ADDITIONAL RESOURCE MATERIALS FOR STAFF'S TECHNICAL ANALYSIS

1. San Joaquin Valley District 2007 Ozone SIP
   Chapter 6 and Appendix I
   http://www.valleyair.org/Air_Quality_Plans/AQ_Final_Adopted_Ozone2007.htm

2. South Coast 2007 Ozone SIP
   Appendix IV-A
   http://www.aqmd.gov/aqmp/07aqmp/07AQMP_modified.html

3. ARB Audit Report
   http://www.arb.ca.gov/audits/audits.htm

4. San Joaquin Valley Air Pollution Control District Rules
   Rules 2020, 4306, 4307, 4308, 4309, 4311, 4352, 4354, 4565, 4570, 4694, 4702, 4703, 4902, 4905 and 9510
   Draft Rules 4306, 4307 and 4354
   http://www.arb.ca.gov/drdb/sju/cur.htm

5. South Coast Air Quality Management District Rules
   Rules 219, 1110.2, 1117, 1146 and 1146.1
   http://www.arb.ca.gov/drdb/sc/cur.htm

6. Bay Area Air Quality Management District Rules
   Rules 9-12 and 12-12
   http://www.arb.ca.gov/drdb/ba/cur.htm

7. Ventura County Air Pollution Control District Rules
   Rule 23
   http://www.arb.ca.gov/drdb/ven/cur.htm

8. El Dorado County Air Quality Management District Rules
   Rule 501
   http://www.arb.ca.gov/drdb/ed/cur.htm

9. San Joaquin Valley Best Available Control Technology Clearinghouse and Policy
   http://www.valleyair.org/busind/pto/bact/bactidx.htm

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Chapter 6

District Regulatory Control Measures for Stationary Sources

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Chapter 6: District Regulatory Control Measures for Stationary Sources

6.1 INTRODUCTION

Attaining the federal 8-hour ozone standard will require the involvement of all sectors of the economy and the population. As discussed in Chapter 4 (Strategy), the District is pursuing a four-faceted control strategy. This chapter describes the District's stationary source regulatory responsibilities under the four-faceted strategy, which consists of traditional "command-and-control" regulations, such as the rules in Regulation IV of the District's Rules and Regulations Manual.

The District's regulatory stationary source control measure component of this plan achieves a robust 32 tons per day (tpd) of combined VOC and NOx reductions by 2012, with an additional 23 tpd of combined VOC and NOx reductions by 2023, for a total combined VOC and NOx reduction of approximately 54 tpd. It is anticipated that additional reductions will be achieved from the District incentives programs, as discussed in Chapter 7 of this plan and from innovative programs discussed in Chapter 8. Emission reductions from state, federal and local measures are presented in Chapter 9. An overall summary of the plan Strategy to include the District's regulatory stationary source control measures, incentive measures and innovative programs, state, federal and local Regional TPAs measures can be found in Chapter 11 of this plan.

6.2 REGULATORY COMPONENT

This chapter presents the District's process to exhaustively consider control measures, which could be included as part of the stationary source regulatory component. The full descriptions of the control measures the District is considering are included in Appendix I, Candidate Control Measures. Table 6-1 includes a summary list of the stationary source control measures and the reductions they are expected to achieve.

It's important to note that in scheduling rule development projects, the District is giving priority to NOx controls. The carrying capacities discussed in Chapter 3 and Appendix F show that while both VOC and NOx reductions advance attainment in the near term, the diminishing return for VOC has no significant impact on final attainment. NOx reductions yield the most benefit for improving ozone air quality in the San Joaquin Valley Air Basin. Also, preliminary modeling being conducted by ARB for the District's upcoming *2008 PM2.5 Plan* (due to EPA in April 2008) shows that NOx reductions should be the priority component of the District's PM2.5 strategy, as well.

The District's regulations may target specific source categories, or facilities within the San Joaquin Valley Air Basin:

- Source categories identify types of equipment or processes. Examples include boilers and dryers in food processing facilities, or industrial processes, such as application of paints and solvents in automotive coating operations.
- Facilities are operations considered as a whole, including all the processes and activities, which are undertaken at specific locations. Examples include oil refineries, dairies, food processors, and wineries.

6.2.1 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.
- Attended the South Coast AQMD Air Quality Summit in January 2006, which generated ideas from technical experts in different stationary and mobile source categories.
- Reviewed recommendations from the 2003 ARB audit of District rule making activities.
- Reviewed Further Study Measures in the District's Extreme Ozone Attainment Demonstration Plan (for 1-hour ozone) (OADP).
- Reviewed control measures suggested by the public shortly after adoption of the Extreme OADP.
- Investigated control strategies and measures in other districts and agencies, including the South Coast AQMD, Sacramento Metropolitan AQMD, Bay Area AQMD, Ventura County APCD, Houston-Galveston Area Council of Governments, Texas Commission on Environmental Quality, and Fresno Council of Governments.
- Attended the San Joaquin Valley Blueprint Planning Process Summit in Fresno.
- Conducted six Town Hall Meetings in July 2006, which enabled citizens, industry stakeholders, environment advocacy groups, and other interested parties to submit control measure suggestions and other comments to the District. See Appendix G: Town Hall Meeting Suggestions.
- Reviewed public comments on the October 17, 2007 plan draft and workshop. Forty-five people attended the workshop. Approximately 23 verbal comments were received during the workshop. Approximately 106 written comments (some from multiple sources) were received during the comment period, and about 88 of these pertained to the District's control strategy.
- Attended ARB workshops (October 12, 2006 and November 14, 2006) on the state strategy and evaluated measures for possible new ideas.
- Analyzed all District rules affecting NOx and VOC to assess possibilities for strengthening and expanding their applicability, including using Best Available Control Technologies, whenever feasible. This analysis involved a thorough comparison of the District's NOx and VOC rules with those from the South Coast

AQMD, Bay Area AQMD, and Ventura County APCD. See Appendix H: Screening Analysis of Existing NOx and VOC Rules/Proposed New Rules.

- Defined emission control scenarios for ARB to investigate via modeling exercises. These include the possibilities of episodic and geographic control measures, patterned after the highly successful rule for wood-burning fireplaces.

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, options for future control options, concerns regarding the implementation of controls, and potential emission reductions. The development of Table 6-1 (District Stationary Source Regulatory Implementation Schedule), which shows the timing of regulatory adoption and implementation of the emission reductions, took into consideration a variety of factors, including:

- Technological feasibility and practicality of emission controls;
- Emission inventory of the source category and likely emission reductions;
- 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 - NOx or VOC or both;
- Any potential adverse environmental impacts; and
- Potential for disparate environmental impacts (environmental justice).

