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.

ARB Community Outreach

- ARB Staff will continue its community-oriented public workshops throughout the Valley on rulemaking, bond funding, climate change, and other issues as they come forward.

Technology Advancement

- ARB staff is working with US EPA on a New Technology Forum to be held in the San Joaquin Valley in 2008. The goal is to showcase new technologies that will provide many of the new near-term emission reductions in the Valley's ozone SIP, as well as potential longer-term technology advancements.

Public Education

- ARB staff will hold a public education forum in the Valley in 2008 focused on the science of air pollution in the Valley. ARB staff will develop community oriented presentations on the science underlying California's effort to improve air quality in the San Joaquin Valley. The forum is planned for UC Merced to facilitate academic participation.

ARB SIP Progress Reports

- ARB staff will report annually to the Air Resources Board on the progress in implementing San Joaquin Valley SIPs for both ozone and particulate matter, the rate of emission reductions, and the status of air quality.

Reports to the San Joaquin Valley District Board

- ARB staff will continue to provide a monthly update at District Board meetings on topics of interest to the Board.

INTRODUCTION

Background

The federally required 2007 Ozone Attainment Plan for the San Joaquin Valley was adopted by the District in May 2007. This SIP was developed in a public process that began in early 2006. Regulation of stationary sources (e.g., industrial and commercial facilities) is the responsibility of the District. The mobile source element of the plan is the responsibility of the ARB. These two components, combined with transportation strategies and required technical elements, comprise the SIP for a region. In June 2007 the ARB approved the District's portion of the plan. In September 2007 ARB approved a new statewide mobile source strategy focused on the SIP needs of the San Joaquin Valley and South Coast Air Basin.

Prior to adoption by the Board in September 2007, the ARB plan was strengthened considerably to speed progress toward the ozone standard in the Valley and to support fine particulate matter (PM2.5) attainment in the South Coast. The emission reductions for the Valley by 2017 from new ARB measures were increased by 50 percent compared to the original draft. ARB staff estimates that, when combined with reductions from local district actions, the strengthened State Strategy as adopted will improve Valley air quality by close to 90 percent by 2018 when measured as progress toward the federal ozone standard. A summary of the strengthened State Strategy is included as an appendix to this report.

With ARB's portion of the SIP strengthened, ARB staff has focused on the District's SIP element to answer the basic questions: do the District's rules and SIP measures meet State and federal legal requirements for rule stringency and what actions should the District take to speed air quality progress?

Staff's review focused primarily on the District rules and measures for controlling oxides of nitrogen (NOx). Air quality science indicates that NOx reductions are relatively more beneficial for reducing ozone than are reductions of reactive organic gases, or ROG, and the Valley's NOx reduction needs are large. Staff looked at the District's adopted rules and SIP measures for limiting emissions from already existing sources and at the District's New Source Review program that looks at emissions from new sources. Staff also examined the SIP inventory to assess the impact of recent inventory improvement work on progress toward attainment.

Public Process – Task Force and Community Meetings

In June 2007, at the ARB meeting to consider the District's element of the SIP, the Board directed staff to conduct a public process to pursue additional actions that would further accelerate clean air progress. Two ARB Board members agreed to oversee the process. As part of the process, the Board directed staff

to establish a task force to engage Valley environmental, business, and government leaders in the process and to hold community meetings to reach out directly to Valley citizens.

As part of the public process directed by the Board, in August 2007, ARB staff convened a task force of business and industry advocates, air quality and public health advocates, and governmental leaders. A list of task force members is included in Appendix D. The task force has met four times to date, with a fifth meeting scheduled for November 7, 2007. The task force meetings all provide opportunity for public comment. The meetings agendas are included in Appendix D.

In addition, community meetings were convened in each of the three Valley subregions – south, central and north. In August 2007, ARB staff held community meetings in Parlier and Arvin. On November 7, 2007, ARB staff will host a community meeting in Merced. These meetings provide the public with an opportunity to ask questions, share thoughts, and provide feedback to ARB staff and the Board. Spanish translation services are provided.

The first three task force meetings, leading up to the September 27, 2007 ARB Board hearing on the State SIP Strategy for mobile sources, focused primarily on actions and efforts which could reduce mobile source emissions. In addition, authors of the ISSRC report staff briefed the task force and ARB staff on technologies identified in their report: "Clearing the Air: A Path to Clean Air by 2017." The ISSRC report took a broad-brush view of control technologies that they expected would be available in the near future and made across-the-board estimates of possible reductions if large-scale conversion to the ISSRC identified technologies were feasible. ARB staff briefed the task force on staff's proposed strengthening of the mobile source strategy at the task force meeting on September 24, 2007.

At its October 29, 2007 meeting, ARB staff briefed the task force on staff's review of the SIP emissions inventory for stationary sources and District rules and SIP measures. At that meeting, the task force members requested that ARB staff broaden its review to include additional District rules. This report includes a review of those additional rules. ARB staff will present a summary of this report at the fifth task force meeting, scheduled for November 7, 2007.

EMISSIONS INVENTORY DESCRIPTION AND REVIEW

An estimate of the emissions in a region is the foundation of a SIP. Emission inventories undergo constant improvement as new information is gathered about sources and emission rates. However, to support SIP development, District and ARB staff must take a snapshot of the inventory as it exists at a given time and use that snapshot for SIP modeling and analysis. This inventory snapshot is used in the photochemical modeling to set overall emission reduction targets and to estimate the emission reductions from control measures. As SIPs are implemented and updated, new inventory information is taken into account.

Since the SIP inventory was finalized in November 2006, District and ARB staffs have continued to work on inventory improvements. Even though the SIP inventory is set, understanding the potential impact of those improvements on emission reduction estimates and overall progress toward attainment is critical to assessing the question of accelerating progress. There are four important upcoming inventory changes:

1. A pending District emissions update for devices that burn natural gas where the individual devices are not required to be permitted, due to their small size. Instead, the emissions are inferred from data other than from permits, i.e., total natural gas consumption in the Valley.

2. A future District update of what emission sources are covered by certain District rules.

3. A future ARB update of emissions from diesel trucks.

4. A future ARB update of emissions from agricultural equipment (mostly tractors).

Stationary Source Emissions

ARB staff reviewed the emissions inventory for sources under District authority, in order to verify that the District has current emission control rules. The table below identifies the NOx emission sources in the Valley and the applicable emission control regulation. In a few instances, such as chemical and plastic manufacturing or metal plating and coating operations, the District controls emissions primarily for ROG or particulate matter (PM) benefits, but there may be small NOx emissions reported. These are so noted below.

