

5. REGIONAL SIP SUMMARIES

San Joaquin Valley Air Basin

Overview

The San Joaquin Valley Air Basin (Valley) is one of the fastest growing regions in California and is home to more than 3.6 million people. The Valley has ozone levels nearly 35 percent above the federal standard which make it among the most heavily impacted regions in the nation. The Valley is currently classified as serious nonattainment for the federal 8-hour ozone standard, as well as nonattainment for the federal PM_{2.5} standard. The San Joaquin Valley Air Pollution Control District (District) released a draft plan for attainment of the ozone standard in October 2006. The combined local measures and State Strategy will provide progress towards attainment of both the ozone and PM_{2.5} standards. However, because we do not yet have carrying capacities from the particulate modeling for the Valley, we may need to revisit the Strategy over the next few months as the District develops its PM_{2.5} attainment plan.

Preliminary modeling indicates that attainment of the ozone standard in the Valley is heavily dependent on control of nitrogen oxides (NO_x) emissions and that NO_x emissions must be reduced by 75 percent from today's levels in order for the region to reach attainment of the standard. Reducing reactive organic gases (ROG) will also help to reduce ozone, especially in the near-term. Air quality modeling indicates that while important, ROG emission reductions do not have the same relative benefit as NO_x emission reductions. In order to demonstrate attainment of the 8-hour ozone standard by the June 15, 2013, nominal attainment date, all of the emission reductions needed for attainment must be in place by the beginning of the ozone season in 2012.

California's existing air pollution control program is already providing reductions of the ozone precursors. The current control programs will provide a 27 percent reduction in NO_x and a 9 percent reduction in ROG emissions between now and 2012 in the Valley. To attain the standard in 2012, the Valley would need to have further NO_x reductions of more than 66 percent. Clearly, demonstrating attainment of the federal ozone standard by June 2013 as a serious nonattainment area is not a viable option. The Clean Air Act (Act) allows, and the U.S. Environmental Protection Agency (U.S. EPA) recommends, that in these cases the area be reclassified to an appropriate higher classification such as severe-15, severe-17, or extreme with attainment dates in 2019, 2021, and 2024, respectively.

ARB staff believes that an extreme classification is the Valley's only realistic option. If the Valley were to bump up to severe-17, the emission reductions needed to attain in 2021 would still exceed all of the reductions identified to date by more than 100 tons per day of NO_x – despite the very aggressive State

Strategy being proposed here. The Valley faces a fundamental technology constraint in its effort to attain the federal ozone standard. As discussed later in this section, even if every car, truck, and piece of construction and farm equipment met the cleanest adopted emission standards, the Valley would still be unable to attain by 2021.

With a 2024 attainment deadline, the majority of the emission reductions needed to bring the Valley into attainment will come from the implementation of the existing State mobile source control program, as newer and cleaner equipment and vehicles become available. However, additional reductions will still be needed. The ARB and District staffs have identified additional opportunities to garner further reductions. The State Strategy proposed in this document proposes significant additional mobile source emission reductions in the Valley on a very aggressive timeline. The San Joaquin Valley District staff is also proposing additional controls on stationary and area-wide sources. Both the State and the local proposals include innovative emission reduction strategies, including regulations, incentive programs, and alternative compliance programs. While the combined existing program and new measures provide significant progress, more reductions are needed to get the entire Valley to attainment of the ozone standard. Therefore, the ARB and the District will need to continue to develop longer-term concepts to provide the final increment of reductions needed for the Valley to attain the standard.

The focus of the current planning effort for the San Joaquin Valley is ozone, but it is important to remember that the Valley is also classified as nonattainment for the federal PM_{2.5} standard. The Valley now has a nominal attainment date for the PM_{2.5} standard of April 2010, with a maximum extension to 2015. The PM_{2.5} attainment plan must be submitted to U.S. EPA by April 5, 2008. As discussed below, many of the control strategies needed to bring the Valley into attainment of the federal ozone standard will also provide progress towards attainment of the PM_{2.5} standard. Like the 8-hour ozone standard, U.S. EPA guidance requires all of the emission reductions needed to attain the PM_{2.5} standard to be in place by the beginning of the year prior to the attainment year, in this case 2014 if the extension is granted. The District will adopt a PM_{2.5} attainment plan in the first half of 2008. As part of this effort, ARB staff will work with the District to both identify emission reduction targets for attainment and to ensure the Valley comes into attainment with the fine particulate standard as expeditiously as practicable.

Topography and Meteorology

The San Joaquin Valley is the southern half of the Great Central Valley, one of the dominant features in California's landscape. Open to the Sacramento-San Joaquin River Delta in the north, the San Joaquin Valley is surrounded by the Sierra Nevada Mountains to the east, the Pacific Coast Range to the west, and the Tehachapi Mountains to the south. Airflow patterns in the San Joaquin

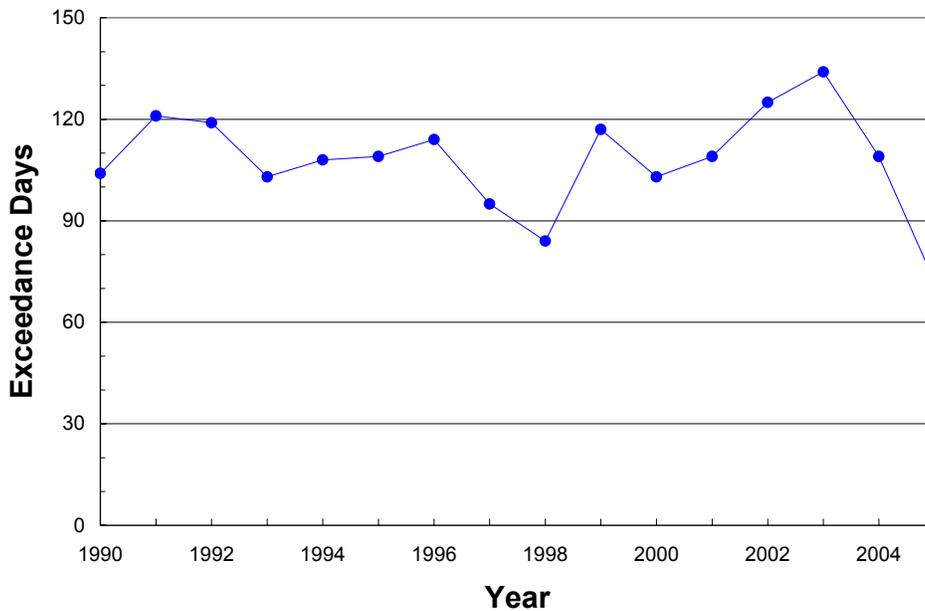
Valley tend to move from north to south and are dammed by the surrounding mountain ranges.

