

Chapter 6

District Strategy

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Chapter 6: District Strategy

6.1 INTRODUCTION

Attaining the federal PM_{2.5} standard will require the involvement of all sectors of the economy and the population. Chapter 4 (Strategy) details the District's four-faceted control strategy:

1. Regulatory Control Measures for Stationary Sources
2. Incentive-based Strategies
3. Innovative Strategies and Programs
4. Local, State, and Federal Sources/Partnerships

A summary of the plan strategy, which includes the District's regulatory stationary source control measures, incentive measures and innovative programs, is included in this chapter. Chapter 7 of this plan presents emissions reductions from state, federal and local measures.

As summarized in Tables 6-4a, 6-4b, and 6-4c, the District's regulatory control measure component of this plan achieves 16.17 tons per day (tpd) of combined NO_x, SO₂, and PM_{2.5} reductions by 2012 and 16.59 tpd of reductions by 2014. Additional reductions will be achieved from the District's incentives programs, which are discussed Section 6.5 of this chapter and in Chapter 7 of the *2007 Ozone Plan*.

As discussed in Chapter 3, emission reductions of NO_x, directly emitted PM_{2.5}, and SO₂ are needed to demonstrate attainment of the PM_{2.5} NAAQS in the San Joaquin Valley. The gridded regional modeling performed by ARB and the receptor modeling performed by the District each identify the need for reductions of directly emitted PM_{2.5} and secondary particulates, including nitrates and sulfates, in order to demonstrate attainment of the PM_{2.5} NAAQS.

6.2 REGULATORY COMPONENT: RACT/RACM

The Stationary Source Control Measures in Section 6.3 were developed according to the federal guidance for reasonably available control technologies (RACT) and reasonably available control measures (RACM). That guidance requires PM_{2.5} nonattainment areas to consider RACT and RACM that might contribute to expeditious attainment in a specific nonattainment area. This section discusses the details of those requirements that were used to determine the control measures that will be pursued.

The U.S. Environmental Protection Agency (EPA) interprets RACM as a collection of measures that, taken as a group, advance the NAAQS attainment date by at least one year. A RACT/RACM analysis must consider which emissions sources to control, to what level, and when the controls can and should be implemented. According to the

federal guidance, states need not analyze every conceivable measure. RACT/RACM are, by their definition, reasonable. Any unreasonable measure, which is absurd, unenforceable, impractical, or that would cause severely disruptive socioeconomic impacts (e.g., gas rationing and mandatory source shutdowns), would not be required. Measures that are not necessary to satisfy Reasonable Further Progress (RFP) or expeditious attainment are also not required RACT/RACM for the area. Finally, any measures that, collectively, would not advance attainment by at least one year are not required for PM_{2.5} RACT/RACM, even if those measures are individually reasonable.

Similar to New Source Review requirements, RACT/RACM analyses must address both direct PM_{2.5} and gaseous precursors, in particular SO₂ and NO_x, unless NO_x and SO₂ emissions do not significantly contribute to PM_{2.5} in the area. RACT/RACM are not needed for ammonia or VOC unless modeling shows that reductions of these are effective in reducing PM_{2.5} levels in the area. EPA encourages States to consider the potential for reducing condensable emissions when evaluating potential measures for RACT. EPA expects areas to more rigorously identify RACT/RACM for those precursors that are most effective in reducing PM_{2.5}. Less rigorous analysis is needed for pollutants that have trivial impacts on PM_{2.5} reductions.

While an area's RACT determination may include an appropriately supported certification of previously conducted RACT determinations, such as those completed for ozone or PM₁₀, existing RACT should be closely reviewed in light of newer information that may have arisen since the initial determinations. Identifying potential RACT/RACM measures entails three main steps:

- (1) Examining the emissions source categories in the nonattainment area with direct PM_{2.5} and precursor emissions, such as NO_x and SO₂. Priority should be given to categories with the largest inventory of PM_{2.5} or precursors. Although many of these sources are already well controlled, small incremental improvements result in higher emission reductions than categories with smaller inventories.
- (2) Considering technologically feasible emissions control technologies or measures for each source. Technological feasibility determinations should include considerations of the source's operating procedures, raw materials, physical plant layout, and any other environmental impacts. The cost of preventing adverse water, solid waste, and energy impacts should be considered when assessing the economic feasibility of the PM_{2.5} control technology.
- (3) Considering the control efficiency and possible emissions reductions, by pollutant, for each technology or measure and the date by which the technology or measure could be reasonably implemented. States should consider the capital costs, annual costs, and cost effectiveness of an emissions reduction technology, as well as any effects on the local economy. EPA is not proposing a fixed cost effectiveness threshold for RACT. If essential reductions are more costly to achieve because many sources are already controlled, the cost per ton of control may necessarily be higher. The significant benefits associated with

PM2.5 ambient reduction should be a relevant consideration in control strategy development.

Because NAAQS violations generally reflect a combination of regional scale, metropolitan scale, and local scale impacts, all three scales must be addressed in an area's RACT/RACM analysis. Considering the variety of emissions sources, control measure types, and nonattainment situations, EPA did not define a de minimis threshold for the PM2.5 RACT analysis. A state needing significant emission reductions for attainment will likely consider controls on smaller sources than would be analyzed by states that don't require significant reductions.

The RACT/RACM control measures are selected based on the reductions needed to obtain the earliest possible attainment year. The selected measures should be adopted and submitted to EPA within three years of the nonattainment designation, which would be April 2008 for the District. Implementation of RACT measures should in no case start later than the beginning of the year before the attainment date.

For 8-hour ozone, the District prepared a RACT SIP analysis that was adopted by the District Governing Board and submitted to ARB for transmittal to EPA by the September 16, 2006 deadline. The RACT SIP analysis showed that the District's rules meet or exceed RACT requirements for all applicable EPA source categories. Because EPA has since issued new Control Technologies Guidelines (CTGs), the District is updating the 8-hour ozone RACT SIP analysis to address these new guidelines.