NOx Emission Sources and Applicable Emission Control Rules
In the San Joaquin Valley
(Summer Planning tons per day)

Industrial Sector	Equipment Type	2006 NOx Emissions	Applicable District NOx Control Rules
Chemical Plants	Boilers, Process Heaters, and Steam Generators	0.1	4306-4308
	Chemical Manufacturing	0.2	ROG/PM rules
	Plastics And Plastic Products Manufacturing	0.1	ROG/PM rules
	Subtotal*	**0.4**	
Cogeneration	Boilers, Process Heaters, and Steam Generators	2.7	4306-4308, 4352
	Internal Combustion Engines	0.2	4702
	Turbine Engines	6.0	4703
	Other	0.1	
	Subtotal*	**9.0**	
Electric Utilities	Boilers, Process Heaters, and Steam Generators	2.6	4306-4308, 4352
	Internal Combustion Engines	< 0.1	4702
	Turbine Engines	0.7	4703
	Subtotal*	**3.3**	
Food And Agriculture Production And Processing	Boilers, Process Heaters, and Steam Generators	1.2	4306-4308
	Internal Combustion Engines	< 0.05	4702
	Agricultural Irrigation I.C. Engines	27.2	4702
	Processing Losses	9.1	4306-4308, 4309, 4352
	Agricultural Burning	5.1	4103
	Other	0.1	
	Subtotal*	**42.7**	
Manufacturing And Industrial	Boilers, Process Heaters, and Steam Generators	1.2	4306-4308
	Oven, Dehydrators, and Dryers	< 0.05	4309
	Internal Combustion Engines	1.6	4702
	Small Natural Gas Boilers**	32.5*	4307-4308
	Glass Manufacturing	7.6	4354
	Metal Plating And Coating Operations	0.1	ROG/PM rules
	Asphaltic Concrete Production	0.3	ROG/PM rules
	Other	2.2	
	Subtotal*	**45.5**	

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Industrial Sector	Equipment Type	2006 NOx Emissions	Applicable District NOx Control Rules
Oil And Gas Production	Boilers, Process Heaters, and Steam Generators	3.0	4306-4308, 4352
	Internal Combustion Engines	7.8	4702
	Turbine Engines	0.3	4703
	Flares	0.1	4311
	Subtotal*	**11.2**	
Petroleum Refining And Marketing	Boilers, Process Heaters, and Steam Generators	0.1	4306-4308
	Flares	0.2	4311
	Subtotal*	**0.4**	
Service And Commercial	Boilers, Process Heaters, and Steam Generators	2.4	4306-4308
	Internal Combustion Engines	0.7	4702
	Turbine Engines	0.5	4703
	Oven, Dehydrators, and Dryers	< 0.05	4309
	Subtotal*	**3.6**	
Waste Disposal	Incineration	< 0.05	4302
	Flares	< 0.05	4311
	Subtotal*	< 0.05	
Forest Management	Forest Management	3.1	4103
	Subtotal*	**3.1**	
Residential	Wood Combustion - Wood Stoves	0.1	4901
	Fuel Combustion	2.7	4902, 4905
	Subtotal*	**2.8**	
Other	Internal Combustion Engines not associated with a category above	1.4	4702
	Other	0.7	
	Fires – Structural and Automobile	0.3	
	Subtotal*	**2.4**	
Total*		**124.4**	

* Numbers may not add up due to rounding conventions.

** A discussion of the improvements to the methodology used to estimate emissions from unspecified natural gas combustion at manufacturing and Industrial sources follows.

Upcoming Inventory Improvements

Stationary Sources

The first of the two District inventory updates was submitted in November 2006. It is based on a new methodology for estimating emissions from NOx emissions from industrial equipment for which natural gas consumption or emissions are not reported for individual sources. In short, these are sources too small to fall into

the district permitting program. Without permit data, emissions from these sources must be estimated from other information.

The emissions for these so called "unspecified" manufacturing and industrial natural gas consumption sources in the 2007 Ozone Plan come from an estimate developed in the early 1990s. This estimate was carried forward into the current inventory. District staff recently reviewed this category and could find no documentation substantiating the existing estimate. Therefore, District staff developed a new methodology for estimating emissions and has submitted it to ARB for review and inclusion in future inventories.

The table below shows the changes to the emissions inventory based on this improvement. As can be seen, the change is large. ARB staff has compared the new estimate with estimates from similar sources in other air districts. The new estimate compares well with other district data. ARB staff believes the methodology is a technically sound approach for estimating NOx emissions from these types of sources.

Emissions Inventory Revisions for
Unspecified Manufacturing and Industrial Natural Gas Combustion
(Summer Planning tons per day)

	2006	2012	2017	2020	2023
Emissions Estimate in 2007 Ozone Plan	32.5	35.5	38.4	39.8	40.3
Revised Estimate	1.2	1.3	1.4	1.4	1.4
Net Difference*	**31.3**	**34.3**	**37.0**	**38.4**	**38.8**

* Numbers may not add up due to rounding conventions.

The revised emission estimation methodologies use 2005 natural gas deliveries reported to the California Energy Commission (CEC), beyond that used by permitted stationary sources in the Valley, to estimate the NOx emissions from combustion of that natural gas. For emission estimation purposes, this natural gas is assumed to be combusted in a small uncontrolled industrial boiler, and uses U.S. EPA's AP-42 emission factors.

The second District inventory update relates to how the effectiveness of adopted District rules are reflected in the inventory, specifically rules 4307 and 4308 that govern emissions from boilers, steam generators, and process heaters. These types of devices are used in many industries as evidenced by the earlier table showing the Valley's stationary source inventory.

Emission reductions from rules are reflected in the inventory through control factors. The control factors themselves are a function of the existing level of control at affected sources and the emission reductions associated with the technologies underlying the rule.

District staff believes that their current inventory methodology does not correctly apply control factors to many of the equipment units that are covered by District rules 4307 and 4308. Consequently, based on preliminary draft estimates[1], District staff believes that future emissions from these sources are overestimated. The table below shows the draft revised estimate for the benefits of these rules compared to the estimate the District provided for the 2007 Ozone Plan emissions inventory.

ARB staff is in the process of reviewing these new emission control estimates. We expect to complete this work in early 2008 in time to include the final data in future SIP emission inventories. Like ARB's potential mobile source inventory improvements, these anticipated changes will not impact the need to reclassify the region to extreme for ozone.

Preliminary Revised Estimated NOx Reductions
From Small and Medium-sized Boilers,
Process Heaters and Steam Generators
(SJV, Summer Planning tons per day)

	2017	2020	2023
2007 Ozone Plan Estimated Reductions	1.2	1.5	1.5
Revised Estimated Reductions	5.2	6.0	6.6
Net Difference	**4.1**	**4.4**	**5.1**

Diesel Trucks and Mobile Agricultural Equipment

ARB staff is continually refining its understanding of emissions from cars, trucks and mobile equipment. This inventory improvement process is typically part of regulatory development. Inventories are refined as control strategies are more fully developed. An inventory improvement process is underway now in support of the rule that ARB staff is currently developing to clean up private diesel truck fleets.