The climate and geography of the San Joaquin Valley create the optimal conditions for creating and trapping air pollution. The Valley is characterized by hot, dry summers, with normal temperatures in the nineties, and heat waves periodically exceeding 100 degrees Fahrenheit. Winters in the San Joaquin Valley are cool and damp, with frequent periods of dense fog. In both summer and winter, the major airflow patterns tend to result in long mixing times for emitted pollutants, especially in the central and southern portions of the Valley. These stagnant weather patterns make the Valley vulnerable to forming ozone and fine particulate matter air pollution and impede the region's ability to disperse it. The ozone season in the San Joaquin Valley spans a six-month period—May through October. Approximately two out of every three days in this period has an exceedance of the national ozone standard at one or more sites within the Basin—reflecting the challenge of attaining the standard throughout the Valley.

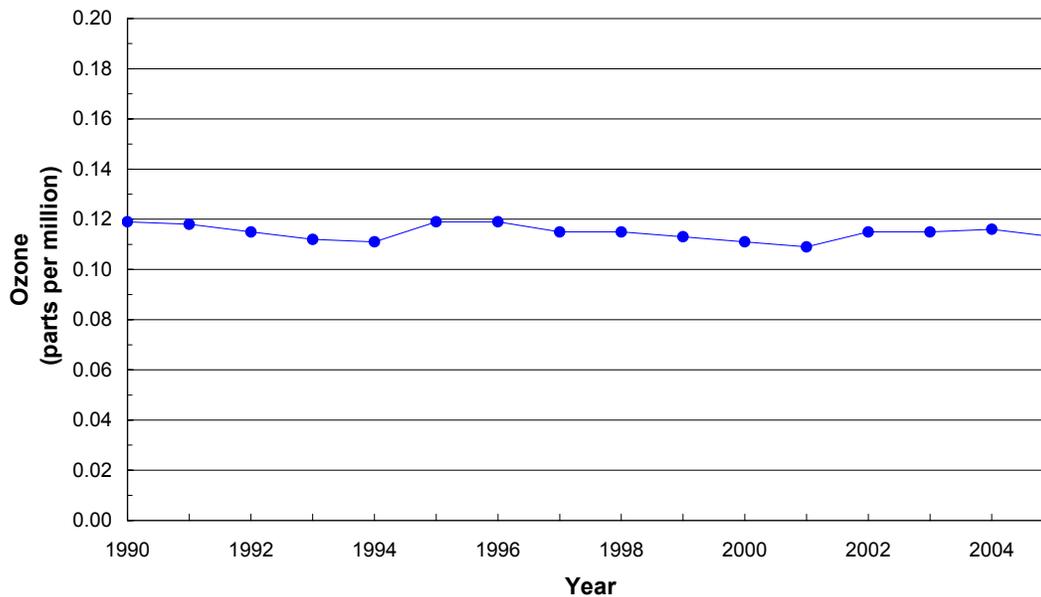
Current Air Quality

Unlike many other ozone nonattainment areas of the State, the ozone problem in the San Joaquin Valley is not dominated by one large urban area. Instead, it comprises a number of moderately sized population centers, located along the main, northwest-southeast axis of the Valley. Trends for 8-hour ozone levels for the San Joaquin Valley as whole have been strikingly flat over the last 10 years. While the number of days exceeding the federal 8-hour ozone standard has declined more than 30 percent between 1995 and 2005, the federal 8-hour design value has dropped by only 5 percent (see the tables below).

**San Joaquin Valley
Federal 8-hr Ozone Exceedance Days (1990-2005)**



**San Joaquin Valley
Federal 8-hr Ozone Design Values* (1990-2005)**



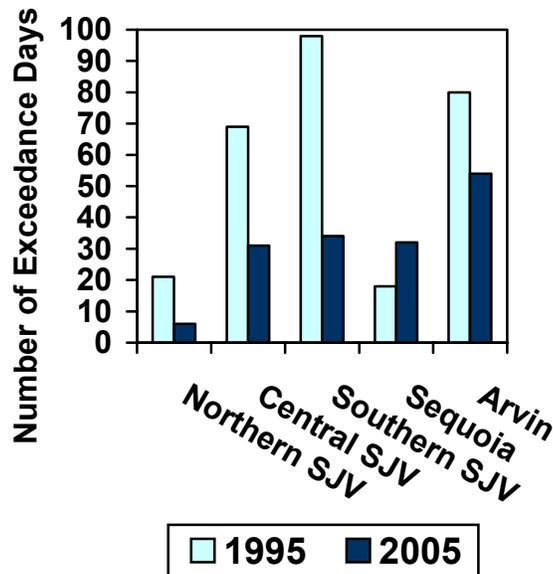
* The Federal 8-hr ozone design values are represented by the "3 year average of the 4th high 8-hour" in ADAM

Because the Valley encompasses a very large geographic area, looking at sub-regions with more similar geography and weather conditions help provide a better understanding of air quality improvements and challenges. Generally, the

number of days exceeding the 8-hour standard is low in the northern region, but dramatically increases from the central to the southern region of the San Joaquin Valley. High ozone concentrations are widespread and commonly occur in the urbanized Merced, Fresno, and Bakersfield regions, and as well as in the downwind areas of Parlier, Sequoia National Park, and Arvin.