A few source categories are not being pursued in this planning effort. The control measure evaluation process brought to light that for some categories a lack of activity or sources operating within the District or the activity occurs outside of the ozone season, therefore not contributing to the ozone problem. Since the release of the first draft of this plan, one proposed control measure has been completed and adopted by the District Governing Board in December 2006 and the emission reduction estimates can be found in Appendix B of this plan. In addition, two source categories are directly under ARB's jurisdiction and control and are being deferred to ARB for further discussion. ARB's control strategy discussion may be found in Chapter 9 of this plan.

For those mobile source categories that are outside of the District's jurisdiction, but for which incentive programs will be developed to achieve reductions, those control measure categories are discussed and addressed in Chapter 7 of this plan.

6.3 IMPLEMENTATION SCHEDULE FOR THE STATIONARY SOURCE REGULATORY COMPONENT

Table 6-1 lists the candidate regulatory stationary source control measures and shows adoption/completion date, compliance and emission reduction implementation dates, and the estimated emission reductions for the pollutant of concern by year. The Schedule shown in Table 6-1 demonstrates a reasonable implementation schedule with all of the proposed measures being developed and implemented by the 2012 date.

The emission reductions estimates in Table 6-1 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. These more effective control techniques will be considered in each 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.

Additional work on source categories will continue through the development of feasibility/future studies listed in Table 6-2. These studies will provide the background work needed in determining which of the categories are viable control measures for additional reductions beyond the 2012 date, which are anticipated to a achieve additional reductions needed for attainment by 2023.

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 a fruitful emissions reduction options 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 ozone season. For additional discussion on the overall strategy that includes all the four faceted strategy components, please see Chapter 11 of this Plan.

Table 6-1 District Stationary Source Regulatory Implementation Schedule

CM#	Measure Name	Product	Completion Date	Compliance Date	Reduction Start	Projected NOx Reductions by 20XX Year							Projected VOC Reductions by 20XX Year						
						08	11	12	14	17	20	23	08	11	12	14	17	20	23
S-GOV-1	Composting Biosolids	Rule	2007 1Q	2008	2008								2	3.4	3.4	3.9	4.0	4.1	4.1
S-AGR-1	Open Burn	Rule	2007 2Q 2010 2Q	2007 2010	2007 2010	1.1	2.4	2.4	2.4	3.5	3.5	3.4	1.3	2.8	2.8	2.8	2.8	2.8	2.7
S-SOL-11	Solvents	Rule	2007 3Q	2010	2010								0.0	1.3	1.32	1.39	1.46	1.53	1.62
S-COM-5	Gas Turbines	Rule	2007 3Q	2010	2010	0.0	0.6	0.6	0.61	0.64	0.66	0.68							
S-IND-24	Soil Decontamination	Rule	2007 3Q	2008	NA								0.0	0.0	0.0	0.0	0.0	0.0	0.0
S-IND-6	Polystyrene Foam	Rule	2007 3Q	2010	2011								0.0	0.0	0.10	0.10	0.11	0.12	0.35
S-PET-1&2	Gasoline Storage & Transfer	Rule	2007 4Q	2009	2009								0.0	0.9	0.92	0.99	1.03	1.07	1.08
S-PET-3	Aviation Fuel Storage	Rule	2007 4Q	2010	2010								0.0	0.05	0.05	0.05	0.05	0.05	0.05
S-COM-1	Large Boilers	Rule	2008 3Q	2011	2011	0.0	0.0	0.69	0.72	0.75	0.77	0.8							
S-COM-2	Medium Boilers	Incentives Rule Backstop	2008 3Q	2020	2012 from incentives	0.0	0.0	0.51	0.51	0.51	0.51	0.51							
S-COM-7	Glass Melting	Rule	2008 3Q	Varies	2008	1.2	1.2	1.6	1.7	1.8	1.9	2.0							
S-SOL-20	Graphic Arts	Rule	2008 4Q	2011	2011								0.0	0.0	0.07	0.07	0.08	0.08	0.08
S-COM-9	Residential Water Heaters	Rule	2009 1Q	Attrition	2011	0.0	0.2	0.25	0.40	0.55	0.70	0.85							
S-GOV-5	Composting Green Waste	Rule	2009 1Q	2012	2012								0.0	0.0	9	10	10	11	11
S-IND-21	Flares	Rule	2009 2Q	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S-IND-14	Brandy & Wine Aging	Rule	2009 3Q	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S-SOL-1	Architectural Coatings	Rule	2009 4Q	2012	2012								0.0	0.0	2	2.1	2.1	2.2	2.3
S-AGR-2	CAFO	Rule	2010 2Q	2011	2011								0.0	6.8	6.7	18.9	20.4	21.5	22.9
S-SOL-6	Adhesives	Rule	2010 3Q	2012	2012								0.0	0.0	0.11	0.17	0.12	0.13	0.15
						Total Projected NOx Reductions by 20XX Year							Total Projected VOC Reductions by 20XX Year						
						08	11	12	14	17	20	23	08	11	12	14	17	20	23
						2.3	4.4	6.0	6.3	7.8	8.0	8.2	3.3	15.3	26.5	40.5	42.2	44.5	46.3

NA (Not Available)

For the purposes of implementing this Extreme OADP, the District is committed to adopt and implement control measures that will achieve, in aggregate, the emissions reductions specified in Table 6-1.

If not enough information is available to satisfactorily evaluate a particular control measure, it became a feasibility/further study measure. Emissions reductions from feasibility/future studies are not currently quantifiable. These studies will be in addition to the regulatory measures and will engage the public and industry in identifying new potential emission reductions. A study report will be released by the dates listed in Table 6-2, which may recommend a future amendment to the regulatory implementation schedule to include those additional measures identified as fruitful.