Due to limitations on time and resources, EPA is not developing additional Control Technologies Guidelines in advance of the PM2.5 SIP submission date. However, EPA provided a list of source categories as a starting point for identifying potentially available control strategies, including both regulatory and voluntary measures, to illustrate the general types of sources and measures that States can consider. Table 6-1 lists those control strategies and the equivalent control measure that the District or ARB has either adopted or will develop for that category. Nonattainment areas should also consider additional measures, other than those suggested in Table 6-1, based on the unique considerations of the area and comments received from the public.

Control measures are discussed in Section 6.3 with more detailed information presented in Appendix I. Thus far, the District has not excluded any reasonable measures. The District is continuing discussions with EPA and ARB on RACT/RACM determinations and will evaluate public suggestions on control measures during the rule development process and during future Plan updates.

Table 6-1 EPA's List of Suggested PM2.5 Control Measures		
	EPA Control Measure	District Equivalent
Stationary Source Measures		
SSM-1	Stationary diesel engine retrofit, rebuild or replacement, with catalyzed particle filter	District Rule 4702 includes standards for existing stationary internal combustion engines. EPA Tier 4 diesel engine standards are expected to include particulate filter systems.
SSM-2	New or upgraded emission control requirements for direct PM2.5 emissions at stationary sources, e.g. installation or improved performance of control devices such as a baghouse or electrostatic precipitator; revised opacity standard; improved compliance monitoring methods.	Source-specific District rules, such as Rule 4204 (Cotton Gins) currently include PM emission control requirements. The new and amended rule development projects (see Table 6-3) will also examine appropriate controls for other sources of direct PM and precursors.
SSM-3	New or upgraded emission controls for PM2.5 precursors at stationary sources (e.g., SO2 controls such as wet or dry scrubbers, or reduced sulfur content in fuel; desulfurization of coke oven gas at coke ovens; improved sulfur recovery at refineries; increasing the recovery efficiency at sulfuric acid plants).	The new and amended rule development projects (Table 6-3) will also examine appropriate controls for sources of direct PM and precursors. SOx controls are currently included in the initial drafts for amendments to the glass melting furnace and boiler rules.
SSM-4	Energy efficiency measures to reduce fuel consumption and associated pollutant emissions (either from local sources or distant power providers).	The 2007 Ozone Plan includes commitments to promote Alternative Energy Sources and reduce consumption through Energy Conservation, Green Contracting, and Heat Island Mitigation projects. These efforts will also reduce PM2.5 emissions.
SSM-5	Measures to reduce fugitive dust from industrial sites.	District Regulation VIII addresses control of fugitive dust emissions from a variety of sources, operations and areas.
Mobile Source Measures		
MSM-1	On-road diesel engine retrofits for school buses, trucks and transit buses using EPA-verified technologies	District Rule 9310 addresses school bus fleets. State programs address truck and transit bus fleets emissions. Early implementation of fleet upgrades are encouraged through state and local incentive funds.
MSM-2	Non-road diesel engine retrofit, rebuild or replacement, with catalyzed particle filter	In September 2007, ARB adopted stringent PM2.5 control standards for non-road equipment which would require retrofit, repair or repowering of diesel engine powered equipment.
MSM-3	Diesel idling programs for trucks, locomotive, and other mobile sources	ARB adopted idling standards for a variety of diesel vehicles. Additionally, the District incentive program has subsidized truck stop support equipment to reduce diesel truck idling along the main goods movement corridors.
MSM-4	Transportation control measures (TCM) including those listed in section 108(f) of the CAA, as well as other transportation demand management and transportation systems management strategies.	Integrated, area-wide TCM are developed, adopted and implemented by Metropolitan Planning Organizations, in accordance with state and federal mandates.

	EPA Control Measure	District Equivalent
MSM-5	Programs to reduce emissions or accelerate retirement of high emitting vehicles, boats, and lawn and garden equipment.	District programs include incentives for scrapping high-emitting cars and trucks and replacing gas-powered lawn mowers with electric mowers. State regulations require lower emissions from engines for boats, off-road equipment and lawn care equipment.
MSM-6	Emissions testing and repair/ maintenance programs for on-road vehicles.	ARB regulations mandate an enhanced smog check for on-road vehicles in non-attainment areas. State funds are available to subsidize repairs or scrapping of high-emitting vehicles.
MSM-7	Emissions testing and repair/maintenance programs for non-road heavy-duty vehicles and equipment.	ARB has adopted stringent standards for a wide variety of non-road equipment from forklifts to construction equipment.
MSM-8	Programs to expand use of clean burning fuels.	ARB is developing standards for alternative and low-carbon fuels.
MSM-9	Low emissions specifications for equipment or fuel used for large construction contracts, industrial facilities, ship yards, airports, and public or private vehicle fleets.	Over \$1 billion in state funds will be available to reduce emissions from equipment at ports and from long-haul trucking along major goods movement corridors.
MSM-10	Opacity or other emissions standards for "gross-emitting" diesel equipment or vessels.	ARB regulations mandate an enhanced smog check for on-road vehicles in non-attainment areas. State funds are available to subsidize repairs or scrapping of high-emitting vehicles.
Area Source Measures		
ASM-1	New open burning regulations and/or measures to improve program effectiveness such as programs to reduce or eliminate burning of land clearing vegetation	District Rule 4103 (Open Burning) addresses the Valley's agricultural burn management program. Additional burn restrictions are scheduled for 2010. Burning is prohibited for non-agricultural purposes, such as land clearing for residential or commercial development.
ASM-2	Programs to reduce emissions from woodstoves and fireplaces including outreach programs, curtailments during days with expected high ambient levels of PM2.5, and programs to encourage replacement of woodstoves when houses are sold.	District Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters) strictly regulates the installation of such devices in new or resold homes. It also includes mandatory burn prohibitions that are publicized through the highly successful "Check Before You Burn" program.
ASM-3	Controls on emissions from charbroiling or other commercial cooking operations.	District Rule 4692 (Commercial Charbroiling) mandates exhaust controls on certain charbroiling operations.
ASM-4	Reduced solvent usage or solvent substitution (particularly for organic compounds with 7 carbon atoms or more, such as toluene, xylene, and trimethyl benzene).	In September 2007, the Governing Board amended eleven District rules to dramatically reduce the emissions from cleaning solvents from automobile refinishing operations, metal and wood product fabricators, printers, and other similar sources.