Air quality has improved in the Fresno and Bakersfield urban areas. Generally, concentrations are decreasing, with fewer unhealthy days during the ozone season that exceed the federal standard in 2005 as compared to 1995. In 2005, the Central part of the Valley exceeded the standard on 31 days. The Southern part of the Valley exceeded the standard on 34 days (see table below).

8-hour Ozone Exceedance Days



Ozone exceedances in downwind areas such as Arvin and Sequoia National Park are a special concern. Arvin, a community of 15,000 people southeast of Bakersfield and at the foot of the Tehachapi Mountains, was the San Joaquin Valley's design site for 2005, with a design value of 0.113 parts per million (ppm), over 35 percent above the level of the standard of 0.084 ppm. Generally, the number of exceedance days at Arvin surpasses any other site in the San Joaquin Valley with the possible exception of sites located in Sequoia National Park, downwind of the Fresno area. The air quality monitor in Arvin records an exceedance 85 percent of the time when there is an exceedance anywhere in the San Joaquin Valley.

Air quality planning in the San Joaquin Valley is further complicated because the Valley is also designated nonattainment for the federal PM2.5 standard. PM2.5 tends to be high during the wintertime. While the Valley does currently meet the 24-hour PM2.5 standard of 65 ug/m3, the design value for the annual PM2.5

standard is approximately 25 percent above the standard of 15 ug/m³. Attainment of the annual standard is the most significant near-term challenge in the San Joaquin Valley. In addition, the Valley has a significant number of days above the new 24-hour standard of 35 ug/m³, which became effective at the end of 2006 and will be the subject of a future planning cycle.

Emission Inventory

Emission sources in the San Joaquin Valley are diverse. The San Joaquin Valley is an important transportation corridor for moving goods and people inside the State and beyond. In addition, it is one of the most productive agricultural regions in the world as well as home to industrial and commercial activities. All of these sources contribute to the concentrations of pollutants in the Valley. The table below shows the San Joaquin Valley's ozone precursor emission split by source category.

Baseline Emission Trends

(San Joaquin Valley Air Basin, in summer planning tons per day)

Source Category	ROG			NOx		
	2006	2023	% Change	2006	2023	% Change
Stationary & Area-wide ¹	279	314	+12%	128	116	-10%
On-Road Mobile Vehicles ²	99	42	-58%	361	105	-71%
Off-Road Vehicles and Equipment ²	74	59	-21%	161	80	-50%
Total³	452	414	-8%	650	300	54%

1 – Baseline emissions with SJV Controls Measures adopted through 2006.

2 – State Measures adopted through 2006.

3 – Numbers may not add up exactly due to rounding.

Mobile sources, including commercial trucks, passenger vehicles, tractors and construction equipment account for nearly 80 percent of the NOx emissions in the San Joaquin Valley. Of this, commercial trucks are the leading source, accounting for 45 percent of the total NOx emissions Valley-wide. Passenger vehicles, the number two source, accounted for 9 percent of the total NOx emissions in the San Joaquin Valley. The future year emission inventory projections show reductions are expected to occur due to the existing emission control programs. The following table shows the top 25 sources of NOx emissions in the San Joaquin Valley.

Top 25 NOx Emission Sources
(San Joaquin Valley Air Basin, in summer planning tons per day)

Source Category	2006	2015	2023
HEAVY DUTY DIESEL TRUCKS	285	141	75
FARM EQUIPMENT (COMBINES AND TRACTORS)	60	34	17
PASSENGER VEHICLES	58	28	16
<i>Light Trucks, Minivans and SUVs</i>	<i><27</i>	<i>13</i>	<i><8</i>
<i>Passenger Cars</i>	<i><20</i>	<i><9</i>	<i><5</i>
<i>Medium Duty Trucks</i>	<i>12</i>	<i><7</i>	<i><4</i>
MANUFACTURING AND INDUSTRIAL (BOILERS, IC ENGINES)	39	44	48
OFF-ROAD EQUIPMENT (CONSTRUCTION AND MINING)	35	20	12
OFF-ROAD EQUIPMENT (OTHER)	34	21	15
<i>Oil Drilling and Workover Rigs</i>	<i>21</i>	<i>13</i>	<i>8</i>
<i>Industrial Equipment</i>	<i><4</i>	<i><2</i>	<i><1</i>
<i>Transport Refrigeration Units</i>	<i>3</i>	<i><4</i>	<i>4</i>
<i>Commercial</i>	<i><3</i>	<i><2</i>	<i>1</i>
<i>Cargo Handling Equipment</i>	<i><1</i>	<i><1</i>	<i><1</i>
<i>Airport Ground Support Equipment</i>	<i><1</i>	<i><1</i>	<i><1</i>
<i>Other</i>	<i><3</i>	<i><2</i>	<i><1</i>
LOCOMOTIVES	22	21	22
AGRICULTURAL IRRIGATION PUMPS	16	5	5
OIL AND GAS PRODUCTION (COMBUSTION)	11	10	10
COGENERATION (ELECTRICITY GENERATION AND HEAT RECOVERY)	9	8	8
GASOLINE-FUELED COMMERCIAL TRUCKS	9	7	6
FOOD AND AGRICULTURE (CROP PROCESSING AND WINERIES)	9	9	9
GLASS AND RELATED PRODUCTS	8	9	11
RECREATIONAL BOATS	5	6	6
<i>Pleasure Boats</i>	<i><5</i>	<i>5</i>	<i>5</i>
<i>Personal Water Craft</i>	<i><1</i>	<i>1</i>	<i>1</i>
AG BURNING	5	5	5
SERVICE AND COMMERCIAL (BOILERS, IC ENGINES)	4	5	5
PRESCRIBED BURNING	3	3	3
ELECTRIC UTILITIES	3	3	4
AIRCRAFT	3	5	5
RESIDENTIAL FUEL COMBUSTION	3	3	3
<i>Water Heating</i>	<i>1</i>	<i>1</i>	<i>1</i>
<i>Space Heating</i>	<i><1</i>	<i><1</i>	<i><1</i>
<i>Cooking</i>	<i><1</i>	<i><1</i>	<i><1</i>
<i>Other (Clothes Dryers, BBQs, Pool Heaters and Fireplaces)</i>	<i><1</i>	<i><1</i>	<i><1</i>
PUBIC TRANSIT BUSES	2	3	3
SCHOOL BUSES	2	2	2
MINERAL PROCESSES (MINING, CEMENT MANUFACTURING)	2	3	3
OTHER (FUEL COMBUSTION)	2	1	1
MOTORCYCLES	1	1	2
All other sources	17	6	6