Preliminary review of data collected over the previous year indicates that the average age of trucks operating in the Valley may be younger than ARB staff has previously estimated. To the extent that trucks operating in the Valley are newer than previously thought, a revised diesel truck inventory will be smaller. Further, the corresponding reduction from the private truck fleet rule would be smaller as well. The potential impact of the possible truck emission inventory update and what it may mean to the fleet rule are included in the two tables below.

This data is very preliminary. Data collection is still ongoing to complete and validate the emerging picture of the State's diesel truck fleets. This effort is not

[1] On October 25, 2007, District staff provided a revised draft assessment of the emissions benefits of rules 4307 and 4308 – regulating emissions from boilers, process heaters and steam generators rated between 75,000 British thermal units (btu) per hour and 5 million btu per hour.

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.

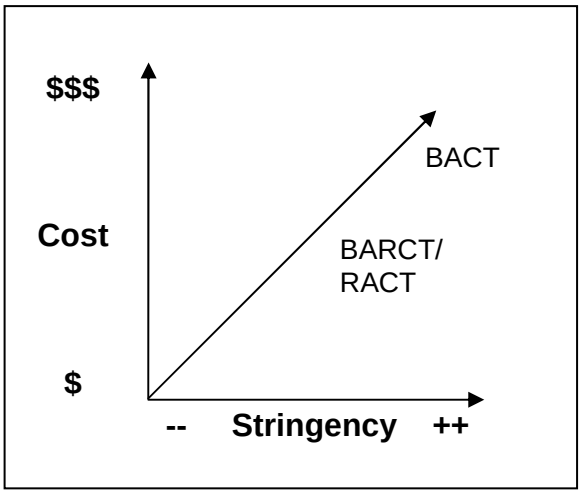
In addition to district prohibitory rules that apply to existing sources, there are rules that apply to new or modified stationary sources. These are referred to as the New Source Review (NSR) program. The NSR program requires that large new sources, as well as existing sources undergoing large modifications, 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.

Relative Stringency and Costs of Emission Control Levels



The best time to introduce new cutting-edge technologies is in the design phase of a new or modified stationary source. As engineers are designing the equipment and processes, they have the most flexibility to integrate the technology into the system to ensure the emission technology can achieve its maximum control efficiency. Integration costs are typically less as well.

As technologies advance, BACT emission levels are subject to continuous improvement. Further, this improvement ultimately manifests in more stringent prohibitory rule levels and lower BARCT emission levels. As BACT technologies become more widely used for new stationary sources, engineering problems and limitation are solved and cost can come down. Air districts can then update their prohibitory rules to reflect these newer technology levels that are being achieved in practice.

For example, low-NOx burners used in natural gas-fueled boilers that emitted NOx at 30 parts per million levels were previously considered BACT, and later were considered BARCT. Since then, BACT has advanced significantly, and BARCT in the Valley has dropped to levels as low as 5 ppm for some boiler sizes.

Before a district can take the step of mandating the retrofit of existing equipment with more stringent technology, the technology must first be shown to be effective in a wide array of uses and operating conditions. BACT serves as the proving ground for air districts to evaluate the merits and applicability of new technologies to a range of sources.

The ISSRC report recommends, for a number of different types of stationary equipment and facilities, modifying prohibitory rules to require technologies that have seen limited (if any) use in those settings. For example, the ISSRC report

recommends the District modify its prohibitory rule to require some solid fuel boilers to emit NOx at levels no higher than 40 ppm. ARB staff has not been able to identify a source that has achieved these levels in practice, and recommends a more exhaustive search of examples achieved in practice. If a technology that reduces levels of NOx from solid fuel boilers to 40 ppm is found, it would be most appropriately applied in the Valley as BACT, before migrating into a prohibitory rule.

Improving the Effectiveness of the District's BACT Program

Because the BACT program plays such a key role in driving technology and the stringency of prohibitory rules, ARB reviewed the District's process for identifying BACT to see if improvements would help to move the Valley's technology benchmarks forward more rapidly.

ARB staff has identified the following areas in which the Valley District could strengthen its BACT program.

- The District should complete its effort to raise its cost-effectiveness thresholds for BACT. The District has not raised its BACT cost-effectiveness thresholds for ozone precursors since 1989, and they are substantially below those of other districts of similar or better air quality status. The District is currently proposing to modify its NOx cost-effectiveness thresholds so that they exceed those of SCAQMD, Bay Area Air Quality Management District (BAAQMD), Ventura Air Pollution Control District (VCAPCD), and San Diego Air Pollution Control District (SDAPCD). The table below compares BACT cost-effectiveness thresholds used by various districts.

California Air District BACT Cost-Effectiveness Thresholds

District		NOx [per ton]	CO [per ton]	VOC [per ton]	PM10 [per ton]	SOx [per ton]
SJVUAPCD (current)		$9,700	$300	$5,000	$5,700	$3,900
SJVUAPCD[a] (proposed update)		**$24,500**	**same**	**$17,500**	**$11,400**	**$18,300**
BAAQMD		$17,500	n/d	$17,500	$5,300	$18,300
SCAQMD[b]		$19,100	$400	$20,200	$4,500	$10,100
VCAPCD		$18,000	$1,000	$18,000	$10,000	$10,000
SDAPCD	small source (<15 tpy)	$13,200	n/d	$7,480	n/d	n/d
	large source (>15 tpy)	$18,000	n/d	$10,200	n/d	n/d

[a] Revisions are expected to be complete by early 2008.
[b] Thresholds represent 2003 values. SCAQMD's policy states that this figure should be adjusted to the latest Marshall and Swift Equipment Cost Index published monthly in Chemical Engineering.

- 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

Recent District NOx Rule Actions

Rule	Title	Date
4103	Open Burning	6/21/2001
		9/16/2004
		5/19/2005
		5/17/2007
4106	Prescribed Burning and Hazard Reduction Burning	6/21/2001
4306	Boilers, Steam Generators, and Process Heaters- Phase 3	9/18/2003
		3/17/2005
4307	Boilers, Steam Generators, and Process Heaters - (2.0 MMBtu/hr to 5.0 MMBtu/hr)	12/15/2005
		4/20/2006
4308	Boilers, Steam Generators, and Process Heaters - (0.075 MMBtu/hr to 2.0 MMBtu/hr)	10/20/2005
4309	Dryers, Dehydrators, and Ovens	12/15/2005
4311	Flares	6/20/2002
		6/15/2006
4352	Solid Fuel Fired Boilers, Steam Generators, and Process Heaters	5/18/2006
4354	Glass Melting Furnaces	2/21/2002
		8/17/2006
4401	Steam Enhanced Crude Oil Production Wells	12/14/2006
4408	Glycol Dehydration Systems	12/19/2002
4693	Bakery Ovens	5/16/2002
4702	Internal Combustion Engines - Phase 2	8/21/2003
		6/16/2005
		4/20/2006
		1/18/2007
4703	Stationary Gas Turbines	4/25/2002
		8/17/2006
		9/20/2007
4901	Wood Burning Fireplaces and Wood Burning Heaters	7/17/2003
4905	Natural Gas Fired, Fan-type, Residential Central Furnaces	10/20/2005