6.3 STATIONARY SOURCE CONTROL MEASURES

As discussed in Section 6.2, EPA provided federal guidance for analyzing possible RACT/RACM. This section describes the District's process to exhaustively consider control measures, in accordance with those guidelines, which could be included as part of the stationary source regulatory component. The detailed descriptions of the control measures are included in Appendix I, Candidate Control Measures. Tables 6-3 and 6-4a to 6-4c include a summary list of the stationary source control measures and the reductions they are expected to achieve.

In scheduling rule development projects, the District is giving priority to NO_x controls. NO_x reductions yield the most benefit for reducing both PM_{2.5} and ozone in the San Joaquin Valley Air Basin. The tables also include control measures for SO₂, and directly emitted PM_{2.5}, since ARB modeling indicates these reductions are required to demonstrate attainment.

The District's regulations address emissions from specific source categories, or facilities, within the San Joaquin Valley Air Basin:

- "Source categories" identify types of equipment or processes. Examples include devices such as boilers and dryers, and processes, such as application of paints and solvents.
- In general, "facilities" are businesses or institutions which have one, several, or many different source categories, at specific locations. Examples include oil refineries, food processing plants, confined animal facilities, and glass manufacturing.

6.3.1 Process for Identifying and Evaluating Potential Control Measures

To generate ideas for control measures, District staff has taken the following steps:

- Conducted a brainstorming effort involving staff from the Planning, Permits, and Compliance departments.
- Reviewed recommendations from the 2003 ARB audit of District rule making activities, as well as the 2007 ARB staff report, "Accelerating Attainment in the San Joaquin Valley."
- Reviewed Further Study Measures in the District's *2007 Ozone Plan*.
- Reviewed control measures suggested by the public since the adoption of the *2007 Ozone Plan*, as part of the District's "Fast Track" program.
- Investigated control strategies and measures in other districts and agencies, including the South Coast AQMD, Sacramento Metropolitan AQMD, Bay Area AQMD, and Ventura County APCD.

- Reviewed all District rules affecting NO_x, VOC, SO_x and PM to assess possibilities for strengthening and expanding their applicability, including using Best Available Control Technologies, whenever feasible. This review involved a thorough comparison of the District's rules with those from other air districts.
- Evaluated EPA's list of possible PM_{2.5} control measures listed in Table 6-1.
- Defined emission control scenarios to investigate via modeling exercises. These include the possibilities of episodic and geographic control measures, patterned after the District's highly successful rule for wood-burning fireplaces.
- Additional control measures or refinements of listed control measures may also occur based on comments received during the public review of the draft plan and during the future rule development process.
- District staff also evaluated the controls recommended by the International Sustainable Systems Research Center (ISSRC) in its draft document "Clearing the Air: A Path to Clean Air by 2017", dated August 2007. District staff under the 2007 Ozone Plan commitments is already proposing some recommendations, such as the use of selective catalytic reduction on large boilers. However, where applicable, ISSRC recommendations were added to the control measure descriptions in Appendix I for further consideration during rule development.

Appendix I includes a Control Measure discussion for each category in the emission inventory. Each Control Measure discussion is a description of the source category, current control levels, future control options, concerns regarding the implementation of controls, and potential emission reductions. The Stationary Source Regulatory Implementation Schedule, Table 6-3, shows the schedule for regulatory adoption and implementation of the emission reductions. The schedule was developed based on a variety of factors, including:

- Technological feasibility and practicality of emission controls;
- Magnitude of emissions from the source category and likely emission reductions;
- Possible uncertainty in the emission inventory of the source category;
- Cost, financial impacts, and potential for socioeconomic impacts (e.g., employment, profitability);
- District authority and enforceability of emission reductions;
- Rate and timing of emissions reductions;
- Public acceptability, including interests and concerns of community members;
- Pollutants reduced – NO_x, PM_{2.5}, VOC, SO₂, or multiple pollutants;
- Any potential adverse environmental impacts; and
- Potential for disparate environmental impacts (environmental justice).

District staff also evaluated the Emission Inventory Codes (EIC) for several source categories that were not assigned to control measures in the *2007 Ozone Plan*. Where

possible, the unassigned EIC and corresponding emissions were placed in an appropriate Control Measure in Appendix I. District staff also made adjustments to the Emissions Inventory for the unassigned EIC based on the District's updated Area Source Emission Inventory methodology. These adjustments have also been incorporated in the appropriate Control Measures presented in Appendix I. District staff will continue to evaluate remaining unassigned EIC and determine if any further adjustments to the emissions inventory are warranted or if the EIC emissions are either errors in the inventory, too small to be significant, or are not able to be controlled by traditional controls or incentive measures.

A few source categories are not being pursued in this planning effort. The control measure evaluation process brought to light that for some categories there is a lack of activity or sources operating within the District. Reductions from any control measure(s) that are completed and adopted by the District Governing Board before the adoption of this plan will be added to Appendix B. In addition, any source categories that are directly under ARB's jurisdiction and control are being deferred to ARB for further discussion and will be found in later chapters of this plan. Mobile source categories that are outside of the District's jurisdiction, but for which incentive programs will be developed to achieve reductions, are discussed in Chapter 7 of the *2007 Ozone Plan*.