Table 6-2
District Stationary Source Feasibility/Future Study Implementation Schedule

CM#	Measure Name	Product	Completion Date
S-COM-6	ICE Electrification\Pump Efficiency Incentives	FS	2008
S-GOV-6	Prescribed Burning	FS	2008
Program Review	Open Burning Biomass Incentive	FS	2008
S-PET-13	Oil Production Sumps	FS	2009
S-PET-16	Heavy Crude Oil Components	FS	2009
S-COM-4	Solid Fuel Fired Boilers	FS	2009
S-COM-3	Small Boilers	FS	2010
S-IND-12	Wine Fermentation & Storage	FS	2010
S-IND-5	Asphalt Roofing	FS	2010
S-PET-18	HOTS & Gauge Tanks	FS	2010
S-AGR-4	Pesticide Fumigation Chambers	FS	2011
S-COM-11	Dryers	FS	2011
S-GOV-4	Asphalt Paving	FS	2011
S-IND-13	Bakeries	FS	2011
S-COM-6	IC Engines – Standards Review	FS	2012
S-GOV-2	POTW Water Treatment	FS	2012
S-IND-23	Reduction of Animal Matter	FS	2012
S-PET-22	Refinery Turnaround Units	FS	2012
S-PET-23	Refinery Vacuum Devices	FS	2012
S-PET-24	Refinery Wastewater Separators	FS	2012

FS – Feasibility/Future Study: Not currently quantifiable. FS reports will be released by the completion date, which may recommend an amendment to the Plan Regulatory Implementation Schedule to include additional regulatory measures identified as fruitful and have the potential of achieving reductions committed to in the Black Box

Those few measures that are not being pursued in Table 6-1 or 6-2 are those that have very little to no known emissions inventories or have been recently adopted or amended to include the most stringent controls known to date. These source categories will pursued through advance technology strategies as part of the long term strategy discussed in Chapter 11 and all source categories will be considered again for additional reductions needed for the “Black Box”. These source categories and others will be revisited well before 2020 or soon thereafter for possible measures where new emerging technologies may garner additional reductions to satisfy the current emission shortfall needed for attainment of the standard by the 2023 deadline.

Appendix I

Candidate Control Measures

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Appendix I: Candidate Control Measures

The San Joaquin Valley Unified Air Pollution Control District (District) conducted an exhaustive search for emissions reductions to use in meeting federal Clean Air Act requirements for this *2007 Ozone Plan*. Chapter 6 details the process that the District used to develop measures for reducing emissions of ozone precursors (also called control measures). This Appendix presents all of the candidate control measure ideas developed for this plan, which are referred to in Chapters 6, 7, and 8 and for some source categories, under ARB and EPA's jurisdiction, Chapter 9 of this plan. As such, it should be considered as a master list of all candidate control measures identified and evaluated by District staff for this plan.

Once District staff assembled Appendix I, they then screened the measures to identify high priority measures to be implemented in the years immediately following plan adoption, those measures that might be implemented in future years given favorable trends in technology development, and those measures that require further study to identify when they could be implemented and what reductions they could achieve. Chapter 6 compiles those measures to be implemented in the years immediately following plan adoption, and also gives a schedule for when the measures would be adopted and implemented, and an estimate of the emissions reductions. Consequently, Chapter 6 contains fewer measures than Appendix I, because it presents a subset of the master list of measures.

Each candidate control measure description in Appendix I has the following major components: Title and Number, Source Category Affected, Current Control, Future Control Options, Future Incentive Options, Discussion, Recommendations, and Projected Reductions. Not all of these components are relevant for all measures listed in Appendix I. For example, a further study measure will not have emissions reductions identified, since one of the reasons a measure is placed into the "further study" category is to determine potential emissions reductions.

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Open Burning (S-AGR-1)

(Managed Burning and Disposal)

Source Category:
This category includes the burning any material, including agricultural waste.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	4.8	4.8	4.7	4.7	4.7	4.6	4.6	4.5
VOC	5.7	5.7	5.6	5.6	5.6	5.5	5.5	5.4

- The emission inventory needs to be further refined to ensure that it fully captures the reductions achieved by existing Rule 4103.
- EICs Affected: 670-660-0262, 670-662-0262

Current Control: District Rule 4103 has limitations on the amount of material that can be burned and the types of material that can be burned, and restricts when burning can occur. The rule provides exemptions for fires that serve a ceremonial purpose, and for when the District determines there would be an imminent and substantial economic loss if burning were to be prohibited. This rule reduces both VOC and NOx emissions from between 58% to almost 100%, depending on the type of material.

Future Control Options:

- District staff is committed to working with agricultural industry stakeholders to identify feasible alternatives to burning agricultural waste.

Discussion:

- Burning is located at stationary sources for which the District has legal authority to regulate air emissions.
- On September 22, 2003, Governor Gray Davis signed California State Senate Bill 705 (SB 705). This action amended the California Health and Safety Code (CH&SC) Sections 41855.5 and 41855.6 to require the District to revise rules that regulate emissions from open burning of waste produced by agricultural operations. The bill divided the agricultural wastes as follows:
  - Phase I: Diseased Crops (June 1, 2005)
  - Phase II: Field Crops, Prunings, and Weed Abatement (June 1, 2005); and Best Management Practices for Weed Abatement (June 1, 2006)
  - Phase III: Orchard Removals (June 1, 2007)
  - Phase IV: Other Materials, Vineyard Removals, and Prunings from Surface-Harvested Crops (June 1, 2010)

Open Burning
(Continued)

- The District's Governing Board adopted rule amendments to District Rule 4103 for Phase I and Phase II in 2004 and 2005, respectively. The current rulemaking project will focus on the provisions in Phase III - the prohibition on the burning of orchard removals. The burning of rice straw, which was preliminarily addressed in Phase II, will also be considered in Phase III. A later rulemaking process for Phase IV will address the prohibition of burning of vineyard removals, surface harvested prunings and other materials.
- The District may postpone the burn prohibition commencement dates set forth in the CH&SC but cannot provide a permanent allowance for burning. Each of the following criteria must apply for the District to postpone the burn prohibition commencement dates:
  - The District determines that there is no economically feasible alternative of eliminating the waste.
  - The District determines that there is no long-term federal or state commitment for the continued operation of biomass facilities in the San Joaquin Valley or the development of alternatives to burning.
  - The District determines that the continued issuance of permits for that specific category or crop will not cause, or substantially contribute to a violation of an applicable federal ambient air quality standard.
  - The California Air Resources Board concurs with the District's determinations.

Recommendation:

- District staff recommends that the District continue to meet its legal obligation under the CH&SC (SB 705) through its rulemaking projects addressing the burning of agricultural waste.
- Currently this source category is not a candidate for incentive funding, but further analysis and study is necessary to determine if this source category may garner cost effective reductions in the future provided funding sources are available. Please see Chapter 7 for any additional information.

Projected Reductions:

Provided the technical and economic limitations of the alternatives to open burning, District staff anticipates that the recommended controls will yield the emissions reductions listed below.

