State of California
AIR RESOURCES BOARD

ARB Staff Report to the Air Resources Board:

Accelerating
San Joaquin Valley Air Quality Progress

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California Environmental Protection Agency
Air Resources Board

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(Additional Resource Material available under separate cover on-line at: http:www.arb.ca.gov/planning/sip/sip.htm)

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EXECUTIVE SUMMARY

Attainment of the federal ozone standard in the San Joaquin Valley is a formidable public health challenge. In June 2007, the Air Resources Board (ARB or Board) approved the federally required San Joaquin Valley Ozone Attainment Plan (the "State Implementation Plan or SIP"). As part of the approval, two ARB Board members agreed to oversee a public process designed to pursue additional actions that would further accelerate clean air progress. This report provides ARB staff's summary of what has been accomplished in that process and what it means in terms of the Valley's ozone SIP.

On September 27, 2007, ARB approved a strengthened State Strategy for the SIP that is expected to result in approximately a 90 percent improvement in air quality over the next ten years relative to compliance with the federal air quality standard. The strengthened SIP will substantially increase emission reductions of nitrogen oxides, the key ozone forming pollutant in the Valley. While the SIP includes a necessary legal attainment deadline of 2023, most of what needs to be done will be accomplished by 2017.

Nonetheless, many Valley residents want assurance that air agencies are doing all they can to improve air quality as quickly as possible. Now that ARB's portion of the SIP has been strengthened, ARB staff has focused on the San Joaquin Valley Air Pollution Control District's (District) SIP element as part of our oversight role under State law. ARB staff has evaluated the District's rules and SIP measures for industrial sources and found them to be as stringent as any in California. This assessment reflects recent actions by the District Board to implement previously approved SIPs, comply with the requirements of State law, and further tighten rules to achieve new reductions needed to meet the federal 8-hour ozone standard.

A snapshot of rule stringency taken ten year ago would have shown the South Coast District with the State's most stringent rules, setting the benchmark for stationary source control. The picture today looks very different. Since early this decade, the Valley District has set aggressive rulemaking targets in its SIPs for ozone and particulate matter. As a result, its existing rules together with those under development now are on par with the South Coast's. Information about the District's and other Districts' rules is included as an appendix to this report.

The challenge that remains will require development and application of new technologies, increased efficiency across all sectors of the economy, land use and transportation policies that foster sustainable growth, and actions by Valley residents to reduce the air quality impacts of their daily activities. Incentive funds will help achieve early reductions as new regulatory requirements phase in. ARB staff has proposed several recommendations that would support such efforts. These recommendations are intended to supplement the approved SIP, and if successful, could later be quantified and credited towards attainment.

Conclusions and Recommendations

The San Joaquin Valley's Air Pollution Control District (District), along with local cities, counties, and transportation agencies, all have important roles to play in reducing air pollution as the region continues to grow. The District's rules currently meet State and federal SIP stringency requirements. However, as technology advances, additional cost-effective applications are expected. Air Resource Board (ARB or Board) staff recommends the following processes and ongoing assessments to ensure continued progress in reducing emissions in the region.

District Actions

Industrial and Commercial Facilities

- The District should complete its effort to raise its cost-effectiveness thresholds for Best Available Control Technology (BACT) for new air pollution sources consistent with other air districts' thresholds. This would expand the universe of potential control technologies the District considers in the permitting process.

- The District should widen its search for cutting-edge technologies by looking beyond the Valley for new control techniques. This includes looking at other California air district control technology databases as well as looking elsewhere in the country and internationally.

- In assessing the applicability of technologies, the District should consider the feasibility of technology transfers from one source type to another.

- The District should continue to look for opportunities to expand the use of technologies identified in the International Sustainable Systems Research Center (ISSRC) draft August 2007 report. Continuing efforts to electrify agricultural pumps is an example. ARB staff supports a partnership with the District and agriculture industry to bring about the necessary action by the Public Utilities Commission.

- The District Board should periodically review, in a public setting, the current state-of-technology and potential for future technology development.

- The District should continue its local task force as a means to identify ways to speed progress and should expand its purview to include industrial sources as well as mobile sources.

- Where appropriate the District should continue to address localized impacts of sources through the nuisance provisions of state law.

- The District should participate in the State's effort to design strategies to reduce greenhouse gas emissions from manure management and any other strategies that may have a co-benefit of reducing ozone forming pollutants.

Clean Air Days

- The District should encourage actions by Valley residents and businesses to reduce emissions on days with high ozone levels. The District has begun to develop a Clean Air Day concept and should continue on that path.

Local Government Actions

Land Use and Transportation

- The region should develop cohesive policies to support land use and transportation decisions that foster sustainable growth. The District should take a leadership role and engage with other local agencies to bring air quality concerns more broadly into regional decision making. The region's nascent Blueprint can set the stage.

Local Funding Decisions

- The local governments receiving federal Congestion Mitigation and Air Quality (CMAQ) funds should give funding priority to projects that provide real, cost-effective emissions reductions.