6.4 IMPLEMENTATION SCHEDULE FOR STATIONARY SOURCE CONTROL MEASURES

Table 6-3 lists the candidate regulatory stationary source control measures and shows the rule adoption or feasibility study completion date; the rule compliance and emission reduction implementation dates. The schedule shown in Table 6-3 demonstrates a reasonable implementation schedule with all of the proposed measures being developed by 2010 and compliance implementation starting no later than 2012.

The emission reductions estimates in Tables 6-4a to 6-4c are based on control techniques existing at the time this plan was developed. The District expects that technologies will advance and that new, more effective control techniques may be available at the time of rule development for each measure. Any more effective control techniques will be considered during the rule development project. Additionally, the District will consider episodic controls and regionally focused controls during each rule development project in order to optimize the benefits of each measure while mitigating undue impacts to the regulated sources.

It should be noted that the emission reductions for NO_x, PM_{2.5}, and SO_x indicated in Tables 6-4a, 6-4b and 6-4c, respectively, are discussed in detail in each of the Control Measure narrative stationary source category in Appendix I. The VOC emission reductions from the *2007 Ozone Plan* are not currently included as part of Appendix I of the PM_{2.5} Plan. According to EPA guidance, VOC controls would only be included in a PM_{2.5} plan if required based on modeling. The indicated VOC measures are, however, commitments in the *2007 Ozone Plan*, so the reductions will be achieved.

Additional work on source categories will continue through the development of feasibility/future studies listed in Table 6-5. These studies will provide the background needed in determining which source categories might be viable control measures for additional reductions beyond the 2012 date, if needed for attainment or continued maintenance of the PM_{2.5} NAAQS.

Considering the overwhelming attainment challenge in the upcoming years, it was imperative to consider a strategy that encompasses all opportunities to include: regulatory approaches, program improvements, incentive programs, feasibility studies for source categories that are not well understood but may prove to be fruitful in a future rulemaking schedule, as well as those measures that will not be pursued further due to lack of sources or the activity does not occur during the PM_{2.5} season. For additional discussion on the overall strategy that includes all four strategy components, please see Chapter 4 of the *2007 Ozone Plan*.

For the purposes of implementing this plan, the District is committed to developing and implementing control measures that will achieve, in aggregate, the emissions reductions specified in Tables 6-4a through 6-4c.

CM#	Measure Name	Completion Date	Compliance Date	Reduction Start
S-AGR-1	Open Burning	2010 2Q	2010	2009
S-COM-1	Boilers, Steam Generators and Process Heaters (>5 MM Btu/hr)	2008 3Q	2012	2012
S-COM-2	Boilers, Steam Generators and Process Heaters (2 to 5 MMBtu/hr)	2008 3Q	2012	2012
S-COM-3	Boilers, Steam Generators and Process Heaters (0.075 to <2 MMBtu/hr)	2009 4Q	2011	2011
S-COM-5	Stationary Gas Turbines	2007 3Q	2012	2012
S-COM-6	Reciprocating Internal Combustion Engines	2010 4Q	2012	2012
S-COM-7	Glass Melting Furnaces	2008 3Q	2009	2009
S-COM-9	Residential Water Heaters	2009 1Q	Attrition	2011
S-COM-10	Natural Gas-Fired, Fan Type Residential Central Furnace	2010 2Q	Attrition	2012
S-COM-11	Wood Burning Fireplaces and Wood Burning Heaters	2009 3Q	2010	2010
S-IND-9	Commercial Charbroiling	2009 2Q	2011	2011

CM#	Measure Name	Completion Date	Compliance Date	Reduction Start
S-IND-21	Flares	2009 2Q	2010	2010
M-TRAN-1	Employer Based Trip Reduction Programs	2009 4Q	2012	2011

VOC control measures are not included in either Table 6-3 or Appendix I, since modeling did not show that the measures are necessary for attainment. Because those measures are commitments in the *2007 Ozone Plan*, rule development is already required and the reductions will occur even if they are not PM_{2.5} commitments.

Emission reduction estimates are summarized in Tables 6-4a through 6-4c. If the reductions were not known, due to uncertainty in emission factors, controls efficiency, or inventory, the control measure may have been excluded from the tables for clarity. This is not to imply that no reductions are expected from a control measure, only that the amount of reductions could not be estimated at this time.

		Winter NOx Reductions (tons/day)						Annual Average NOx Reductions (tons/day)					
		2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
S-AGR-1	Open Burning	1.84	2.96	4.07	4.05	4.04	4.02	1.21	1.95	2.68	2.67	2.66	2.65
S-COM-1	Boilers, Steam Generators and Process Heaters (>5 MM Btu/hr)	0	0	0	1.43	1.44	1.46	0	0	0	1.49	1.50	1.52
S-COM-3	Boilers, Steam Generators and Process Heaters (0.075 to <2 MMBtu/hr)	0	0	0.13	0.28	0.41	0.57	0	0	0.12	0.27	0.39	0.55
S-COM-5	Stationary Gas Turbines	0	0	0	2.20	2.20	2.20	0	0	0	2.21	2.21	2.21
S-COM-7	Glass Melting Furnaces	1.22	1.25	1.18	1.60	1.67	1.58	1.22	1.25	1.18	1.60	1.67	1.58
S-COM-9	Residential Water Heaters	0	0	0.20	0.25	0.32	0.40	0	0	0.20	0.25	0.32	0.40
S-COM-14	Wood Burning Fireplaces and Wood Burning Heaters	0	0.08	0.15	0.14	0.14	0.13	0	0.04	0.08	0.07	0.07	0.06
TOTAL NOx REDUCTIONS		3.06	4.29	5.73	9.95	10.22	10.36	2.43	3.24	4.26	8.56	8.82	8.97