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	1.1	2.4	2.4	2.4	3.5	3.5	3.4
VOC	1.3	2.8	2.8	2.8	2.8	2.8	2.7

Confined Animal Facilities (S-AGR-2)

(Dairy Operations)

Source Category:
This source category includes facilities and operations that raise fowl or animals that are corralled, penned, or otherwise caused to remain in restricted areas for commercial purposes and feeding is by means other than grazing.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC without 4570	65.4	68.7	72.5	74.0	76.9	81.4	85.9	90.4
VOC *adjusted	65	68	53	55	57	60	64	67

***Baseline adjusted to reflect recently adopted Rule 4570 reductions & current estimated control efficiencies.

- EIC Affected: 620-618-0262

The following are current efforts being considered for refining the emissions inventory for this source category:

- Research is being conducted to refine the emission factors;
- Analysis is being conducted to include emission sources, such as feed, that were not included in the inventory;
- Analysis of the impact of current BACT and Rule 4570 requirements, which may result in refining growth factors; and
- Research into the control efficiencies for the mitigation measures in Rule 4570, which may result in refining control efficiencies.

Current Control:

- District Rule 4570 requires dairy owners/operators to implement 19 VOC mitigation measures from a list of 69 measures, which is expected to achieve an overall VOC reduction of 26% from this source category.
- Dairies with less than 1,000 milk-producing cows are exempt from the rule requirements.
- The compliance date for the requirements in the current rule is December 2008.

Future Control Options:

- Increasing the required management practices listed in the rule by two (2) would result in an additional 20% facility-wide reductions at affected sources for an additional overall source category VOC reduction of 6% from this option. The exact increase in required management practices will be determined during the rule development process after considering socioeconomic, environmental, and regulation issues.

- Dietary changes to high moisture feed or steam flaked corn instead of rolled corn; setting a maximum percent of the animal's diet that can contain silage; or enclosing silage in bags may reduce VOC emissions from feed by an overall source category VOC reduction of 10% from this option. The feasibility of this amendment will be determined during the rule development process.
- Lowering the applicability threshold for dairies and requiring management practices for these newly affected facilities may achieve an additional 9% reduction in VOCs from this source category. The feasibility of this amendment will be determined during the rule development process.
- Research is currently being done by California State University Fresno, US EPA, and ARB that may identify new additional control options or technology.

Discussion:

- This source is within the District's legal authority to regulate per to CH&SC 40724.
- Lowering the applicability level, incorporating requirements for additional mitigations measures and considering requirements for dietary changes all have a potential to achieve an overall 25% VOC reduction from this source category.
- Based on current District experience and that of other districts, it is expected that the rule project will take approximately 16 months to go from scoping meeting to public hearing.

Recommendation:

- Lower the applicability threshold to bring more sources into the rule, increase the number of mitigation measure from 19 to 21 and implement dietary feed requirements may be likely control options for future controls. Although the exact number and type of additional practices and the exact threshold will be determined during the rule development process after considering socioeconomic, environmental, and regulation issues.

Projected Reduction:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	6.8	6.7	18.9	20.4	21.5	22.9

Orchard Heaters (S-AGR-3)

(Unclassified)

Source Category:
This source category covers orchard heaters commonly known as "smudge pots". Other types of orchard heaters, such as wind machines, are not included in this category.

Emissions Inventory:
With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004

Current Control: District Rule 4303, last amended December 16, 1993, requires that orchard heaters produce less than 1 gm/min. of solid carbonaceous material.

Control Options:
- None; only minor rewording for administrative changes.

Discussion:
- Use of orchard heaters has been decreasing over past years to the point that they are no longer used in many San Joaquin Valley counties.
- These units are not in use during the ozone season.
- Since emissions from this source occur during the cold season, it is not relevant to the control of ozone, which is a summer problem.

Recommendation:
- This control measure should be considered in a future PM2.5 plan development strategy but not recommended as an ozone control measure since these units are operated outside of the ozone season and do not contribute to summertime ozone.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pesticides/Fertilizers (S-AGR-4)

(Post-Harvest Fumigation)

Source Category:
This source category includes fumigation operations used to control pests in post harvest products, such as fruits, vegetables, cotton, and grains.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- EIC Affected: 530-540-3225-0000

Current Control: There is no current rule-based requirement for controlling VOCs from post-harvest fumigation operations. Post harvest fumigation using methyl bromide is a District-permitted activity.

Future Control Options:
- Capture and control with 85% overall efficiency, using adsorption systems.

Discussion:
- As a pesticide, methyl bromide is mainly used in the fumigation of agricultural fields, which is under the jurisdiction of the Department of Pesticide Regulation. Fumigation of post-harvest products occurs in stationary facilities, which is subject to District authority.
- The inventory, above, represents the portion that is used for fumigation of post harvest products, which approximately is 5% of the total methyl bromide inventory (e.g. 2.26 tons per day in the 2005 summer season).
- There are 210 permitted fumigant operations, and of these, there are 69 permitted operations using methyl bromide as fumigant.
- A source in Monterey County has successfully installed a capture and control system with 85% overall efficiency, using adsorption as the control technique.
- It is estimated that 50% of the District-permitted sources have enough throughput to take advantage of the abovementioned technology.
- The emission reduction is based on controlling emissions from 50% of the facilities using methyl bromide for fumigation, which have enough throughput to take advantage of the adsorption technology. Facilities that don't have enough throughputs may be subject to alternative compliance options, whereby equivalent VOC reductions are made elsewhere, in lieu of controlling VOCs from methyl bromide fumigation.

Post-Harvest Fumigation
(Continued)

Recommendation:

- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:
With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Boilers, Steam Generators, and Process Heaters, >5 MMBtu/hr (S-COM-1)

(Electrical Utilities, Cogeneration, Oil & Gas Production – Combustion, Petroleum Refining – Combustion, Manufacturing & Industrial, Food & Ag Processing, Service & Commercial)

Source Category:
This source category includes a wide range of industries including but not limited to those listed above.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	7.5	4.7	4.6	4.6	4.7	4.7	5.2	5.4
VOC	0.7	0.7	0.7	0.71	0.71	0.73	0.75	0.77

- EICs Affected: 010-005-0110; 010-005-1220; 030-005-0110; 030-005-0124; 030-005-0130; 030-005-1220; 030-005-1530; 030-010-0110; 030-010-1600; 030-015-0110; 030-015-0130; 040-005-0110; 040-005-0130; 040-010-0100; 040-010-0110; 040-010-1000; 050-005-0110; 050-005-0122; 050-005-0124; 050-005-0300; 050-005-1220; 050-010-1220; 050-010-1224; 052-005-0110; 052-005-0122; 052-005-0124; 052-005-1220; 052-005-1510; 052-005-1520; 052-010-0110; 052-010-0120; 052-010-1224; 060-005-0110; 060-005-0122; 060-005-0124; 060-005-0144; 060-005-0320; 060-005-1220; 060-005-1520; 060-010-1220