Recent District ROG Control Actions

Rule	Description	Amendment Dates
4403	Components at Natural Gas Production Facilities, Chemical Plants, and Petroleum Refineries	4/20/2005
4409		
4451		
4452		
4455		
4565	Biosolid, Animal Manure and Poultry Litter Operations	3/15/2007
4570	Confined Animal Facilities	6/15/2006
4601	Architectural Coatings	10/31/2001
4602	Various Coating Operations	12/20/2001
4603		
4604		5/16/2002
4605		4/17/2003
4606		1/15/2004
4607		5/18/2006
4610		9/21/2006
4612		9/20/2007
4622	Gasoline Transfer into Motor Vehicle Fuel Tanks	9/19/2002
4623	Storage of Organic Liquids	12/20/2001
		5/19/2005
4651	Soil Decontamination Operations	9/20/2007
4653	Adhesives	12/20/2001
		9/20/2007
4661	Organic Solvents	12/20/2001
		5/16/2002
		9/20/2007
4662	Organic Solvent Degreasing Operations	4/19/2001
		12/20/2001
		9/20/2007
4663	Organic Solvent Cleaning, Storage and Disposal	12/20/2001
		9/20/2007
4682	Polystyrene Foam Manufacturing	9/20/2007
4684	Polyester Resin Operations	12/20/2001
		9/20/2007
4694	Wine Fermentation and Storage Tanks	12/15/2005

The following summarizes ARB staff's review of the District's nine most significant NOx control rules. Taken together, the nine rules plus the District's open burning rule apply to nearly 95 percent of the stationary source NOx inventory. Staff's overall conclusion is that the District's rules are as stringent as any in the State. For completeness, staff has identified where the San Joaquin Valley's District rules differ from those for similar sources in other air districts. These types of differences are typical. It might be possible to squeeze additional reductions from some sources through small incremental changes to emission limits, exemption levels, etc. The feasibility of these types of changes usually boils down to cost on an individual source basis, since the additional reductions

are small compared to already stringent control levels. In terms of quantifiable new SIP reductions the additional increment of control would not likely be significant.

Gas and Liquid Fuel Fired Boilers,
Process Heaters and Steam Generators

Existing San Joaquin Valley District Control Rule(s)

Rule:	4306 – Boilers, Steam Generators, and Process Heaters – Phase 3
Last Revised:	March 17, 2005
Applicability:	This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million Btu per hour (MMBtu/hr).
Compliance Date:	December 1, 2008

Boilers, steam generators, and process heaters with a rated heat input greater than 5.0 MMBtu/hr must meet NOx emission limits ranging from 6 to 15 parts per million by volume (ppmv) corrected to 3% oxygen (O_2) on a dry basis if gaseous fueled and 40 ppmv if liquid fueled (with few exceptions). Exceptions include, but are not limited to, refinery units with heat input between 5 MMBtu/hr and 110 MMBtu/hr. These units have gaseous fueled NOx compliance levels ranging from 25 to 30 ppmv, depending on size.

Rule:	4307 – Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr
Last Revised:	April 20, 2006
Applicability:	This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input of 2.0 MMBtu/hr up to and including 5.0 MMBtu/hr.
Compliance Date:	July 1, 2009

Boilers, steam generators, and process heaters with a total rated heat input of 2.0 MMBtu/hr up to and including 5.0 MMBtu/hr must meet NOx emission limits of either 30 or 40 ppmv corrected to 3% O_2 depending on fuel type.

Rule:	4308 – Boilers, Steam Generators, and Process Heaters - 0.075 MMBtu/hr To 2.0 MMBtu/hr
Last Revised:	October 20, 2005
Applicability:	This rule applies to any person who supplies, sells, offers for sale, installs, or solicits the installation of any new small boiler, steam generator, process heater or water heater with a rated heat input capacity greater than or equal to 0.075 MMBtu/hr and up to but not including 2.0 MMBtu/hr.
Compliance Date:	January 1, 2007

Boilers, steam generators, process heaters, and water heaters with a total rated heat input of greater than 0.075 MMBtu/hr but less than 2.0 MMBtu/hr must meet NOx emission limits of either 0.036 lb/MMBtu (30 ppmv) or 0.093 lb/MMBtu depending on size. For the same size unit, South Coast has a NOx compliance level of 20 ppmv.

The District's 2007 Ozone Plan commits to evaluate NOx reduction opportunities for boilers, steam generators, and process heaters (Control Measures S-COM-1 Large Boilers, S-COM-2 Medium Boilers, and S-COM-9 Residential Water Heaters) through rule amendments to be completed by the first quarter of 2009.

In conjunction with S-COM-1, Rule 4306 is currently undergoing the amendment process and a draft rule (dated October 30, 2007) has been publicly released. If the District adopts the proposed amendments, effective June 1, 2011 natural gas-fired boilers will be required to meet a NOx limit ranging from 5 ppmv to 30 ppmv depending on size of the boiler and annual heat input. The proposed limits reflect recent BACT determinations made by District staff, and would be the most stringent limits in the State. Oilfield boilers and refinery boilers are included in the emission limit requirements.

In conjunction with S-COM-2, Rule 4307 is also undergoing amendments. The draft rule (dated October 16, 2007) has been publicly released. The proposed amendments include removing the oilfield boiler and school boiler exemptions by July 1, 2015. This will increase the stringency of the rule; however, considering the cost-effectiveness and availability of control technology for emission units in this category, District staff should consider requiring oilfield boilers to comply with the emission limits identified in Draft Rule 4307, Table 1, sooner than July 1, 2015.

Staff identified the following differences between San Joaquin Valley District rules and other district rules addressing similar equipment. These differences are not considered significant from an emission reduction standpoint.

- District Rule 2020 exempts boilers with heat input rates less than 5.0 MMBtu/hr from permit requirements. El Dorado County Air Quality Management District rule exempt boilers with heat input rates less than 3.0 MMBtu/hr. VCAPCD has a heat input exemption threshold of 1.0 MMBtu/hr.

- Draft Rule 4306, Section 4.2.1 exempts natural gas boilers from emission limits during a maximum of 48 hours per year of testing and maintenance operations using fuels other than Public Utilities Commission quality natural gas (i.e., a back-up fuel). SCAQMD Rule 1135 contains a similar exemption for electric power generating boilers which exempts 24 hours per year of such operation.

- District Rule 4308, Boilers, Steam Generators and Process Heaters from 0.075 to 2.0 MMBtu/hr, does not apply to existing equipment. SCAQMD Rule 1146.2 establishes a compliance schedule for existing equipment.