		Winter PM2.5 Reductions (tons/day)						Annual Average PM2.5 Reductions (tons/day)					
		2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
S-AGR-1	Open Burning	2.41	3.88	5.34	5.32	5.30	5.28	1.60	2.57	3.53	3.52	3.50	3.49
S-COM-1	Boilers, Steam Generators and Process Heaters (>5 MM Btu/hr)	0	0	0	0.22	0.22	0.22	0	0	0	0.23	0.24	0.24
S-COM-14	Wood Burning Fireplaces and Wood Burning Heaters	0	0.76	1.48	1.43	1.39	1.35	0	0.39	0.76	0.73	0.71	0.69
S-IND-9	Commercial Charbroiling	0	0	2.16	2.21	2.25	2.28	0	0	2.17	2.21	2.25	2.28
TOTAL PM2.5 REDUCTIONS		2.41	4.64	8.98	9.18	9.16	9.13	1.60	2.96	4.46	6.69	6.70	6.70

		Winter SO _x Reductions (tons/day)						Annual Average SO _x Reductions (tons/day)					
		2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
S-AGR-1	Open Burning	0.09	0.14	0.20	0.20	0.20	0.20	0.06	0.10	0.14	0.14	0.14	0.14
S-COM-1	Boilers, Steam Generators and Process Heaters (>5 MM Btu/hr)	0	0	0	0.76	0.76	0.76	0	0	0	0.76	0.76	0.76
S-COM-14	Wood Burning Fireplaces and Wood Burning Heaters	0	0.01	0.03	0.03	0.03	0.03	0	0.01	0.02	0.02	0.02	0.02
M-TRAN-1	Employer Based Trip Reduction Programs	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
TOTAL SO_x REDUCTIONS		0.09	0.15	0.23	0.99	0.99	0.99	0.06	0.11	0.16	0.92	0.92	0.92

If not enough information is available to satisfactorily evaluate a particular control measure, it is included as a feasibility study measure. Emissions reductions from feasibility studies are not currently quantifiable. These studies will be conducted in addition to the regulatory measures and will engage the public and industry in uncovering new, potential emission reduction opportunities. Study reports will be released by the completion dates listed in Table 6-5. Studies that point toward possible emission reductions opportunities will be included in future plan updates with specific development schedules and emission reductions commitments.

Table 6-5 Feasibility Study Implementation Schedule

CM#	Measure Name	Completion Date
S-AGR-2	Conservation Management Practices	2010
S-COM-4	Solid Fuel Boilers Steam Generators, Process Heaters	2009
S-COM-6A	Small Spark-Ignited Engines and Agricultural Spark-Ignited Engines	2008
S-COM-8	Lime Kilns	2011
S-COM-11	Dryers	2011
S-GOV-6	Prescribed Burning	2008
S-IND-8	Cotton Gins	2009
S-IND-4	Fugitive PM10 Prohibitions (Regulation VIII)	2009
M-OTH-8	Indirect Source Review (ISR) Enhancement	2010
M-OTH-9	Healthy Air Living	TBD
M-OTH-10	Fireworks	2012

6.5 DISTRICT INCENTIVE PROGRAMS

The District has operated highly successful grant programs since 1992, and several of these programs have expanded in funding and increased in sophistication over the years. The District is currently operating two incentive programs aimed at reducing precursor emissions: the Heavy-Duty Engine Emission Reduction Incentive Program (Heavy-Duty Engine Program) and the Reduce Motor Vehicle Emissions II (REMOVE II) Program. As opportunities to achieve cost-effective emission reductions present themselves and funding becomes available, the District has been willing to develop new programs and to add new components for existing programs.

Since 1992, the District has awarded over \$180 million to projects that have resulted in approximately 58,000 tons of lifetime emission reductions with a cost-effectiveness of approximately \$2,600/ton. In 2006 alone, the District executed 473 agreements through the incentive programs for a total of \$43.9 million. The types of projects funded include diesel agricultural irrigation pump replacements, on-road and off-road vehicle engine replacements, new vehicle purchases, locomotive replacements, vanpools, bicycle path

construction and transit pass subsidies. Over the project life, these projects are expected to reduce 7,850 tons of NO_x, PM, and ROG or VOC.

When developing new incentive programs, the District begins by securing funding. Then, after any necessary and appropriate discussions with the California Air Resources Board (ARB) and federal Environmental Protection Agency (EPA), the District develops a proposed framework for the policies and procedures for program administration. These procedures are designed to ensure efficient program administration, applicant and District accountability, and adequate enforcement authority. Typically, new incentive policies and procedures are based on existing ARB guidance documents, such as the Carl Moyer Program Guidelines. The District then presents the proposed framework to the public for comments. Upon receiving comments, District staff refines the framework as appropriate and develops a policies and procedures document for program administration. This document is presented at a public meeting where the ARB, EPA, and public have an opportunity to comment. Finally, the document is presented to the District's Governing Board for approval. Upon approval by the District's Governing Board, the new program is implemented in accordance with the approved policies and procedures document.

In order to maximize SIP creditability of District incentive-based reductions, the District will implement the incentive program changes as described in Chapter 7 of the adopted and state-approved *2007 Ozone Plan* as well as the accompanying resolution on SIP creditability of incentive-based emission reductions.

6.5.1 Types of Incentive Programs

6.5.1.1 Heavy-Duty Engine Emission Reduction Incentive Program

The Heavy-Duty Engine Program is by far the District's largest and most successful incentive program. The Heavy-Duty Engine Program accepts applications for a wide variety of engines that power vehicles or equipment. It provides funding for new purchases (differential cost only, in most cases), engine repowers, and/or retrofits. Emission reductions are obtained when the project applicant purchases vehicles and/or engines that are cleaner than required by current emission standards or installs emission certified/verified retrofit kits on existing engines. The District pays a portion of the differential cost of purchasing the lower emitting technology compared to conventional technology up to a cost-effectiveness cap of \$14,300 per combined tons of NO_x, PM and VOC.