Current Control:

- Rule 4306 is currently the most stringent in the state and requires the most effective controls.
- Rule 4306 sets NOx limits of 9 ppmv for units greater than 20 MMBtu/hr and 15 ppmv for units less than 20 MMBtu/hr. For large refinery units >110 MMBtu/hr the limit is 6 ppmv. The limits become effective in 2007.
- The rule has an optional enhanced NOx limit of 6 ppmv for units greater than 20 MMBtu/hr, which becomes effective in 2008.
- Low-use units with an annual heat input of 9 billion Btu or less need not comply with the limits but needs periodic tune-up or limit exhaust oxygen to 3% or less.
- The current limits in Rule 4306 achieve 45% reduction from previously controlled emissions limit of 30 ppmv required by previous Rule 4305.

Future Control Options:

- Lower NOx limits are achievable by using selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR). Both technologies reduce NOx by injecting ammonia to the exhaust gas to convert NOx to elemental nitrogen and oxygen.
- Ultra Low NOx burner technology at this time is technologically capable of achieving 9 ppmv NOx.

Boilers, Steam Generators, and Process Heaters, >5 MMBtu/hr
(Continued)

- Low temperature oxidation may be technologically feasible but its application on boilers has not yet been achieved in practice or established as BACT for this source category.

Discussion:

- The units in this source category are located at stationary sources for which the District has legal authority to regulate air emissions.
- Lowering the current limit 9 ppmv to 6 ppmv for units greater than 20 MMBtu/hr could be achieved by retrofitting existing units with SCR or SNCR. Ultra Low NOx burner alone is not technologically capable of such low limit.
- An estimated 40% reduction from current emissions level could be achieved by lowering the NOx emission limit to 6 ppmv for units greater than 20 MMBtu/hr by using SCR or SNCR.
- To date, the District has processed permit applications for nine units from operators who decided to comply with current Rule 4306 enhanced option NOx limit of 6 ppmv by 2008. All nine units will employ SCR to meet the emission limit of the rule.
- Older units nearing useful life expectancy may not be economical able to retrofit with SCR and it may be more cost effective to replace these older units with new units that incorporate SCR as a complete replacement package.
- Real property space where the units are located could impede installation of SCR especially if the existing space is limited or if a new location has to be sited.
- Other constraints not known at this time may have to be considered when deciding the implementation schedule for this control measure. Constraints such as longer lead-time to design, manufacture, deliver and install the technology could affect early implementation of lower limits.

Recommendation:

- Staff recommends this source category be controlled through regulatory method with implementation schedule not earlier than 2012 due to constraints discussed above.
- An estimated 40% reduction from current emissions level could be achieved by lowering the NOx emission limit to 6 ppmv for units greater than 20 MMBtu/hr by using SCR or SNCR.
- Consider inclusion of an alternative compliance option to improve cost effectiveness of this control measure.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.0	0.69	0.72	0.75	0.77	0.80
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- The rule has no VOC reductions because this is a NOx reduction rule strategy.

Boilers, Steam Generators, and Process Heaters, 2 - 5 MMBtu/hr (S-COM-2)

(Electrical Utilities, Cogeneration, Oil & Gas Production – Combustion, Petroleum Refining – Combustion, Manufacturing & Industrial, Food & Ag Processing, Service & Commercial, Other – Fuel Combustion)

Source Category:

This source category includes a wide range of industries including but not limited to medical facilities, educational institutions, office buildings, prisons, military facilities, hotels and industrial industries.

Emissions Inventory:

- The emissions inventory for medium size boilers (2-5 MMBtu/hr) is assumed to be included as part of the inventory for S-COM-1 (large boilers - from units rated at 5 MMBtu/hr or less); please refer to that control measure write-up for the baseline emissions from boilers as a whole.
- Current Rule 4307 requires registration of small units pursuant to new District Rule 2250. When registration is completed within the next 3 years and the total number of medium size units has been determined, the District will calculate the emissions and then update the emissions inventory for this source category.
- EICs Affected: 010-005-0110; 010-005-1220; 030-005-0110; 030-005-0124; 030-005-0130; 030-005-1220; 030-005-1530; 030-010-0110; 030-010-1600; 030-015-0110; 030-015-0130; 040-005-0110; 040-005-0130; 040-010-0100; 040-010-0110; 040-010-1000; 050-005-0110; 050-005-0122; 050-005-0124; 050-005-0300; 050-005-1220; 050-010-1220; 050-010-1224; 052-005-0110; 052-005-0122; 052-005-0124; 052-005-1220; 052-005-1510; 052-005-1520; 052-010-0110; 052-010-0120; 052-010-1224; 060-005-0110; 060-005-0122; 060-005-0124; 060-005-0144; 060-005-0320; 060-005-1220; 060-005-1520; 060-010-1220

Current Control:

- District Rule 4307 sets NOx limits at 30 ppmv effective in 2009. This is approximately 70% NOx control from uncontrolled levels. Units operated at schools kindergarten through 12th grade are exempt.

Future Control Options:

- The current Rule 4307 limits are achievable by retrofitting units with commercially available Low NOx Burner combustion control technology that achieves a 70% reduction from uncontrolled level.
- Ultra Low NOx Burner could achieve lower emission level but may not be available for retrofit of all units, specifically smaller, newer units.
- Replacement of older existing units with new ones that already integrate low NOx technology is possibly the more cost effective control options to that of retrofitting existing units.
- Replacing with electric heaters is also an option since almost all facilities are in areas connected to existing commercial electric grid system.

Future Incentive Options

Additional reductions can be achieved by providing incentives for replacement and retrofit of school boilers. Staff's preliminary assessment indicates at least 380 school boilers in the District with estimated uncontrolled NOx emissions of 0.8 tons/day.