- The District should continue to work with ARB to maximize the use of incentive funds to achieve early emission reductions in the Valley. The District is already very active in the public process for obtaining Proposition 1B bond monies, and the California Partnership for the San Joaquin Valley has been an important voice in indentifying the need for additional funding.

Ongoing ARB Focus on the Valley

In September, to accelerate air quality progress in the San Joaquin Valley, ARB strengthened the State Strategy for car, trucks, and construction and agricultural equipment. To follow up in September's actions, ARB will bolster its efforts in the Valley on public education, outreach, and advanced technology development.

ARB Rulemaking

- The air quality status of the San Joaquin Valley will be explicitly considered as ARB staff develops major new regulations. Over the next year the key focus is the fleet rule for heavy diesel trucks. At the September Board meeting, ARB strengthened its measure for agricultural equipment cleanup. This measure will be a high priority for the Board.

expected to be complete until some time next year. Until that work is complete, ARB staff is not able to estimate with certainty the impacts of any diesel truck inventory changes. ARB staff has presented this information here to help provide a general understanding of how future inventory changes may impact progress toward attainment of the ozone standard in the Valley.

Potential Changes to On-road Heavy Duty Truck Emission Estimates in the San Joaquin Valley
(Summer Planning tons per day)

	2017	2020	2023
EMFAC2007 Emissions Estimate	113	87	72
Possible Heavy-duty Truck Inventory Estimate Update	69	59	55
Net Difference	**44**	**28**	**17**

Potential Impact of Possible Changes to On-road Heavy Duty Truck Emission Estimates in the San Joaquin Valley on ARB's 2007 State Strategy Commitment for Cleaner In-Use Heavy-duty Trucks
(SJV, Summer Planning tons per day)

	2017	2020	2023
SIP Measure	62	30	21
Potential Emission Reduction Estimate Based Possible Inventory Changes	30	24	20
Net Difference	**32**	**7**	**1**

A similar inventory improvement effort is underway for emissions from agricultural equipment, especially tractors, in support of upcoming rule development for the cleanup of in-use agricultural equipment. The Board committed to develop a measure to clean up agricultural equipment as part of the State Strategy adopted in September 2007.

That effort is in its very first stages, and ARB staff does not yet have enough information to provide a preliminary estimate of the potential changes to the inventory that may result. Depending on the relationships that are identified between such factors as useful life, activity by age and horsepower, and age distribution, future estimates could be either larger or smaller than the current estimate.

REVIEW OF DISTRICT RULES AND MEASURES

State and Federal Technology Requirements for Stationary Sources

In California, each of the local air districts has rules governing existing stationary sources. These rules are known as prohibitory rules. They include requirements for emission limits, testing, recordkeeping, and reporting. Prohibitory rules may be generic, such as limiting the maximum level of a particular pollutant (such as oxides of nitrogen) at any facility, or they may address specific equipment, such as a turbine, a boiler, or an internal combustion engine.

Prohibitory rule emission limitations reflect established emission control technologies that can be feasibly added to existing sources. The most stringent of these technologies are referred to as Best Available Retrofit Control Technology (BARCT). In addition to BARCT, federal law requires nonattainment areas to implement Reasonably Available Control Technology (RACT) at large stationary sources.

In addition to district prohibitory rules that apply to existing sources, there are rules that apply to new or modified stationary sources. These are referred to as the New Source Review (NSR) program. The NSR program requires that large new sources, as well as existing sources undergoing large modifications, install the Best Available Control Technologies (BACT) as a part of the initial design of the source.

When BACT is required, owners of sources must ensure that the equipment they are installing will not emit air pollutants at levels greater than those of similar new facilities. These limits are at least as stringent as the air district's prohibitory rules. To identify BACT for a specific stationary source, air district staff needs to conduct a comprehensive evaluation of the cost and effectiveness of equipment, including obtaining testing results or similar proof that the emission levels have been achieved in practice. District staff is also expected to conduct a broad search (even internationally, at times) for technologies that have been demonstrated through testing on similar types of stationary sources to reduce emissions to the lowest levels.

Once identified, the cost of the identified technology is compared to the air district's BACT cost-effectiveness threshold. If the cost is lower than the threshold, then the technology can be designated as BACT in that district for that type of stationary source.

The diagram below compares the general level of control compared to the relative cost of the control equipment for each of these levels of control.

- The Valley District uses only its own BACT Clearinghouse to make BACT determinations, unless there are classes and categories of equipment not contained in the Clearinghouse. Conducting a broader technology search would help District staff become more aware of technology advancements in other jurisdictions, encourage the advancement of emission controls, and promote consistency statewide.

- When determining whether a BACT control technology is achieved in practice for a given class or category of source, the District currently requires that the "type of business where the emission units are utilized must be the same." [2] CAPCOA/ARB Guidance on Achieved in Practice BACT Determinations does not include business type as part of the criteria for achieved-in-practice BACT determinations. ARB staff believes that business type, in itself, does not warrant establishment of a different class or category of source unless unique operational or technical issues justify alternative emission levels.

- The District should continue to look for opportunities to expand the use of the technologies identified in the ISSRC report, including electrification and SCR when making BACT determinations.