The first projects that were funded began operating in 1998. Each year since then, additional funds have been allocated to the program and additional projects have become operational. Project life varies from 3 to 20 years depending on the application, with an average project life of 5 years based on the mix of projects received to date. Emission reductions are cumulative since additional projects are completed each year.

The 2003 PM₁₀ Plan projected emission reductions utilizing currently available funding would amount to 6.3 tons per day of NO_x by 2005. The 2003 PM₁₀ Plan also indicated that the District expected additional funding would be obtained to allow continued emission reductions in later years.

The most successful component of the Heavy-Duty Engine Program is the replacement of agricultural irrigation pump engines used for water pumping. Approximately 65% of all engines re-powered have been uncontrolled diesel agricultural irrigation pump engines that have been replaced with new engines meeting current off-road engine standards or electric motors.

In addition to the Agricultural Irrigation Pump Engine Component, other principal components of the Heavy-Duty Engine Program are the On-Road Vehicle Component, Off-Road Vehicle Component, Locomotive Component, Marine Vessel Component, Forklift Component, Airport Ground Support equipment, Idle Reduction Component, and Alternative Fuel Infrastructure Component.

6.5.1.2 REMOVE II Program

The Reduce Motor Vehicle Emissions (REMOVE) Program was the District's first incentive program. It began its first phase in 1992. The District has developed a new, enhanced program (REMOVE II) that was approved by the Governing Board in February 2005. REMOVE II reduces emissions from light- and medium-duty motor vehicles in the District. The purpose of this grant program is to assist the District in attaining air quality standards. This is accomplished by allocating funds to cost-effective projects that have the greatest motor vehicle emission reductions, thereby creating long-term air quality benefits for the San Joaquin Valley. All projects must have a direct air quality benefit to the District. Any portion of a project that does not directly benefit the District within its boundaries is not allowed for funding or in calculating emission reductions.

Principal components of the REMOVE II Program are the Light- and Medium-Duty Vehicle Component, the E-Mobility (Telecommunications) Component, the Bicycle Infrastructure Component, the Public Transportation and Commuter Vanpool Subsidy Component, Accelerated Vehicle Retirement Component and the Alternative Fuel Vehicle Mechanic Training Component.

6.5.1.3 Light and Medium-Duty Vehicle Incentive Program

In 2002, the District completed a highly successful Light and Medium-Duty Vehicle Incentive Program. The program provided incentives for the purchase of low-emission passenger vehicles, light trucks, small buses, and trucks less than 14,000 pounds gross vehicle weight. The purpose of the program was to encourage the early introduction of low-emission vehicles in the District. The program paid between \$1,000 and \$3,000 per

vehicle depending on the emission certification level and size of the vehicle. Vehicles were required to be powered by alternative fuel, electricity, or hybrid electric engines/motors. Emission reductions from vehicles purchased under this program were claimed under ARB's Low Emission Vehicle program. These types of vehicle projects are now funded through the REMOVE II Program.

6.5.1.4 Electric Lawnmower Incentives

For the last several years, the District has operated an electric lawnmower exchange incentive program known as the Clean Green Yard Machine Program. The District worked with electric lawnmower manufacturers and local equipment dealers to provide large discounts to people who turned in their gasoline-powered mowers in exchange for electric or push-type lawn mowers. For 2004, District funding provided discount coupons for electric and push-type lawn mowers and 327 mowers were sold in 2004 under the coupon program. In 2005, the District sold 595 electric lawn mowers to District residents who traded-in their old gas-powered mowers. In 2006, the District increased the program and sold 798 electric mowers over the course of five events. This is an example of a new program that will likely be continued in coming years if funding is available.

6.5.1.5 Woodstove Changeout Incentives

In the 2006-2007 wood burning season, the District, in partnership with Operation Clean Air, initiated its "Burn Cleaner" program that offered financial incentives to change out old wood-burning fireplaces, stoves and inserts for cleaner-burning options. The District used a voucher program over a six-week period; 33 Valley hearth retailers participated, and 14 recyclers in the Valley crushed old devices. The District issued more than 500 vouchers to Valley residents, and about \$50,000 in funds was paid to retailers. The District plans to continue this program for the 2007-2008 season.

6.5.2 Existing Incentive Funding Sources in the San Joaquin Valley

Current programs use a combination of state and local funds, including ARB's Carl Moyer Program, the District's Department of Motor Vehicles Surcharge Fees (DMV Fees), Indirect Source Review (ISR) fees and Voluntary Developer Mitigation Contract (DMC) fees, as shown in Table 6-6. The District has achieved significant, cost-effective emission reductions from a variety of grant programs and will seek funding for cost-effective programs from all potential sources. Emission reductions claimed for this plan are based on funding already committed, as shown in the table below. The mix of locally generated funding, state funding, and federal funding will vary.

Table 6-6 Existing Funding Sources

Source	Estimated Annual Available Funding*	Funding Duration
DMV Surcharge Fees	\$10 Million	On-going
Moyer Funds	\$10 Million	7 Years
ISR/DMC Funds	\$20 Million	On-going
Total	\$40 Million	

* The total available funding can potentially be reduced by approximately \$15 million per year beginning in 2016 unless reauthorizations are granted for the Moyer Program and \$2 DMV Surcharge Fee (AB 923) funds.

Calculating the reductions expected from incentive programs involves several steps and assumptions. First, although the project life for each project is expected to be 10 years, the District conservatively calculates reductions for the first three years of the project under the assumption that if the equipment hadn't been replaced under the grant, then after three years, the old equipment would have been replaced under natural fleet turnover. Therefore, grant funds awarded in 2007 are expected to achieve surplus reductions in 2007, 2008, and 2009. Also, to calculate the total reductions being achieved by incentive programs in 2009, for example, the reductions from funds distributed in 2009, 2008, and 2007 are considered. Second, the cost effectiveness (cost per ton of reductions) for District incentive programs in 2007 is \$14,300 per ton. The cost per ton increases over time due to inflation, so the District assumes a 6% increase in cost effectiveness each year. Third, the total secured incentive funding decreases with the expiration of Moyer and part of the total DMV fees in 2015, unless these programs are re-authorized by the California Legislature. The total NO_x reductions achieved by incentive programs with secured funding in key years are shown in Table 6-7.