Note: Due to rounding, subcategory emission sums may not match the listed total for the category.

TOTAL	650	404	300
<i>Subtotal: On-Road Mobile Sources</i>	<i>361</i>	<i>185</i>	<i>105</i>
<i>Subtotal: Off-Road Mobile Sources</i>	<i>161</i>	<i>109</i>	<i>80</i>

Emission sources of ROG are more diverse. Of the top 25 ROG sources in the San Joaquin Valley (see the table on the next page), only two individual categories are larger than 10 percent of the total inventory – passenger vehicles and composting currently account for 14 percent and 13 percent, respectively. All other ROG sources, including livestock waste, prescribed burning, oil and gas production, and recreational boats make up less than 10 percent when viewed individually.

Anthropogenic, stationary and area-wide sources make up nearly 60 percent of the total ROG emissions, and on-road mobile sources make up one-quarter of the ROG emissions. The balance is made up of off-road mobile sources such as construction and farming equipment. Emissions from stationary and area-wide sources are expected to grow in the future – emissions from waste disposal and composting are expected to increase by more than 20 tons per day between now and 2023.

Top 25 ROG Emission Sources
(San Joaquin Valley Air Basin, in summer planning tons per day)

Source Category	2006	2015	2023
PASSENGER VEHICLES	62	35	24
<i>Passenger Cars</i>	<29	13	8
<i>Light Trucks, Minivans and SUVs</i>	<26	16	11
<i>Medium Duty Trucks</i>	8	6	5
WASTE DISPOSAL/COMPOSTING	57	71	80
LIVESTOCK WASTE (DAIRY CATTLE)	40	33	41
OIL AND GAS PRODUCTION (EVAPORATIVE LOSSES/FLARING)	28	25	23
CONSUMER PRODUCTS	24	26	30
PESTICIDES	23	21	21
HEAVY DUTY DIESEL TRUCKS	20	12	8
RECREATIONAL BOATS	20	17	17
<i>Pleasure Boats</i>	16	14	14
<i>Personal Water Craft</i>	4	3	3
FOOD AND AGRICULTURE (CROP PROCESSING AND WINERIES)	13	12	13
ARCHITECTURAL COATINGS (PAINTS AND THINNERS)	11	12	13
OFF-ROAD EQUIPMENT (OTHER)	10	5	4
<i>Commercial</i>	3	1	<1
<i>Oil Drilling and Workover Rigs</i>	2	1	<1
<i>Transport Refrigeration Units</i>	1	<1	<1
<i>Industrial Equipment</i>	1	<1	<1
<i>Cargo Handling Equipment</i>	0	<1	<1
<i>Airport Ground Support Equipment</i>	0	<1	<1
<i>Other</i>	3	<2	1
FARM EQUIPMENT (COMBINES AND TRACTORS)	10	5	3
GASOLINE-FUELED COMMERCIAL TRUCKS	9	5	3
OFF-ROAD EQUIPMENT (LAWN AND GARDEN)	9	7	6
<i>Lawn and Garden Residential</i>	5	<4	<3
<i>Lawn and Garden Commercial</i>	4	<4	<4
LIVESTOCK WASTE (BROILERS)	8	8	8
PRESCRIBED BURNING	8	8	8
COATINGS (PAINTS AND THINNERS - NON ARCHITECTURAL)	8	9	10
PETROLEUM MARKETING (GASOLINE EVAPORATIVE LOSSES)	8	9	10
OFF-ROAD RECREATIONAL VEHICLES	7	9	12
LIVESTOCK WASTE (RANGE CATTLE)	7	7	7
AIRCRAFT	7	10	11
MOTORCYCLES	6	5	6
AG BURNING	6	6	5
OFF-ROAD EQUIPMENT (CONSTRUCTION AND MINING)	5	3	2
LIVESTOCK WASTE (FEEDLOT CATTLE)	5	3	3
GAS CANS	5	2	2
All other sources	36	39	42

Note: Due to rounding, subcategory emission sums may not match the listed total for the category.

TOTAL	452	406	414
<i>Subtotal: On-Road Mobile Sources</i>	99	58	42
<i>Subtotal: Off-Road Mobile Sources</i>	74	61	59

In many cases, the same controls needed to reduce summertime ozone levels will also have a positive impact on wintertime PM2.5 levels. Cleaning up the NOx sources in the San Joaquin Valley is an integral part of the State Strategy to control both ozone and PM2.5 concentrations.

