)	1.8
SIP-creditable incentives	3.0
Total contingency reductions achieved	14.9

(1) Table from data in Table 3-7 of the *San Joaquin Valley 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard*.

The Implementation Rule preamble specifies that for areas that cannot practicably attain by attainment deadline, contingency measures could consist of reductions from measures that go beyond requirements for RACM/RACT, such as early implementation of best available control measures and technologies. Given California's air quality challenges, the scope of ARB's mobile source control program has gone well beyond RACM and additional control measure levels required for a Moderate nonattainment area. ARB's comprehensive mobile source program relies on four fundamental approaches: 1) stringent emission standards that minimize emissions from new vehicles and equipment; 2) in-use programs that target the existing fleet and require the use of the cleanest vehicles and emissions control technologies; 3) cleaner fuels that minimize emissions during combustion; and 3) incentive programs to remove older, dirtier vehicles and equipment and pay for adoption of the cleanest available technologies. This multi-faceted approach has spurred the development of increasingly cleaner technologies and fuels that go far beyond national programs or programs in other states. For example, as documented in Attachment 2 of the 2016 Plan, ARB's Truck

and Bus Regulation is one control measure that provides reductions from implementation of best available and most stringent measure requirements. These future reductions result from phased requirements reflecting implementation dates through 2023. Emission reductions from this regulation therefore can provide the necessary $PM_{2.5}$ and NOx emission reductions beyond RFP targets to meet the contingency requirements for 2019.

In this staff report, ARB is also documenting the NOx and $PM_{2.5}$ emission reductions necessary to provide the 2022 RFP milestone contingency (Table 5). Consistent with the Implementation Rule, contingency reductions for 2022 account for the incremental turnover of the motor vehicle fleet and control measures in place that provide emission reductions beyond those needed for the 2022 milestone RFP target. The 2022 contingency demonstration also includes inter-pollutant trading of surplus NOx reductions achieved for additional $PM_{2.5}$ reductions needed (at a 9 tpd NOx reductions per 1 tpd $PM_{2.5}$ reductions trading ratio). SIP creditable emission reductions from woodstove change-outs achieved in 2014 and not yet included in the emission inventory also provide for $PM_{2.5}$ contingency[3].

Table 5. 2022 RFP Milestone Contingency Reductions

NOx	
Contingency required (1 year of RFP)	14.8
Early implementation of BACM mobile source reductions in 2023	21
Used for NOx contingency	14.8
Extra reductions available	6.2
Used to trade for $PM_{2.5}$	1.8
Contingency required (1 year of RFP)	0.4
Early implementation of mobile source reductions in 2023	0.1
Reductions from Wood Stove Change-out in 2014	0.1
Trade NOx for $PM_{2.5}$ (9:1 trading ratio)	0.2
Total contingency reductions achieved	0.4

[3] ARB, 2015, *ARB Review of the San Joaquin Valley PM2.5 State Implementation Plan*, Appendix B https://www.arb.ca.gov/planning/sip/planarea/2015sjv/Appendix_B_with_attachments.pdf

F. Transportation Conformity Budgets

Under section 176(c) of the Act, transportation plans, programs, and projects that receive federal funding or approval must be fully consistent with the SIP before being approved by a metropolitan planning organizations (MPO). U.S. EPA's transportation conformity rule[4] details requirements for establishing motor vehicle emission budgets (budgets) in SIPs for the purpose of ensuring the conformity of transportation plans and programs with the SIP.

The 2016 Plan establishes county-level on-road motor vehicle emission budgets for each RFP milestone year. Emission budgets for $PM_{2.5}$ and NOx were calculated using EMFAC2014 and reflect annual average emissions. The emission budgets established in the 2016 Plan fulfill the requirements of the Act and U.S. EPA regulations to ensure that transportation projects will not interfere with progress and attainment of the annual $PM_{2.5}$ standard. Additional detail on the on-road motor vehicle emission budgets can be found in Chapter 3 of the 2016 Plan.

V. NEXT STEPS

Once the San Joaquin Valley is classified as a Serious nonattainment area, the District will be required to prepare a SIP to attain the standard by 2025. The SIP will be due to U.S. EPA 18 months after classification.

ARB modeling efforts are underway to evaluate the magnitude of reductions needed to attain the 12 $\mu g/m^3$ annual $PM_{2.5}$ standard. Additional reductions from sources of directly emitted $PM_{2.5}$ under District control will be critical based on their contribution to ambient $PM_{2.5}$ levels. Given the 2025 attainment date, accelerating the pace of NOx reductions will also be necessary. Ongoing mobile source NOx reductions will provide for significant regional improvement, but strategic use of incentive funding will be essential to achieve earlier penetration of cleaner technologies.

VI. ENVIRONMENTAL IMPACTS

The District found that the 2016 Plan will not result in any potentially significant adverse effects on the environment and is exempt from the provisions of the California Environmental Quality Act (CEQA) under section 15061 (b)(3) (the general rule that CEQA only applies to projects which have the potential for causing a significant effect on the environment) and section 15308 (actions taken by a regulatory agency for protection of the environment) of the CEQA Guidelines.

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

ARB has determined that its review and approval of the 2016 Plan submitted by the District for inclusion in the California SIP does not alter the conclusion that the 2016 Plan is exempt from CEQA. Generally, ARB considers its review and approval of district plans for inclusion in the California SIP as a ministerial activity by ARB for purposes of CEQA (14 CCR § 15268). A "ministerial" decision is one that involves fixed standards or objective measurements where the agency has no discretion to shape the activity in response to environmental concerns. (14 CCR § 15369; *San Diego Navy Broadway Complex Coalition v. City of San Diego* (2010) 185 Cal.App.4th 924, 934.)

For the District's 2016 Plan, ARB made minor alterations to the 2016 Plan to ensure it meets Clean Air Act requirements, namely accounting for contingency emission reductions for the 2022 RFP milestone year that were not included in the 2016 Plan's inventory. As described earlier in this Staff Report, the additional accounting considers reductions that will happen in 2023 from the on-going implementation of ARB's Truck and Bus Regulation and reductions from the District's Wood-Stove change-out program. These accounting alternations by ARB do not add any new measures that would trigger any further environmental review and do not alter the conclusion that the 2016 Plan is exempt from CEQA. Further these modifications fall within the type of actions that would be considered ministerial actions by ARB for purposes of CEQA, namely limited actions (changes in accounting reductions) to ensure the District's plan meets the Act requirements.

VII. STAFF RECOMMENDATION

ARB staff recommends that the Board:

1. Approve the San Joaquin Valley 2016 Plan and request for reclassification as Serious nonattainment, plus supplemental documentation included in the ARB Staff Report as a revision to the California SIP.

2. Direct the Executive Officer to submit the San Joaquin Valley 2016 Plan and the ARB Staff Report for U.S. EPA approval.