Table 6-7 NO_x Reductions Achieved by District Incentive Measures with Assured Funding¹

Year	NO _x Reductions (tpd)
2012	1.4
2020	0.7
2023	0.6

¹ Reductions achieved with Moyer incentives are not included in the reductions listed here since ARB takes credit for these reductions in Table B-2.

6.5.2.1 DMV Surcharge Fees

State law provides air districts that are designated as state non-attainment for a pollutant emitted by motor vehicles to receive revenues from motor vehicle surcharge fees collected and disbursed by the State Department of Motor Vehicles. Legislation (AB 2766) was enacted in 1990 to enable air districts to receive up to a \$4 surcharge per vehicle on motor vehicle registration fees. These fees provide air districts with funds to meet their responsibilities mandated under the California Clean Air Act (CCAA) without raising fees on stationary sources. The California Health and Safety Code states that these motor vehicle surcharge fees shall be used to support air district-operated planning, monitoring, enforcement, and technical studies necessary to implement the CCAA, including incentive programs that reduce motor vehicle emissions.

Additional legislation (SB 709) was enacted in 2003 allowing the District to receive an additional \$1 surcharge per motor vehicle. The funds generated by this surcharge may only be used to reduce emissions from vehicular sources, including, but not limited to the establishment of a clean fuels program and the adoption and implementation of motor vehicle use reduction measures. The District may utilize up to 2 percent of the funds received for administrative expenses.

In 2004, air districts were allowed to adopt an additional \$2 motor vehicle surcharge fee (AB 923). The funds generated by this additional surcharge may be used only to reduce emissions from certain motor vehicle and agriculture sources, including Carl Moyer Program projects, and for the new purchase, retrofit, repower, or add-on equipment for previously unregulated agricultural sources, school buses, and an accelerated vehicle retirement or repair program. The District may utilize up to 5 percent of the funds received for incentive program administrative expenses. This additional surcharge will remain in effect only until January 1, 2015, unless re-authorized by the California Legislature.

It is estimated that approximately \$10 million per year will be available for incentive grants from District DMV fees.

6.5.2.2 Carl Moyer Memorial Air Quality Standards Attainment Program

The Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) is a grant program, implemented by a partnership of the ARB and local air districts, which funds the incremental cost of cleaner-than-required engines, equipment, and other sources of pollution. Eligible project types include on-road heavy-duty vehicles, idle reduction technologies, off-road diesel equipment, transportation refrigeration units, off-road spark-ignited equipment, marine vessels, locomotives, and agricultural engines. Legislative changes enacted in 2004 provide increased and continued funding for the Moyer Program through 2015, unless re-authorized by the California Legislature.

It is estimated that approximately \$10 million per year will be available to the District for incentive grants from Moyer Program funds.

6.5.2.3 Indirect Source Review and Voluntary Developer Mitigation Contract Funds

The District's ISR Rule was developed to achieve a number of goals, including the reduction of NOx and PM emissions from new development projects. The rule requires a certain amount of emission reductions from each development project, which can be achieved by utilizing one of several approaches. Paying a fee to fund projects that will reduce emissions off-site is an option for rule compliance. Funds from this option will be used for NOx and PM emission reduction projects through the District's incentive programs. Additionally, funds are also derived from developer mitigation contracts in which certain developers choose to mitigate 100% of the emissions from their development projects. These fees are then used to fund emission reduction projects through the District's incentive programs.

For the purpose of this analysis, it is estimated that approximately \$20 million per year will be available for incentive grants from ISR and DMC fees.

6.5.3 Potential Future Incentive Funding

Current state and local funds available to the San Joaquin Valley for incentive-based programs in the District is approximately \$40 million per year. The primary sources for these funds are the expected revenues from the District's Indirect Source Review rule, voluntary development mitigation agreements, local DMV surcharge fees, and the state's Carl Moyer program. Additionally, the San Joaquin Valley receives funding that can be utilized for air quality projects that is allocated by agencies other than the District. The District is expecting to receive five major sources of new incentive funding:

Table 6-8 Estimated New Funding Sources

Funding Source	Estimated Annual New Funding	Funding Duration
Federal Funding	\$5 Million	1 Year
Proposition 1B (Goods Movement Infrastructure) ¹	\$50 Million	4 years
Great Basin UAPCD	\$223,000	1 Year
Low Emission School Bus Program	\$20 Million	2 Years
Total	\$75.2 Million	

¹ ARB approved the first distribution of funding at a public hearing held on February 28, 2008. More information is available at: www.arb.ca.gov/bonds/gmbond/gmbond.htm

The federal transportation-funding program provides Congestion Mitigation and Air Quality (CMAQ) funds to non-attainment areas to fund transportation projects that improve air quality. These funds are allocated by the eight county level Metropolitan Planning Organizations (MPOs) in the Valley. While the draft guidance for the allocation of CMAQ funding provides a renewed focus on cost-effective emissions reduction projects, transportation agencies often weigh other criteria, such as congestion relief, when allocating CMAQ funds.

The federal farm bill provides air quality funding through the Environmental Quality Incentives Program (EQIP). EQIP funds are distributed by the Natural Resource Conservation Service (NRCS). San Joaquin Valley agriculture receives approximately \$5.5 million per year in EQIP funding. These funds can be utilized for dust control activities and to reduce emissions from agricultural engines. Historically, approximately \$1.15 million per year has been utilized to reduce emissions from agricultural engines; however, the program does not require that the funds be utilized for any particular category.