Many actions already taken by both the District and the ARB have reduced emissions in the San Joaquin Valley. These actions include the adoption of stringent controls on stationary sources as well as reductions in tailpipe emissions from motor vehicles and off-road equipment. Adopted controls will result in an expected decline in combined ozone precursors of NOx and ROG by 27 percent from 2006 levels by 2013, despite the projected growth in the San Joaquin Valley.

Proposed Local Control Strategy

The San Joaquin Valley Air Pollution Control District has the lead role in defining how quickly the Valley can come into attainment. The District published the San Joaquin Valley Draft Ozone Plan (draft Valley Plan) in October 2006. The draft Valley Plan outlined the emission control strategies that the District will pursue to achieve new NOx and ROG reductions needed for attainment. These reductions focus on achieving near-term ROG reductions from sources under the District's authority. In addition to near-term ROG reductions, the draft Valley Plan identified a suite of stationary and area-wide source control measures to achieve additional NOx reductions needed to demonstrate attainment of the federal standard.

The opportunities to achieve significant additional NOx reductions are somewhat limited, because stationary sources have been largely controlled with adopted rules. In recent years, the District has adopted some innovative new rules on uncontrolled sources. In December 2005, the District became the first local authority to adopt an Indirect Source Review (ISR) rule to mitigate the air quality impacts from new land development projects.

In order to achieve greater NOx reductions, the District staff is exploring opportunities to achieve greater emission reductions through regional incentive programs. The District has a history of successfully implementing programs to more rapidly replace older, dirtier mobile source equipment with cleaner, new equipment. Many of the specialized fleets in the Valley, including the tractors and on-road trucks used by the agricultural industries are long-lived and infrequently modernized. The draft Valley Plan relies on incentive funding to achieve substantial new emission reductions from these and other sources with long lives and/or low modernization rates. The incentive programs complement ARB regulations for mobile sources.

The District Governing Board adopted California's first rule controlling ROG emissions from wineries. The District has also adopted rules which require

significant ROG reductions from the raising of livestock, which provides the additional benefits of reducing ammonia emissions from dairies, a significant source of emissions in the Valley. The draft Valley Plan proposes to continue this approach through the promulgation of controls and management practices to reduce ROG emissions from large scale composting activities.

Recognizing the need for clean air and a strong economy, California Governor Arnold Schwarzenegger established the California Partnership for the San Joaquin Valley. The partnership brought State agency secretaries and Central Valley representatives together to make recommendations to the Governor regarding changes that would improve the economic well-being of the Valley and the quality of life of its residents. Specific to air quality, the Partnership organized an air quality subcommittee which made recommendations on the need for increased economic incentives for businesses to accelerate modernization of polluting vehicles and equipment. The District and ARB staffs participated in this effort and provided technical support in the development of the strategy recommendations. The Governing Board of the District unanimously endorsed the concepts in the recommendations made by the Partnership's air quality subcommittee.

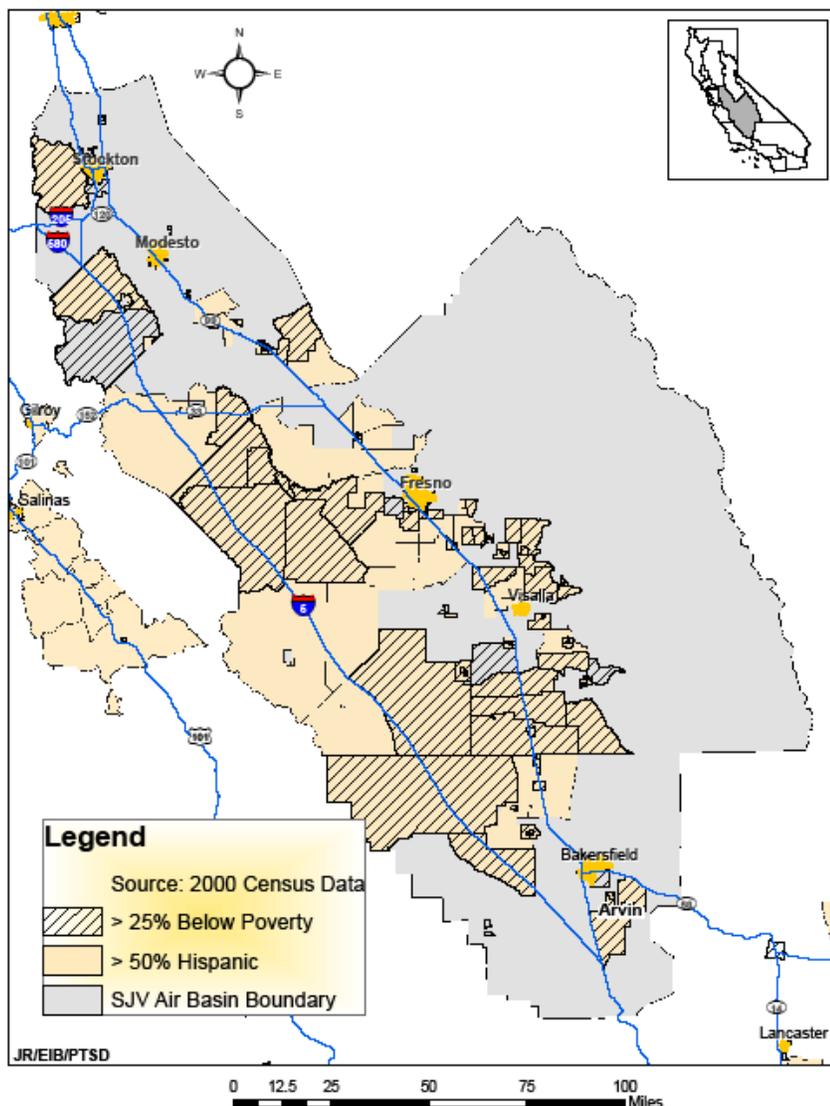
Environmental Justice Considerations

Another consideration in the development of the air quality plans is the impact of the strategies on environmental justice communities. State law defines environmental justice as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation and enforcement of environmental laws, regulations, and policies. To achieve this end, one objective of the Plan must be to ensure that no group bears a disproportionate air pollution burden, and the plan benefits all Valley communities.