Solid Fuel Fired Boilers,
Process Heaters and Steam Generators

Existing San Joaquin Valley District Control Rule(s)

Rule:	4352 – Solid Fuel Fired Boilers, Steam Generators, and Process Heaters
Last Revised:	May 18, 2006
Applicability:	This rule applies to any boiler, steam generator, or process heater fired on solid fuel. Heat may be supplied by liquid or gaseous fuels for start-ups, shutdowns, and during other flame stabilization periods, as deemed necessary by the owner/operator.
Compliance Date:	January 1, 2007

Municipal solid waste boilers have a NOx emission limit of 200 ppmv, corrected to 12% CO_2. All other boilers, steam generators, and process heaters fueled by biomass must meet a NOx emission limit of 115 ppmv corrected to 3% O_2. Units operated at stationary sources that have a potential to emit less than 10 tons per year of NOx are exempt from the provisions of this rule.

The District's 2007 Ozone Plan addresses solid fuel boilers in Control Measure S-COM-4, which recommends re-examining the achievability of more stringent emission limits.

Stationary Gas Turbines

Existing San Joaquin Valley District Control Rule(s)

Rule:	4703 – Stationary Gas Turbines
Last Revised:	September 20, 2007
Applicability:	The provisions of this rule apply to all stationary gas turbine systems, which are subject to District permitting requirements, and with ratings equal to or greater than 0.3 megawatt (MW) or a maximum heat input rating of more than 3.0 MMBtu/hr.
Compliance Date:	January 1, 2012

By January 1, 2012, all turbines must meet Tier 3 NOx compliance limits. All liquid-fueled turbines must meet a NOx emission limit of 25 ppmv at 15% O_2, with one exception; liquid-fueled turbines with a maximum heat input rating greater than 10 MW and permitted to operate less than 200 hr/year must maintain NOx limits of 42 ppmv.

Gaseous fueled turbines must maintain NOx limits anywhere between 5-12 ppmv, based on classification rating and length of annual operation. Simple-cycle turbines rated at greater than 10 MW and permitted for operation less than 200 hours/year must not exceed NOx levels of 25 ppmv. Turbines rated at less than 0.3 MW are exempt from the provisions of this rule.

The District has amended its turbine rule several times in recent years, and it is currently the most stringent in the State. With the exception of small or low-use turbines, the Tier 3 NOx requirements are close to emission levels currently required as BACT in California for gaseous fuel-fired units.

In the future, the District could explore bringing more non-electrical generating turbines under regulatory control by, for example, lowering the applicability thresholds of the rule to greater than or equal to 0.2 MW or maximum heat input rating of greater than 2.0 MMBtu/hr. For dual fuel and non-gaseous fuel units, District staff could also explore the NOx reduction potential and feasibility of requiring that only natural gas be used as a primary turbine fuel unless there is a natural gas curtailment. However, District staff should consider keeping the rule sufficiently flexible so the use of alternative/renewable fuels is not prohibited due to potential greenhouse gas benefits if there is no concurrent backsliding on NOx emissions.

Stationary Internal Combustion Engines

Existing San Joaquin Valley District Control Rule(s)

Rule:	4702 – Internal Combustion Engines – Phase 2
Last Revised:	January 18, 2007
Applicability:	This rule applies to any internal combustion engine with a rated brake horsepower (bhp) greater than 50 bhp.
Compliance Date:	January 1, 2015 to January 1, 2020 – Compression Ignition January 1, 2010 – Agricultural Spark Ignition

Spark-ignited internal combustion engines (ICE) not used exclusively in agricultural operations must maintain NOx levels between 25 and 75 ppmv (corrected to 15% O_2 on a dry basis). Spark-ignited ICEs used exclusively in agricultural operations must meet NOx emission limits between 90 and 150 ppmv, depending on engine type.

Certified compression-ignition engines must comply with EPA Tier 3 or Tier 4 requirements. Non-certified compression-ignition engines greater than 500 bhp and operating more than 100 hours per year must meet a NOx emission limit of 80 ppmv.

Some exemptions include ICEs rated at less than 50 bhp, ICEs used to propel implements of husbandry, ICEs used to power mobile agricultural equipment,

and ICEs that operate no greater than 200 hours per calendar year (with few exceptions).

The District's 2007 Ozone Plan addresses internal combustion engines in Control Measure S-COM-6. No schedule is included to strengthen Rule 4702. District staff recommended accelerating replacement of engines with electric motors and lowering the applicability threshold below 50 bhp. ARB staff encourages the District to accelerate electrification where possible.

Glass Production Furnaces

Existing San Joaquin Valley District Control Rule(s)

Rule:	4354 – Glass Melting Furnaces
Last Revised:	August 17, 2006
Applicability:	The provisions of this rule shall apply to any glass-melting furnace.
Compliance Date:	March 31, 2008

By March 31, 2008, all glass melting furnaces must meet Tier 2 NOx compliance limits. Container glass or fiberglass furnaces must meet a NOx emission limit of 4.0 lb/ton of glass pulled on a block 24-hour average. Flat glass furnaces must meet a NOx emission limit of 9.2 lb/ton of glass pulled on a block 24-hour average and 7.0 lb/ton of glass pulled on a rolling 30-day average.

Glass melting furnaces with a total potential to emit, for all processes, less than ten (10.0) tons per year of NOx are exempt from the provisions of this rule. Also exempt from this rule are glass melting furnaces where all the heat is supplied by an electric current from electrodes submerged in the molten glass. Heat may be supplied by other fuels for start-up when the furnace contains no molten glass.

Container glass/fiberglass and flat glass are not separated in the BAAQMD rule regulating NOx emissions from glass melting furnaces. SCAQMD Rule 1117 for Glass Melting Furnaces does not apply to flat glass furnaces.

The District's 2007 Ozone Plan commits to evaluating NOx reduction opportunities for glass melting operations (Control Measure S-COM-7) through a rule amendment to be completed by the third quarter of 2008. Rule 4354 is currently undergoing the amendment process and a draft rule (dated October 8, 2007) has been publicly released. If the District adopts its proposed amendments to Rule 4354, the NOx emission limit requirements (from 1.3 to 3.7 lb NOx/ton glass pulled and effective on and after January 1, 2011 to coincide with expected furnace rebuild schedules) will be the most stringent in the State. The proposed limits reflect recent BACT determinations made by District staff.

Dryers, Dehydrators, and Ovens

Existing San Joaquin Valley District Control Rule(s)

Rule:	4309 – Dryers, Dehydrators, and Ovens
Last Revised:	December 15, 2005
Applicability:	This rule applies to any dryer, dehydrator, or oven that is fired on gaseous fuel, liquid fuel, or is fired on gaseous and liquid fuel sequentially, and the total rated heat input for the unit is 5.0 million British thermal units per hour (5.0 MMBtu/hr) or greater.
Compliance Date:	December 1, 2008

Dehydrators are required to use only PUC quality natural gas, except during natural gas curtailments.