The Environmental Protection Agency (EPA) administers funding from the Diesel Emissions Reduction Account (DERA) to fund projects that reduce emissions from diesel engines. The DERA program is a national program that has been authorized, but never fully funded, at \$200 million per year. To date, the San Joaquin Valley has received approximately \$700,000 in DERA funding. However, the Valley could potentially receive up to \$7.5 million in future near-term DERA funding.

6.6 DISTRICT INNOVATIVE STRATEGIES AND PROGRAMS

6.6.1 Fast Track

On April 30, 2007, the District Governing Board approved an innovative and comprehensive “dual-path” strategy to attain cleaner air, meeting the federal 8-hour ozone standard as expeditiously as possible. The dual path includes the State Implementation Plan for ozone, and a “Fast Track” set of strategies of types that have not historically been approved in state implementation plans. The Fast Track measures are designed to significantly reduce emissions as expeditiously as possible, well in advance of the 2024 attainment deadline.

The Fast Track contains three primary components:

1. **Assuring effective and expedited regulations by California Air Resources Board (ARB) and EPA:** Attaining the federal 8-hour ozone standard will require a 75% reduction in NO_x emissions. With mobile source emissions constituting 80% of the Valley's total NO_x emissions, the bulk of the necessary emissions reductions must come from state and federal control measures for mobile

sources. These measures will include more stringent tail-pipe standards for new on-road and off-road mobile sources, and regulations designed to accelerate the deployment of newer, cleaner engines. The District will work diligently to ensure stringent and expeditious controls on mobile sources are promulgated and implemented by ARB and EPA. Toward that end, the District will take a leadership role in devising effective control measures for mobile sources and will utilize all available administrative, regulatory, legislative, and legal avenues to pressure ARB and EPA to do their fair share in controlling emissions from sources under their jurisdiction.

2. **Significant increase in incentive funding:** There is broad consensus that regulations alone cannot bring about all the reductions that are necessary to reach attainment. Stationary sources are already heavily controlled, and more stringent tail-pipe standards for new vehicles will not produce reductions until the old engines are replaced with cleaner new engines. With incentives, the full benefit of the new engine standards will be accelerated by several years. Incentive grants can also allow for adoption of cleaner technologies that may otherwise be unaffordable.
3. **Fast Track emission reduction measures:** Reaching attainment ahead of the 2024 deadline will require development and implementation of a number of bold, innovative, and creative measures. The following is a list of such measures as outlined in the District's *2007 Ozone Plan*:
 - **Green Contracting:** Encourage or require government agencies and private businesses to give preference to contractors/vendors who use low-emission processes and equipment. District does not currently have the authority to mandate green contracting.
 - **Green Fleets:** Encourage or require government agencies and private businesses to upgrade existing fleets with low-emission vehicles. District does not currently have the authority to mandate the use of green fleets by private businesses.
 - **Truck Replacement/Retrofit/Repower:** Provide incentives for early and cost effective fleet modernization. This could potentially produce 40 tons per day (tpd) NOx emissions reductions at a cost of approximately \$1.5 billion. The measure will depend heavily on participation and funding.
 - **Short Sea Shipping:** Reduce heavy-duty truck and locomotive vehicle miles traveled through the District by transporting goods by water carriers between northern and southern California. If short sea shipping replaces 20% of daily trips in 2010, approximately 8,000 heavy-heavy duty truck movements would be eliminated, resulting in 40 tpd of NOx and 1 tpd of PM emissions reductions.
 - **High-Speed Rail:** Use high-speed rail to transport goods and people through the Valley. The California High-Speed Rail Authority projects that the system would be capable of handling up to 68 million passengers a year by 2020, at a total project cost of \$33 billion.

- Alternative Energy: Utilize lower-emitting sources of energy such as electric, solar, and hydrogen fuel cells, to reduce or slow the growth of NOx emissions in the Valley.
- Energy Conservation: Encourage or require government agencies, businesses, and residents to employ measures to reduce energy consumption in the San Joaquin Valley.
- Heat Island Mitigation: Adopt methods and practices, such as urban landscaping and highly-reflective roofing, to reduce the surface temperatures in urban centers and reduce the need for peak electricity generation. Additional benefits include cost savings, reduction of greenhouse gases, and aesthetic improvements. The mass planting of trees could result in increased water usage, maintenance costs, and emission of biogenic VOCs.
- Episodic/Regional Controls: Incentive and regulatory-based measures, such as enhancements to the Spare the Air program, designed to reduce ozone concentrations at hot-spot locations during the worst days of the ozone season. While the District is not proposing major curtailments in activity that could have a devastating effect on the Valley economy (e.g., no farm days, no construction days), it may be beneficial to include episodic provisions in many incentive and regulatory measures. Each year, the District averages 25 Spare the Air days and 100 days with AQI levels above 100.
- Inland Ports: Provide linkages between ports and other modes of transportation, such as by train for the delivery of goods. Increase the use of cargo containers and truck/rail combinations.

The Fast Track is being developed in an open public process. The APCO has formed a task force comprised of members from environmental organizations, industry representatives, and the Governor's San Joaquin Valley Partnership. District staff has been meeting regularly with the Fast Track Task force to devise and advance the new and innovative measures for early attainment. The Fast Track Task Force will fulfill four important roles:

- An advisory group for refining Fast Track strategies;
- A source for new ideas for Fast Track strategies;
- Outreach to inform decision-makers and the public on the Dual Path and Fast Track concepts; and
- Advocacy to help develop the means (i.e., funding for incentives) to implement Fast Track strategies.

The District will also prepare an annual Fast Track Report and present it to the Governing Board. For more information on the Fast Track please visit:

<http://valleyair.org/Programs/FastTrack/FastTrackIdx.htm>

6.6.2 Healthy Air Living

The Healthy Air Living initiative is a lifestyle program aimed at giving businesses, communities, civic organizations, municipalities, health organizations, families and all Valley residents the tools they need to make substantial permanent lifestyle and behavior changes which will reduce emissions in the Valley year-round.

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