As part of its work for the Carl Moyer Program, the District has recognized environmental justice is a concern throughout the San Joaquin Valley. As can be seen in the figure on the following page, low income areas, usually with a large Hispanic population, are present throughout the entire length of the Valley. Because this is a regional ozone plan that provides air quality benefits to the entire Valley, all potential environmental justice areas will benefit. People living in the southern and central Valley will receive the largest benefits as these areas currently have the Valley's worst air quality.

It is important to note that the area where it will be most difficult to attain the ozone standard, Arvin, is a low income area with a large Hispanic population. Therefore, taking the necessary steps to achieve healthy air quality in the Arvin area is critical to both attaining the ozone standard and achieving environmental justice goals.

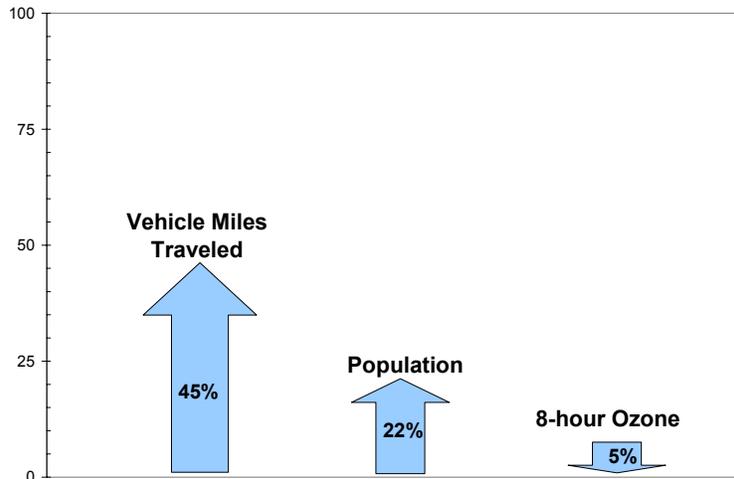
SJV Air Basin > 25% Below Poverty & > 50% Hispanic



Benefits of the Proposed State Strategy in the San Joaquin Valley

The new control measures under development will build upon and continue the success of California's pioneering mobile source control program. This success comes despite the tremendous growth the Valley has experienced over the past decade. The following figure illustrates the decline in 8-hour ozone design values, even while the population of the Valley has grown, as has the number of miles people are driving in the Valley.

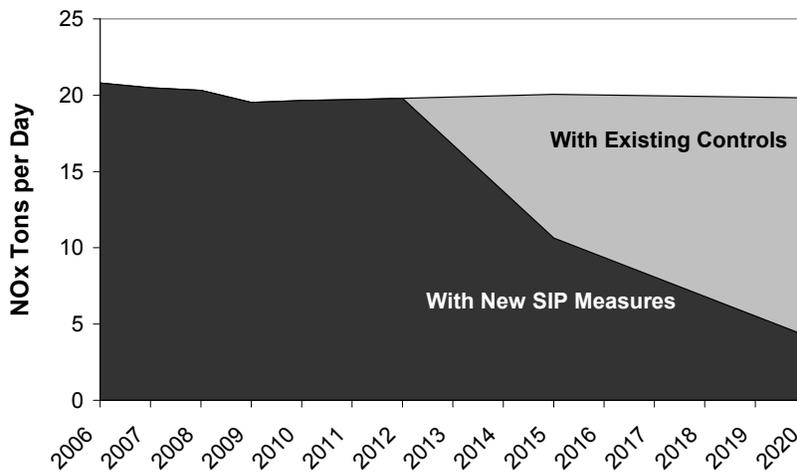
**San Joaquin Valley
Growth in Population and Vehicle Miles Traveled While the
8-hour Ozone Design Value is Declining
(1995-2005)**



In the development of the proposed emission control measures, ARB staff considered all the emission reduction needs of the San Joaquin Valley for both ozone and PM_{2.5}. Near-term, the proposed measures provide significant new NO_x reductions needed for both ozone and PM_{2.5} attainment. The measures proposed in this document focus on what can be done to bring newer, cleaner vehicles and equipment into service more rapidly. The NO_x measures also work to ensure that the vehicles and equipment in use remain clean over their entire useful lives. Long-term, the proposed concepts seek to ensure continued clean operation, as well as to take advantage of new technology as it becomes available.

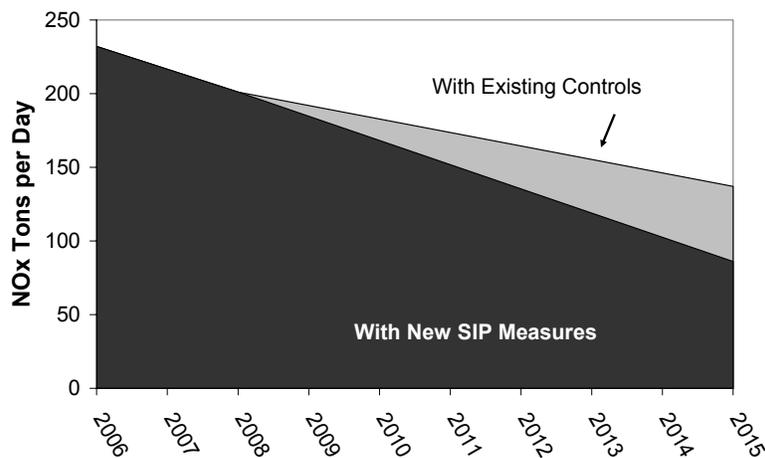
The following figure shows the expected emission reductions from locomotives, a less well controlled emission source under Federal jurisdiction, which will be achieved through the implementation of the proposed locomotive measure. The locomotive measure seeks to bring the cleanest new locomotives into service in California as quickly as they become available. This will be critical as the goods movement industry in California expands and rail traffic increases.