Evaluation of San Joaquin Valley District Rule Stringency

A snapshot of rule stringency taken ten years ago would have shown the South Coast District with the State's most stringent rules, setting the benchmark for stationary source control. San Joaquin Valley District would have been seen lagging behind. The picture today looks very different. While the South Coast is still pushing the limits of stringency, the San Joaquin Valley District has caught up. Since early this decade, the District has set aggressive rulemaking targets in its SIPs for ozone and particulate matter. The tables below identify recent rules the District has adopted that limit ozone precursor emissions. As a result, its existing rules, together with those under development now, are on par with those in the South Coast.

[2] Best Available Control Technology (BACT) Policy, San Joaquin Valley Unified Air Pollution Control District. November 9, 1999. Available on-line at: http://www.valleyair.org/policies_per/Policies/APR%201305.pdf

POTENTIAL IMPACT ON PROGRESS TOWARD ATTAINMENT

The following table shows the potential impact on progress toward attainment of the federal ozone standard of the changes discussed in this report. The information in the table, especially as it pertains to the potential improvements to the on-road truck emissions estimates (inventory and truck fleet rule emission reductions), is draft and subject to change. This is not a revision to the attainment demonstration.

The table shows that the Valley will make greater and more rapid progress toward attainment than was previously estimated by the air agencies. The remaining emission reductions needed for attainment in 2023 in the District's adopted SIP is 80 tons per day (tpd) of NOx. ARB staff's estimate today is that that the needed remaining emission reductions may be as low as one quarter of that, on the order of 20 tpd. Most importantly, ARB staff now estimates that progress by 2017 will be much greater than previously believed. The remaining excess emissions in 2017 will be only half of the previous estimate. While this gap can not feasibly be closed now, and 2023 remains the necessary legal deadline, most of what needs to be accomplished to attain the federal standard will be in place by 2017.

San Joaquin Valley NOx Emissions with Strengthened SIP Commitments and Future Emissions Inventory Improvements

		2017	2020	2023
Baseline Emissions		362	322	295
Pending and Future Potential Emission Inventory Improvements (these all would reduce the future estimated emissions compared to the SIP.)	Natural Gas Combustion	37	38	39
	Small Boilers Rules 4307 & 4308	4	4	5
	Possible Heavy-duty Truck Inventory Estimate Update	44	28	17
Measure Reductions	Strengthened ARB Reductions with Potential Updated On-road Truck Emissions Reduction Estimate Based on Possible Heavy-duty Truck Inventory Estimate Update	61	49	45
	District Reductions	8	8	8
Adjusted Controlled Emissions Inventory		209	193	181
Attainment Target			160	
Remaining Emission Reduction Needs after Adoption of Strengthened SIP Measures and Pending and Future Potential Emissions Inventory Improvements		49	33	21

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CALCULATION METHOD FOR AIR QUALITY PROGRESS METRIC

This appendix provides the calculation method for the air quality progress metric used in the body of the report. The metric shows approximately 90 percent progress in terms of compliance with the federal 8-hour ozone standard by 2018. From a legal perspective, compliance with the standard is either yes or no for each air quality monitoring site. Therefore, staff considered any site for which photochemical modeling predicts moving from nonattainment to attainment of the standard as 100 percent improvement. Eleven of the eighteen sites show 100% improvement. Even the most challenging sites in the southern Valley show significant improvement. For example, from the table below, Arvin shows a 50 percent improvement relative to the predicted value above the federal standard on the remaining days that exceed the standard (the number days exceeding the standard will be substantially lower than today). Since the monitoring network is reasonably representative of the entire Valley, staff calculated the overall progress as the average percent improvement across all sites. The photochemical modeling used to project the 2018 concentrations is available at:
http://eos.arb.ca.gov/eos/SIP_Modeling/cc/2018_SJV_DVs_2007-01-19.pdf

	Observed Ozone Design Value, ppb	Predicted Ozone Design Value, ppb	Standard Exceeded By, ppb		Design Value Improvement %
Site	2006	2018 with new measures	2006	2018	2006 vs 2018
Arvin	110	97	26	13	50%
Bakersfield - California St.	99	85	15	1	93%
Bakersfield - Golden Ave.	88	83	4	0	100%
Clovis	90	83	6	0	100%
Edison	100	89	16	5	69%
Fresno - Drummond St.	87	84	3	0	100%
Fresno - First St.	99	86	15	2	87%
Fresno - Sierra Skypark	96	92	12	8	33%
Hanford	86	77	2	0	100%
Sequoia N.F. - Mineral King Rd	103	83	19	0	100%
Madera	78	74	--	--	--
Merced	88	82	4	0	100%
Mariposa	89	82	5	0	100%
Oildale	96	87	12	3	75%
Parlier	92	87	8	3	63%
Shafter	89	79	5	0	100%
Sequoia N.F. - Lower Kaweah	96	81	12	0	100%
Turlock	86	80	2	0	100%
Visalia	92	79	8	0	100%

Appendix C

TASK FORCE AND PUBLIC OUTREACH MATERIALS