Concrete and asphalt plants must meet NOx emission limits of 4.3 ppmv when fueled by natural gas, and 12.0 ppmv for liquid fuel.

Milk, cheese and dairy processing facilities must meet NOx emission limits of 3.5 ppmv @ 19% O_2 (36.7 ppmv @ 3% O_2) if heat input is less than 20 MMBtu/hr and 5.3 ppmv @ 19% O_2 (55.5 ppm @ 3% O_2) if greater than or equal to 20 MMBtu/hr, regardless of fuel type. All other processes must meet a NOx emission limit of 4.3 ppmv.

Exemptions include any unit with less than 5.0 MMBtu/hr heat input, column-type or towers dryers used to dry grains, or tree nuts, units used to pre-condition onions or garlic prior to dehydration, smokehouses or units used for roasting, and units used to bake or fry foods for human consumption.

The District's Ozone Plan addresses dryers, dehydrators, and ovens in Control Measure S-COM-11, which, while not recommending any rule revisions in the near future, commits to re-evaluating the source category in the future.

ARB staff conducted a search for similar rules for dryers and ovens in other districts, but found that other districts do not have similar source-specific rules. South Coast, for example, limits NOx emissions from ovens and dryers using only BACT requirements at the time of permitting (SCAQMD Draft 2007 Air Quality Management Plan, Appendix IV-A-41). SCAQMD's 2003 BACT level for ovens and dryers was 30 ppm at 3% oxygen.

The District's existing emission limits appear to reflect the application of low-NOx burners.

Flares

Existing San Joaquin Valley District Control Rule(s)

Rule:	4311 – Flares
Last Revised:	June 15, 2006
Applicability:	This rule is applicable to operations involving the use of flares.
Compliance Date:	January 1, 2008

Ground-level flares without steam-assist must meet NOx emission limits ranging from 0.0952-0.5240 lb/MMBtu depending on heat release rate. Ground-level flares with steam-assist must meet a NOx emission limit of 0.068 lb/MMBtu.

Flares operated in municipal solid waste landfills, flares that are subject to the requirements of specific federal regulation, flares that are permitted to operate only during emergencies, and flares that emit less than 10 tons NOx per year are exempt from the emission limits in the rule.

The District's 2007 Ozone Plan addresses flares in S-IND-21. The 2007 Ozone Plan suggests that most of the NOx from flares is a result of the natural gas pilot flame that remains on at all times. District staff recommended evaluating the effect of flare minimization plans and considering the incorporation of requirements in Rule 4311 that will minimize flaring events. BAAQMD Rule 12-12 prohibits flaring except for emergencies or unless it is consistent with an approved flare minimization plan.

Other Opportunities

Composting and Biosolids

Controlling emissions from the composting of green waste and biosolids will be critical as these industries seek to expand into the Valley. District staff estimated that ROG emissions from composting operations will be nearly 75 tpd by 2017. Much of the waste being treated is not generated within the Valley. The economic setting of the composting industry in California often results in this waste being transported into the Valley, as real estate values and regulation in other regions make local handling cost prohibitive. At the same time, State law requires that California communities divert waste from our landfills – a requirement that green waste and biosolid composting is especially well suited to address.

The District has committed to reducing emissions from composting of green waste and biosolids through the use of best management practices. In order to balance California's waste disposal and air quality needs, handling green waste and biosolids should be addressed through a multi-regional, multi-media

approach, rather than through regulations which are intended to transfer the wastes, and the associated air quality impacts, into yet another region.

Dairies

Senate Bill 700 (SB 700, Florez, 2003), required ARB to develop a definition for large confined animal facilities (CAFs.) Also as part of SB 700, the District is required is required to permit large CAFs and adopt a rule requiring an emissions mitigation plan. ARB adopted a CAF definition in 2005. The District required operators of CAFs to submit mitigation plans starting in June 2006. And the District is now lowering its existing threshold for dairy mitigation to one-half the ARB definition of a large CAF.

Cattle and poultry operations are the main types of CAFs in California. In addition to ozone precursor and particulate emissions, dairy manure also emits greenhouse gases including methane, carbon dioxide, and nitrous oxide. The California Global Warming Solutions Act of 2006 (AB 32), creates a comprehensive, multi-year program to reduce greenhouse gas emissions in California.

The consideration of manure management strategies is part of the State's strategy for achieving greenhouse gas reductions under AB 32. ARB staff will conduct a series of public consultation meetings to solicit stakeholder input on potential greenhouse gas emission reduction strategies for manure management activities. Reducing methane emission from livestock operations has significant potential to help California meet its 2020 greenhouse gas target. Potential ROG reductions from these strategies could produce ozone co-benefits. The climate change scoping plan required next year under AB 32 will serve as a mechanism for moving forward on identifying further dairy emission reduction opportunities.

Burning

SB 705 requires the District to revise rules that regulate the open burning of agricultural crops and waste. SB 705 prohibits the issuance of any permit to burn certain categories of agricultural waste in the San Joaquin Valley Air Basin commencing on specific dates for each category. SB 705 allows the limited continuation of burning of agricultural waste, conditioned on the presence of disease.

Recent District rule revisions have included limited postponements to the phase out of agricultural burning, as allowed under SB 705. The District included a sunset date, as a part of the rule, after which the postponement expires. Once these postponements have expired, agricultural burning would only be conditionally allowed for diseased crops. The District staff should continue to work with the agricultural industry, as well as those industries providing alternatives to open field burning of agricultural waste, to ensure that upon expiration of the postponement, viable alternatives exist.

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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Appendix A

SUMMARY OF STRENGTHENED STATE IMPLEMENTATION PLAN STRATEGY

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SUMMARY OF STRENGTHENED STATE IMPLEMENTATION PLAN STRATEGY

California's State Implementation Plan (SIP)
Revised Staff Proposal (September 27, 2007)

Summary of Strengthened State Strategy

Discussion of Proposed New Local, State, and Federal Actions

At two Air Resources Board (ARB or Board) meetings in June 2007, the air quality challenges of meeting the federal PM2.5 standard in the South Coast and the federal 8-hour ozone standard in the South Coast and San Joaquin Valley were discussed at length. At both meetings, the Board determined that there was still more work to be done to sufficiently meet these challenges and directed staff to collaborate with the respective air districts on this task. Subsequent efforts of staff and Board members from ARB, the South Coast and San Joaquin Valley air districts, and the Southern California Association of Governments (SCAG), resulted in a strengthening of California's 2007 State Implementation Plan (SIP) that was adopted by the Board at its September 27, 2007 meeting.