San Joaquin Valley Locomotive Emissions



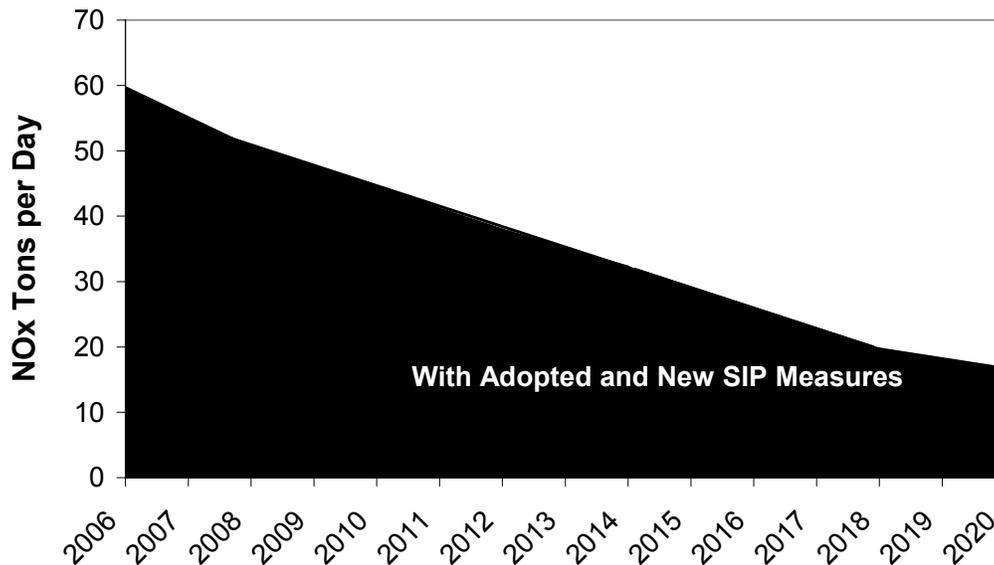
The San Joaquin Valley has the two most heavily traveled major north-south highways in California. The heavy-duty trucks in use along this corridor contribute significantly to the emission load in the Valley. The figure below illustrates the emission reductions which will be achieved through the implementation of the truck measures in the State Strategy under development. On-road trucks have been subject to emission control requirements for the past decade. Because the trucks with the cleanest engines will not even enter service until 2010, ARB's proposed new measures have a two-pronged approach: to clean up older trucks through replacement and emission control retrofits, and to ensure that the trucks in operation are well maintained and the emission control equipment is functioning as expected.

San Joaquin Valley Truck Emissions



While California's passenger vehicle emission standards have resulted in some of the cleanest cars and trucks in the world, passenger vehicles continue to be a large source of NOx emissions in the Valley. The San Joaquin Valley is seeing double-digit growth in both population and vehicle mileage travel. Additionally, emission control systems naturally deteriorate over time. Therefore, ensuring that the cars and trucks on the road remain clean and well maintained is a priority. The figure below illustrates the emission reductions to be achieved through the passenger car and truck strategy under consideration.

San Joaquin Valley Passenger Vehicle Emissions - NOx



Achieving emission reductions from farm equipment poses a challenge in the San Joaquin Valley. Fortunately, between now and 2021, emissions from farm equipment are expected to decline by more than 60 percent as older tractors and equipment are replaced with newer and lower polluting equipment. To achieve additional near-term emission reductions for PM2.5 attainment and progress on ozone standards, ARB and District staff will work to coordinate regulatory development and incentive funding. The agricultural industry has been working to identify federal grant opportunities, through the Farm Bill, to expedite this effort even further.

Attainment Demonstration

The SIP must identify all of the measures that will provide the emission reductions needed for attainment. ARB staff has been exploring aggressive new emission reduction measures, which will be brought before the Air Resources Board in Spring 2007 and which will provide substantial progress towards attaining the 8-hour ozone standard in the Valley. The measures focus on

getting newer, cleaner vehicles and equipment into service more quickly and on ensuring that the mobile sources operating in California remain clean over their entire useful lives. The proposed new measures under development by the staff of the District and ARB will achieve significant new reductions in smog-forming emissions in the San Joaquin Valley by 2021 – on the order of 60 tons per day of NOx and 65 tons per day of ROG. However, even with these additional reductions, the San Joaquin Valley will still fall short of the emission reductions needed to attain the federal 8-hour ozone standard by 2021.

While ARB staff’s proposed State Strategy is very aggressive, it does not provide all the emission reductions needed for attainment in the Valley. ARB staff therefore performed a broad brush analysis to see whether the shortfall could be covered by assuming complete replacement of mobile source fleets with the cleanest new technology standards phasing in from 2007-2014. Cost was not a constraining factor in this analysis. ARB staff considered the constraints of legal authority, since SIP measures addressing sources not under our authority to control cannot be approved.

In our analysis, shown in the table below, we made the following assumptions: in 2020 the Valley would have no passenger vehicles older than 10 years; all diesel trucks would meet the extremely stringent 2010 standards; and all diesel construction and farm equipment would meet the most stringent Tier 4 standards.