Boilers, Steam Generators, and Process Heaters, 2 - 5 MMBtu/hr
(Continued)

- Electric heaters were not considered because of the increased operational costs associated with electrification

Incentive Option	# of Units	MMBtu/hr	Capacity Factor	Emissions (tons per day)	Emission Reductions (tons per day)	Total Cost	Capital Cost	Cost Effectiveness (dollars per ton)
Low NOx Retrofit (30 ppm)	380	3.5	0.5	0.798	0.511	$17,733,460	$46,667	$11,124
Low NOx Replacement (30 ppm)	380	3.5	0.5	0.798	0.511	$24,553,700	$64,615	$15,402
Ultra Low Nox Replacement (15 ppm)	380	3.5	0.5	0.798	0.694	$57,000,000	$150,000	$26,327

Discussion:

- These units are located at stationary sources for which the District has legal authority to regulate air emissions.
- Except for the school boilers exemption, current Rule 4307 is as stringent as other air district rules.
- The existing annual heat input threshold of 5 billion Btu per year needs to be evaluated to determine if there is a significant reduction to gain by lowering the threshold to 1.8 billion Btu/yr and if it is cost effective.

Recommendation:

- Schools districts need financial assistance to retrofit or replace aging equipment. Staff recommends controlling this source category through an incentive program. Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.

Incentives:

- Retrofit and replacement of school boilers to meet BARCT standards (30 ppm) are relatively cost effective incentive options
- Grant history indicates that participation is higher for programs that offer full replacement as opposed to retrofit
- Consider adopting a backstop rule to assure participation in the incentive program and improve cost effectiveness

Projected Reductions with or without Incentives:

Low NOx Replacement or Retrofit (30ppm NOx limit)
Tons per day – annual average

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.51	0.51	0.51	0.51	0.51	0.51
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Boilers, Steam Generators, and Process Heaters, Greater than 0.075 MMBtu/hr (S-COM-3)

(Electrical Utilities, Cogeneration, Oil & Gas Production – Combustion, Petroleum Refining – Combustion, Manufacturing & Industrial, Food & Ag Processing, Service & Commercial, Other – Fuel Combustion)

Source Category:
Facilities with boilers in this size range may include electrical utilities, crude oil production facilities, manufacturing facilities, and food processing facilities.

Emissions Inventory:
The emissions inventory for small size boilers (0.75 –to < 2.0 MMBtu/hr) is assumed to be included as part of the inventory for S-COM-1 (large boilers - from units rated at 5 MMBtu/hr or less); please refer to that control measure write-up for the baseline emissions from boilers as a whole.

- EICs affected: 010-005-1220; 010-005-0110; 030-005-0110; 030-005-0124; 030-005-0130; 030-005-1220; 030-005-1530; 030-010-0110; 030-010-1600; 030-015-0110; 030-015-0130; 040-005-0110; 040-005-0130; 040-010-0100; 040-010-0110; 040-010-1000; 050-005-0110; 050-005-0122; 050-005-0124; 050-005-0300; 050-005-1220; 050-010-1220; 050-010-1220-0000; 052-005-0110; 052-005-0122; 052-005-0124; 052-005-1220; 052-005-1510; 052-005-1520; 052-010-0110; 052-010-0120; 052-010-1224; 060-005-0110; 060-005-0122; 060-005-0124; 060-005-0144; 060-005-0320; 060-005-1220; 060-005-1520; 060-010-1220

Current Control: District Rule 4308 limits NOx emissions at 3% O_2 to the following:

0.075-0.4 MMBtu/hr	0.093 lb NOx/MMBtu
Between 0.4 and 2.0 MMBtu/hr	0.036 lb NOx/MMBtu

Future Control Options:
- Ultra Low NOx Burner could achieve lower emission level but may not be available for smaller unit.
- Replacement of older existing units with new ones that already integrate low NOx technology is possibly the more cost effective control options to that of retrofitting existing units.
- Replacing with electric heaters is also an option since almost all facilities are in areas connected to existing commercial electric grid system.

Discussion:
- These units are located at stationary sources for which the District has legal authority to regulate air emissions.
  Although current District Rule 4308 has a specific date for when new boilers must meet the emission limit, it does not specify the turnover of boilers in service prior to that date. This means that an existing boiler could be emitting outside the limits specified and yet still be in compliance with the rule since the boiler has not yet reached the end of its service life, therefore is not a “new” boiler. Mandating

Boilers, Steam Generators, and Process Heaters, 0.75 MMBtu/hr
(Continued)

a specific date that all boilers in this size range must meet the current emission limit would allow faster turnover of the existing, in-service boilers, thereby realizing the full impact of lower NOx limits already in place sooner than under natural unit attrition. At full implementation, NOx emission reductions were estimated to be 2.0 tons NOx per day, or about 60% of the estimated baseline inventory of 3.3 tons per day.

- Mandating conversion to electric boilers could be a possibility for this source category. Further study is needed to determine the most cost effective way to implement the standard for these units.

Recommendation:

- Accelerate the replacement of older units with new units meeting the Rule 4308 NOx emission rate limits by a rule-based requirement (e.g. no units operating within the District that are 10 years or older, unless a certain emission rate can be demonstrated) or by the use of incentives or a combination of both strategies.
- Explore possibilities of converting to electric boilers, and implement options that are cost effective and socioeconomically viable.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Solid Fuel Boilers, Steam Generators, and Process Heaters (S-COM-4)

(Electric Utilities, Cogeneration, Service and Commercial)

Source Category:
This source category includes facilities that operate boilers, steam generators, and process heaters (units) that are fired on solid fuel. These units are used in facilities that generate utility and industrial power (electricity and heat) by burning solid fuels including petroleum coke, coal, municipal solid wastes, tires, or biomass wastes.

Emissions Inventory:
With current controls and regulations: does not reflect reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	4.0	4.0	4.1	4.1	4.1	4.1	4.2	4.2
VOC	0.406	0.408	0.409	0.409	0.409	0.411	0.413	0.413

ARB emissions inventory needs to be validated to account for NOx reductions resulting from existing boiler permit NOx limits as well as current Rule 4352 limits.

- EICs Affected: 010-005-0214; 010-005-0240; 010-005-0243; 010-005-0254; 020-005-0214; 020-005-0218; 020-005-0220; 020-005-0230; 060-005-0250

Current Control: District Rule 4352 requires municipal solid waste units to meet a NOx limit of 200 ppmv @ 12% CO2. For all other units the NOx limits is 115 ppmv @ 3% O2.