For the San Joaquin Valley, ARB staff identified additional emission reductions from mobile sources for inclusion in the proposed State Strategy to help attain the ozone standard prior to the 2023 deadline. Work also began to try to identify further emission reductions from stationary sources in the Valley. For the South Coast, actions were identified that would achieve the additional emission reductions needed by 2014 to reach the PM2.5 target established by the South Coast Air District.

This section describes the strengthened State Strategy and the benefits for the San Joaquin Valley.

San Joaquin Valley

At the June 14, 2007 ARB meeting in Fresno, the Board heard several hours of testimony indicating that more work was needed to reduce emissions in advance of a 2023 "extreme" ozone attainment date. A primary focus was a draft report by the International Sustainable Systems Research Center (ISSRC), which suggested ways to further reduce emissions from both stationary and mobile sources in the Valley. At the meeting, the Board directed staff to explore what additional actions could be included in the SIP to further reduce emissions, including thoroughly reviewing the ISSRC report.

The public comments also indicated that significant work must be done to reach out to the public and build partnerships. In response, the Board also directed staff to establish a task force with Valley stakeholders to evaluate ways to further reduce emissions, including evaluating the ISSRC proposal, and to hold a series of town hall meetings in

Valley communities in an effort to receive input from the public. ARB staff held town hall meetings in Parlier, Arvin and Merced. ARB Board Members D'Adamo and Case have attended these meetings to directly hear from community members.

ARB staff held two task force meetings in August 2007 and also held a third meeting on September 24, 2007 focused on ARB staff's proposed new mobile source SIP commitments. The next two task force meetings will focus on the stationary source recommendations in the ISSRC report. ARB staff will report back to the Board on the results of these activities at its November 15, 2007 meeting.

The table below shows the additional actions that strengthen the mobile source portion of the San Joaquin Valley's 2007 ozone SIP.

Additional Actions to Accelerate Ozone Air Quality Progress in the San Joaquin Valley
(NOx Emission Reductions – tons/day in 2017)

Action / Measure	**Responsible Agency**	**NOx**
Enhanced Heavy-Duty Truck Measure	ARB	17
SOON Program Opt-in for Construction Equipment	District/ARB	4
Mobile Agricultural Equipment	ARB	5-10
Stationary Sources	District	Under evaluation
Additional Reductions		26-31

Enhanced ARB and District Actions

ARB's commitments for additional actions are an enhanced heavy-duty truck measure and a mobile agricultural equipment measure. An enhanced heavy-duty truck measure that will be heard by the Board in 2008, will reduce NOx emissions by 62 tons per day in the San Joaquin Valley in 2017 – 17 tons per day more than what was initially proposed. The emissions impact of the measure will be equivalent to having all model year 2006 and older trucks meet model year 2007 emission levels by 2014. A cleaner in-use agricultural equipment rule will reduce 5-10 tons per day in the Valley in 2017. ARB will bring this measure to the Board by 2009.

The enhanced State Strategy also includes an opt-in provision for a regional incentive program for off-road equipment. The Surplus Off-road Opt-in for NOx (SOON) program gives air districts the option of requiring older larger fleets to meet a higher level of control when incentive funds are available to help offset the cost of control. If the

San Joaquin Valley air district opts in to the SOON program, it is estimated that approximately four tons per day of additional NOx reductions could be realized in 2017.

Staff will continue to evaluate local actions for increasing NOx reductions and will also look at additional ROG reduction opportunities, including those in the ISSRC report and in public testimony. Staff does not propose to submit the stationary source portion of the San Joaquin Valley Ozone SIP before the Task Force process is complete.

Enhanced State Implementation Plan Commitments

The tables below show the emission reduction commitments of the adopted State Strategy. The enhanced State Strategy includes commitments from ARB to provide additional tons of NOx emissions in 2017 to accelerate ozone air quality progress in the San Joaquin Valley. The 2017 commitment is for a total of 88-93 tons/day of NOx reductions. This includes 22-27 tons per day of additional NOx reductions than the original proposed strategy.

Summary of Emission Reduction Commitments – San Joaquin Valley
(tons per day)

Year	NOx	ROG	Direct PM2.5	SOx
2014	76	23	5	0
2020	56	24	--	--
2023	46	25	--	--
2023 CAA 182(e)(5) measures	81 [1]	-- [1]	--	--

[1] The reductions of NOx and ROG from 182(e)(5) measures will be reassessed as new SIPs are developed and revised.

Summary of Emission Reduction Commitments – San Joaquin Valley
NOx Reductions to Accelerate Ozone Standard Attainment
(tons per day)

Year	NOx
2017	88-93

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Appendix B

CALCULATION METHOD FOR AIR QUALITY PROGRESS METRIC

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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%

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Appendix C

TASK FORCE AND PUBLIC OUTREACH MATERIALS

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TASK FORCE AND PUBLIC OUTREACH MATERIALS

Air Resources Board Air Quality Task Force
For the San Joaquin Valley
Membership List

Business/Agriculture Industry

Jan Marie Ennenga, Executive Director
Manufacturing Council of the Central Valley

Paul Martin, Director of Environmental Services
Western United Dairymen

Les Clark, Executive Vice President
Independent Oil Producers' Agency

Chris Savage
Director of Environmental and Regulatory Compliance

Roger Isom
Vice President and Director of Technical Services
California Cotton Ginners’ and Growers’ Association

Environmental/Community Groups

Kim Thompson, Air Quality Director
Fresno-Madera Medical Society

David Lighthall, Ph.D.
Central Valley Health Policy Institute

Ray Leon
Latino Environmental Advancement & Policy

Melissa Kelly-Ortega
Merced/Mariposa County Asthma Coalition

Jim Lents, President
International Sustainable Systems Research Center

Barbara Patrick
Great Valley Center

Government

Dorene D'Adamo
Board Member
California Air Resources Board

Seyed Sadredin, Executive Director/APCO
San Joaquin Valley Unified Air Pollution Control District

Judy Case, Supervisor
Fresno County

Agenda

ARB Air Quality Task Force for the San Joaquin Valley
Kickoff Meeting

San Joaquin Valley Room
San Joaquin Valley Air Pollution Control District
Fresno, California
August 22, 2007
1:00 – 5:00 pm

1) Welcome and opening remarks

2) Task Force member introductions

3) ARB staff updates

4) International Sustainable Systems Research Center preview of upcoming *Clearing the Air* report on the San Joaquin Valley

5) Task Force discussion on further actions to reduce emissions

6) Public Comments

7) Next steps and agenda topics for the August 30th meeting

-- Draft Agenda --

ARB Air Quality Task Force for the San Joaquin Valley

San Joaquin Valley Room
San Joaquin Valley Air Pollution Control District
Fresno, California
August 30, 2007
10:00 am – 2:30 pm

1)	Welcome, introductions, and opening remarks		10:00-10:10
2)	Financial incentives		10:10-10:35
	- SJV Partnership Activities	Pete Weber	
	- AG ICE	Roger Isom	
3)	ARB On-road Truck Fleet Rule		10:35-11:00
	- Summary of concept and inventory work	Jon Taylor	
4)	International Sustainable Systems Research Center		11:00-12:00
	Clearing the Air report on the San Joaquin Valley		
	- Introduction	Jim Lents	
	- Mobile source control approaches	Nicole Davis	

Lunch Break 12:00 – 1:00

4)	International Sustainable Systems Research Center, cont.		1:00-2:00
	- Stationary source control approaches	Alvin Valeriano	
5)	Public comments		2:00-2:15
6)	Dates and agenda topics for the next Task Force Meeting		2:15-2:30

-- Draft Agenda --

ARB Air Quality Task Force for the San Joaquin Valley

San Joaquin Valley Room
San Joaquin Valley Air Pollution Control District
1990 E. Gettysburg Avenue
Fresno, California 93726
Monday, September 24, 2007
1:00 p.m. – 4:00 p.m.