All New Fleets Analysis Unconstrained by Cost

Source	Remaining 2020 Emissions (tpd)
<i>Passenger vehicles</i>	5
<i>Diesel trucks</i>	43
<i>Construction and other equipment</i>	7
<i>Farm equipment</i>	9
Aircraft	5
Locomotive	21
Stationary/area-wide sources	103
Subtotal of remaining emissions from above categories	193
All other NOx sources	27
Total of all remaining emissions	220
Carrying capacity	160

In the above table, the top four rows are italicized to indicate the categories for which we assume that all vehicles and equipment meets the cleanest adopted emission standards. Because the ARB does not have emission standard setting authority for aircraft, locomotives, stationary sources or area-wide sources, the

emissions reported above for those categories come directly from the standard emission inventory for 2020. Included in the category “all other NOx sources” are commercial gas trucks, motorcycles, buses, motor homes, ships and commercial boats, off-road recreational vehicles and gas powered off-road equipment.

The result was a NOx emission level of 220 tons per day compared to a carrying capacity of 160 tons per day. Close to half of the remaining emissions, 103 tons per day, are from stationary and area-wide sources. Based on these types of analyses, long-term concepts that include new technologies for both mobile and stationary sources will be needed. This makes reclassification to extreme necessary in ARB staff’s view.

Lacking all of the emission reductions needed to close the gap by 2021, the San Joaquin Valley is left with only one realistic option: to request that U.S. EPA reclassify the San Joaquin Valley nonattainment area to an extreme classification. While an extreme classification has impacts on industrial growth, it also allows the San Joaquin Valley to take advantage of the full suite of tools allowed by the Act, including the use of new emission control techniques which are expected to develop in the future. The impacts of reclassification are borne locally, so the decision to be reclassified is one which should properly be made by the local air quality agency. The table on the following page summarizes the attainment demonstration and relies on the provisions for long-term commitments under section 182(e)(5) of the Clean Air Act.

From today’s emission levels, reaching the emission targets for attainment will take NOx emission reductions of 490 tons per day. The existing control program will yield 350 tons per day of reductions between today and 2024. Proposed new measures would generate another 53 tons per day of NOx reductions by 2024. This leaves a gap of 87 tons per day to be addressed by long term measures.

Attaining the ozone standard in the San Joaquin Valley will require continued efforts at all levels of government. ARB staff will continue to track promising new mobile source emission reduction technologies. This will include technologies to ensure that new sources are as clean as possible and will leverage technology development to keep existing equipment operating at its intended levels. U.S. EPA will need to continue to reduce emissions from sources under its authority. In the San Joaquin Valley, this will require additional reductions from the on-road trucks registered outside of California and locomotives moving goods up and down the Valley, and continued progress to clean up the off-road equipment under its control.

As mobile sources continue to get cleaner, stationary and area-wide sources will own a greater share of ozone forming emissions. Substantial emission reductions will be achieved in the near-term through the use of programs which speed up the transition to cleaner mobile sources. However, as the adopted mobile source controls reach full implementation by 2020, new technologies will

be needed to further reduce both mobile and stationary source emissions. The District has a history of implementing first-of-their-kind emission control regulations. This tradition will need to continue as cleaner industrial and commercial technology becomes available.

Attaining the standard as quickly as practicable is a priority for both the ARB and the District. Unfortunately, there is no approvable mechanism to demonstrate to U.S. EPA that the Valley can attain the ozone standard without using all of the tools the Clean Air Act provides. While bumping to extreme extends the attainment date until 2024, substantial progress is expected over the next decade. Air quality modeling predicts that all of the Valley will be brought into attainment prior to 2024, with the exception of Arvin, located southeast of Bakersfield. And even Arvin will see dramatic improvement as the proposed control measures are implemented.

Setting and Meeting the Emission Reduction Target for Ozone Attainment

San Joaquin Valley (2023)		
	NOx	ROG
2006 Emissions Inventory	650	452
Carrying Capacity	160	345
Emission Reduction Target	490	107
Emission Reductions from Existing Program	350	38
Emission Reductions from New Local Measures	8	46
Emission Reductions from New State Measures	45	23
Long-Term Concepts	87	--
Total Reductions Identified	403	107

(2006 Emissions Inventory) – (Carrying Capacity) = (Emissions Reduction Target)
2006 Emissions Inventory = Amount of ozone-forming emissions.
Carrying Capacity = Pollutant emissions limit that ensures air quality standards are met.
Emission Reduction Target = Amount of emissions that must be reduced to meet the standard.
Emission Reductions from Existing Program. Emissions reduced from measures adopted or implemented through 2005.
Emission Reductions from New Measures. Emissions reduced from measures in the State Strategy or new local measures adopted after 2005.
Long-Term Concepts. Emissions reduced from measures adopted after 2020 that rely on new or evolving technology, as allowed in section 182(e)(5) of the Clean Air Act.

Reasonable Further Progress

The Clean Air Act requires that areas classified moderate or above demonstrate ongoing progress towards reducing emissions and attaining the air quality standard. The San Joaquin Valley's expected progress at each of the milestone years is summarized in the following table. As can be seen, emission reductions from the existing control program will enable the Valley to demonstrate reasonable further progress through 2017. For 2020 and 2023, the Valley will need to rely on reductions from new measures to meet progress requirements.

San Joaquin Valley Reasonable Further Progress Reductions from Existing and Proposed Programs

	Milestone year					
	2008	2011	2014	2017	2020	2023 (for 2024 attainment)
ROG or NOx percent reduction required from 2002 levels	18%	27%	36%	45%	54%	63%
ROG percent reduction projected from existing program 2002 levels used to meet RFP	9.0%	13.2%	13.9%	14.7%	14.3%	13.0%
NOx percent reduction projected from existing program from 2002 levels used to meet RFP	9.0%	13.8%	22.1%	30.3%	34.7%	39.4%
Total ROG and/or NOx percent reductions from existing program used to meet RFP	18.0%	27.0%	36.0%	45.0%	49.0%	52.4%
Total ROG and/or NOx percent reductions from proposed program used to meet RFP	0.0%	0.0%	0.0%	0.0%	5.0%	10.6%
RFP percent reduction requirements met?	Yes	Yes	Yes	Yes	Yes	Yes

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