Future Control Options:

- Current BACT is selective non-catalytic reduction (SNCR) with ammonia injection for municipal waste-fired or biomass-fired boilers. Sources subject to Rule 4352 are already operating at or below the limits by using this control technology.
- Reexamine if the NOx emission limits from Sacramento AQMD (70 ppmv) or ARB recommendations (40 ppmv) are achievable for this source category.
- There is some increased use of selective catalytic reduction SCR with ammonia injection in new coal-fired boilers in eastern states in the nation. European Best Available Technology (BAT) listed SCR for coal and lignite firing boilers.
- There are no biomass-fired or municipal waste-fired boilers that are currently using SCR in the nation or in Europe.
- Coal -fired units are not comparable to the District's biomass fired or municipal solid waste fired boilers, which are non-homogenous fuel and therefore higher emission variability.
- Further research would need to be conducted to determine if SCR could be retrofitted to the existing boilers or if they also need combustion retrofits that would require boiler rebuilds.

Discussion:

- These sources are located at stationary sources for which the District has legal authority to regulate air emissions.

Solid Fuel Boilers, Steam Generators, and Process Heaters
(Continued)

- Rule 4352 was recently amended to implement BARCT and All Feasible Control Measure as a commitment in the District's One-hour Extreme Ozone Attainment Demonstration Plan. A discussion of possible NOx emission levels and controls was included in the analysis for that rule amendment project.
- Facilities subject to Rule 4352 operate boilers that burn locally generated agricultural waste and municipal waste materials as well as waste materials imported into the Valley. Continued operation of these facilities is important to reduce emissions from open burning.

Recommendation:

- District staff recommends this source category as control measure for further study to determine if SCR could be retrofitted to existing biomass and municipal waste fired boilers.
- If SCR retrofit is feasible consider including an alternate compliance option as part of this control measure to improve cost effectiveness.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Stationary Gas Turbines (S-COM-5)

(Electric Utilities, Cogeneration, Oil & Gas Production – Combustion, Petroleum Refining – Combustion, Manufacturing & Industrial, Service & Commercial, Other – Fuel Combustion)

Source Category:
This source category includes any operations that use stationary gas turbines for the generation of electrical power.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	8.4	4.8	5.0	5.1	5.2	5.3	5.6	5.7
VOC	0.64	0.67	0.68	0.68	0.68	0.71	0.74	0.76

- EICs Affected: 010-045-0110; 020-045-0110; 030-045-0110; 030-045-1200; 040-045-1412; 050-045-1200; 060-045-0110; 060-045-1420

Current Control:
- District Rule 4703 is as stringent as other air districts for similar source category.
- Rule 4703 applies to stationary gas turbines with rated 0.3 megawatt (MW) and/or a maximum heat input greater than 3 MMBtu/hr.
- Current NOx limits are: For gas fuel-fired turbines – Standard limit is 5 ppmv to 50 ppmv, depending on turbine size, hours of operation, and control system used. Enhanced limit for >10MW combined cycle is 3 ppmv. For Liquid fuel-fired turbines – 25 ppmv to 50 ppmv, depending on turbine size, hours of operation, and control system used.
- Exemption includes laboratory turbines used exclusively in turbine technology research, turbines used exclusively for fire fighting and/or flood control, emergency turbines operated $\leq$ 200 hours per year, and turbines rated $\leq$ 4 MW and limited to operations of $\leq$ 877 hours per year.
- The current rule limits achieve about 95% NOx reduction from uncontrolled level.
- Full compliance with the current rule requirements occurred in 2002 to 2005, depending on turbine size, hours of operation, control system used, and turbine efficiency.
- Existing turbines in the SJVAB generally control NOx emissions through water or steam injection, dry low-NOx combustion technology, selective catalytic reduction, or some combination thereof.

Future Control Options:
- Currently, Rule 4703 is undergoing rule development process as a control measure in the 1-hour Extreme Ozone attainment Demonstration Plan (EOADP). The control measure would specifically examine controls for turbines rated less than 10 MW and used for distributed power generation in order to achieve additional NOx reduction.

Stationary Gas Turbines
(Continued)

- ARB recently published emission standards for turbines used in electrical power generation. Current Rule 4703 limits would be evaluated in comparison with the ARB suggested limits and determine if they are attainable by existing turbines by available control technology as well as new burner technology that may be under development.
- Adoption for this control measure is anticipated in the third quarter of 2007 with full implementation for NOx control projected for the year 2010. The emissions from sources affected by the control measure are estimated at 2.5 tons NOx/day which is estimated at 50% of the sources. Upon final implementation by 2010 of the proposed control measure, a reduction of 0.6 tons of NOx per day is anticipated.
- Future rule amendment projects should reexamine the low-use turbine emission levels to determine if they are still a valid consideration for this category of units.

Discussion:

- The District has legal authority to regulate this source category.
- As stated above, this control measure is currently undergoing rule development process to evaluate feasibility of ARB suggested NOx limits for stationary gas turbines, rated <10.0 MW and amend the rule appropriately. Turbines rated greater than 10 MW are subject to requirements similar to the ARB limits.

Recommendation:

- Continue current rule development and adopt amendments to Rule 4703 by third quarter 2007.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.60	0.60	0.61	0.64	0.66	0.68
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- No VOC reduction because Rule 4703 is a NOx control rule and does not regulate VOC emissions.

Reciprocating Internal Combustion Engines (S-COM-6)

(Cogeneration, Oil & Gas Production – Combustion, Petroleum Refining – Combustion, Manufacturing & Industrial, Food & Ag Processing, Service & Commercial, Other – Fuel Combustion)

Source Category:
This source category includes all reciprocating internal combustion engines. District Rule 4702 covers engines greater than 50 brake-horsepower (50 bhp), a portion of all possible engines.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	31.80	31.58	29.77	29.12	27.72	25.52	23.18	20.69
VOC	5.29	5.25	5.19	5.17	5.15	5.15	5.17	5.21

- ARB emissions inventory for engines 50 bhp or less are not included in the emissions inventory. Survey of businesses and industries needs to be conducted to determine the total number of small engines in order to calculate their uncontrolled emissions.
- Survey of AO sources needs to be conducted to determine total AO spark-ignited engines and update the emissions inventory. Preliminary data received from a stakeholder indicates at least 1,000 AO spark-ignited engines operating within the District.
- EICs Affected: 010-040-0110; 010-040-1200; 020-040-0110; 020-040-1200; 030-040-0100; 030-040-0110; 030-040-0124; 030-040-1100; 030-040-1200; 030-040-1210; 040-040-0110; 050-040-0012; 050-040-0110; 050-040-0124; 050-040-1200; 050-040-1299; 050-040-3220; 052-040-0110; 052-040-1200; 052-042-1200; 060-040-0012; 060-040-0110; 060-040-0124; 60-040-0146; 060-040-1100; 060-040-1200; 060-040-1210