1)	Welcome	All
2)	Augmentation of the Mobile Source Reductions September 21 Proposal Comparison to ISSRC	ARB Staff
3)	Operational Measures Discussion of ISSRC concepts Other ideas	All
4)	ARB update on Air Quality Bonds Process	ARB Staff
5)	Next Steps and Meeting Dates	All

-- Draft Agenda --

ARB Air Quality Task Force for the San Joaquin Valley

San Joaquin Valley Room
San Joaquin Valley Air Pollution Control District
1990 E. Gettysburg Avenue
Fresno, California 93726
Monday, October 29, 2007
1:00 p.m. – 4:00 p.m.

1)	Welcome	All
2)	ARB Report on: • Rulemaking Calendar for the Implementing the SIP • Air Quality Progress Toward State Standards	ARB Staff
3)	Update on ARB Review of Potential Local Reductions	ARB Staff
4)	Next Steps	All

Next Meeting

November 7, 2007
1:00 p.m. – 4:00 p.m.

Merced County Administration Center
Room 310
2222 M Street
Merced, CA 95340

Are you concerned about ***air quality*** in your community?

SAN JOAQUIN VALLEY AIR QUALITY PARLIER COMMUNITY MEETING

August 22, 2007, 6-8 pm
Kearney Agricultural Center
9240 South Riverbend Avenue
Parlier, CA 93648

California Environmental Protection Agency
AIR RESOURCES BOARD

All community members are invited to discuss air quality concerns in the San Joaquin Valley. Attendees will have the opportunity to ask questions about current and future agency efforts.

Please come and share your ideas on what more can be done.

Let your voice be heard!

Spanish language translation will be available at this event.
For more information, contact Patricia Rey at (916) 322-2638.

¿Le preocupa *la CALIDAD del AIRE* en su comunidad?

VENGA A LA JUNTA PARA LA COMUNIDAD DE PARLIER SOBRE LA CALIDAD DEL AIRE EN EL VALLE DE SAN JOAQUIN

Miércoles 22 de agosto, 2007
De 6 a 8 de la noche
Centro Agricultural Kearney
9240 Sur de la Avenida Riverbend
Parlier, CA 93648

California Environmental Protection Agency
AIR RESOURCES BOARD

Se invita a todos los miembros de la comunidad a que nos acompañen para hablar acerca de sus preocupaciones sobre la calidad del aire en el Valle de San Joaquín. Todos los que asistan tendrán la oportunidad de hacer preguntas acerca de los corrientes y futuros esfuerzos que esta agencia lleva a cabo.

Venga a compartir sus ideas sobre que mas se puede hacer

¡Hágase oír!

Traductores al español estarán disponibles en este evento
Para más información, comuníquese con Patricia Rey al (916) 322-2990.

Are you concerned about ***air quality*** in your community?

SAN JOAQUIN VALLEY AIR QUALITY ARVIN COMMUNITY MEETING

August 29, 2007, 6-8 pm
City of Arvin Veteran's Hall
414 4th Street
Arvin, CA 93203

California Environmental Protection Agency
AIR RESOURCES BOARD

All community members are invited to discuss air quality concerns in the San Joaquin Valley. Attendees will have the opportunity to ask questions about current and future agency efforts.

Please come and share your ideas on what more can be done.

Let your voice be heard!

Spanish language translation will be available at this event.
For more information, contact Patricia Rey at (916) 322-2638.

¿Le preocupa *la CALIDAD del AIRE* en su comunidad?

VENGA A LA JUNTA PARA LA COMUNIDAD DE ARVIN SOBRE LA CALIDAD DEL AIRE EN EL VALLE DE SAN JOAQUIN

Miércoles 29 de agosto, 2007
De 6 a 8 de la noche
Sala de Veteranos de la Ciudad de Arvin
414 Calle 4ª
Arvin, CA 93203

California Environmental Protection Agency
AIR RESOURCES BOARD

Se invita a todos los miembros de la comunidad a que nos acompañen para hablar acerca de sus preocupaciones sobre la calidad del aire en el Valle de San Joaquín. Todos los que asistan tendrán la oportunidad de hacer preguntas acerca de los corrientes y futuros esfuerzos que esta agencia lleva a cabo.

Venga a compartir sus ideas sobre que mas se puede hacer

¡Hágase oír!

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Are you concerned about ***air quality*** in your community?

SAN JOAQUIN VALLEY AIR QUALITY MERCED COMMUNITY MEETING

November 7, 2007, 6-8 pm
Tenaya Middle School
760 W. 8th Street
(corner of 8th and N Streets)
Merced, CA 95341

California Environmental Protection Agency
AIR RESOURCES BOARD

All community members are invited to discuss air quality concerns in the San Joaquin Valley. Attendees will have the opportunity to ask questions about current and future agency efforts.

Please come and share your ideas on what more can be done.

Let your voice be heard!

Spanish language translation will be available at this event.
For more information, contact Patricia Rey at (916) 322-2638.

¿Le preocupa *la CALIDAD del AIRE* en su comunidad?

VENGA A LA JUNTA PARA LA COMUNIDAD DE MERCED SOBRE LA CALIDAD DEL AIRE EN EL VALLE DE SAN JOAQUIN

Miércoles 7 de noviembre, 2007
De 6 a 8 de la noche
Tenaya Middle School
760 West 8th Street
(esquina de las calles 8 y la N)
Merced, CA 95341

California Environmental Protection Agency
AIR RESOURCES BOARD

Se invita a todos los miembros de la comunidad a que nos acompañen para hablar acerca de sus preocupaciones sobre la calidad del aire en el Valle de San Joaquín. Todos los que asistan tendrán la oportunidad de hacer preguntas acerca de los corrientes y futuros esfuerzos que esta agencia lleva a cabo.

Venga a compartir sus ideas sobre que mas se puede hacer

¡Hágase oír!

Traductores al español estarán disponibles en este evento
Para más información, comuníquese con Patricia Rey al (916) 322-2990.