Current Control:
- District Rule 4702 regulates NOx emissions from stationary spark-ignited engines and stationary compression ignited (diesel) engines greater than 50 horsepower.
- NOx limits for spark-ignited engines used exclusively in agricultural operations (AO) are: Rich burn– 90 ppmv or 80 percent reduction; lean-burn– 150 ppmv or 70 percent reduction. The full compliance schedule for AO engines is 2008, or 2010 if an operator has an agreement to replace existing engine with electric motor.
- For non-AO spark-ignited engines: Rich-burn – 25 ppmv or 96 percent reduction; lean-burn – 65 ppmv or 90 percent reduction. The full compliance schedule for non-AO engines is 2007.
- NOx limits for compression ignited engines are: for non-EPA certified engines greater than 500 bhp and at least 1,000 annual operating hours – 80 ppmv and a full compliance schedule of 2008; 50 bhp to 750 bhp operating less than 1,000 hours

per year – EPA certified Tier 3 to Tier 4 depending engine size and a compliance schedule of 2010 or 2011 based on engine size. For EPA certified compression ignited engines: EPA certified Tier I or Tier 2 must comply with Tier 4 standard by 2015 or 12 years after installation date whichever is later.

Future Control Options:

- Electrification - replacing engines with electric motors - where possible.
- Lower agricultural spark-ignited engine NOx emission limits to the same level as the non-agricultural units.

Discussion:

- These units are located at operated and located at stationary sources for which the District has legal authority to regulate air emissions.
- Current Rule 4702 is as stringent as other air district rules.
- Additional NOx reductions could be achieved by expanding the rule applicability so that engines 50 bhp or less would be subject to the rule. A survey would need to be conducted to determine the number of small engines and estimate the uncontrolled emission levels for such engines.
- Electrification should also be considered as part of a strategy to reduce engine emissions. Utility companies are currently in the process of electrifying over 1,000 agricultural diesel engines.
- Technical and economic conditions may limit the application of electric motors in some locations and possible impacts to the power grid should be examined.
- Current Rule 4702 goes beyond the State Suggested Control Measure for this source category.

Recommendation:

- Accelerate the replacement of engines with electric motors, either through regulatory or incentive programs. Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.
- The reduction estimate for controlling engines 50 bhp or less would be determined after completing a survey of sources and establishment of the emission inventory for these engines. A future study to re-evaluate this source category is planned.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Glass Melting Furnaces (S-COM-7)

(Glass and Related Products)

Source Category:
This source category includes any glass-melting furnace. Within the District, there are four types of glass produced: container glass (bottles and jars), flat glass (windows and automobile windshields), wool fiberglass (building insulation), and continuous strand fiberglass (aircraft insulation and filter media for air and water).

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	9.38	8.02	8.56	8.73	9.08	9.64	10.12	10.65
VOC	0.337	0.39	0.415	0.423	0.440	0.469	0.49	0.515

- EICs Affected: 460-460-7037, 460-460-7038, 460-460-7039

Current Control: Rule 4354 regulates the glass melting category. NOx emission limits range from 4.0 to 9.2 pounds NOx per ton of glass pulled, depending on production technology, firing technology, and monitoring averaging period. VOC emission limits are 20 ppmv or range from 0.1 to 0.25 lb/ton glass pulled depending on market sector and firing technology. Operators meet current emission limits through a selection of furnace firing technology and glass raw materials.

With recent rule amendments, Rule 4354 applies to all industrial glass-melting furnaces in the District. The NOx emissions are controlled 67% to 76% compared to uncontrolled glass-melting furnaces.

Future Control Options:
- Oxy-fuel, 3R technology, Selective Catalytic Reduction, electric furnaces.

Discussion:
- Lower NOx emissions have been achieved within the District with current firing technology and glass recipes.
- Selected Catalytic Reduction (SCR) is an add-on control that may help operators meet lower NOx limits. SCR has been used by other source categories to reduce NOx emissions. Glass melting furnaces in Europe and Asia have successfully used SCR to control NOx emissions, but to date; no facility in the US has implemented this control technology.
- During the rule development process, District staff will consider:
    - NOx limits of 3 lbs/NOx per ton of container glass pulled and 5 lbs/NOx per ton of flat glass pulled.
    - Changing the averaging period for emissions to no more than 3 hours.
    - Reducing the maximum allowable start-up time to a few days.
    - Implementing a specific SOx emission limit.

Glass Melting Furnaces
(Continued)

- Operators have increased production capacity during the most recent round of rebuilds, triggering Best Available Control Technology (BACT) provisions of the District's New and Modified Stationary Source Review (NSR) Rule. The BACT provisions have resulted in NOx emission limits that meet or are less than the 3 & 5 lbs/NOx per ton of glass pulled. The emissions reductions from the most recent rebuilds will be realized starting in 2008.
- There are four furnaces with NOx limits greater than these limits that District staff expects will be rebuilt by 2012: three container glass furnaces and one flat glass furnace. The most cost-effective time to change NOx limits for glass-melting furnaces is at the time of furnace rebuild. To ensure that all glass-melting furnaces in the District meet the by 2012, it is recommended that the rule development project be completed by 2009.
- When fully implemented, District staff has estimated that actual NOx emission reductions from rule amendments would be an additional 0.4 tons per day beginning in 2012.

Recommendation:
This control measure is recommended as a candidate control measure with rule development occurring by 2009 so that rule requirements are in place by the 2012.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	1.2	1.20	1.6	1.7	1.8	1.9	2.0
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lime Kilns (S-COM-8)

(Food & Ag Processing)

Source Category:
This source category pertains to facilities operating lime kilns in a wide variety of manufacturing and processing operations, including food and agriculture.

Emissions Inventory:
With current controls and regulations: does not reflect reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VOC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

EICs Affected: Need to assign an EIC because lime kiln is not included in the ARB emissions inventory. There is only one device operating in the District and it currently complies with the rule associated with this device.

Current Control: District Rule 4313 requires NOx: 0.12 lb/MMBTU-gaseous fuel; 0.12 lb/MMBTU-distillate fuel oil; 0.20 lb/MMBTU-residual fuel oil

Future Control Options:

- Future control option includes lowering the current NOx emission limits.
- Available retrofit combustion control technologies to achieve lower NOx limits include low NOx burner and ultra low NOx burners fired on natural gas. Add-on controls such as SCR or SCNR is technologically feasible but its cost effectiveness should be examined for this application.

Discussion:

- These sources are located at stationary sources for which the District has legal authority to regulate air emissions.
- There is only one permitted lime kiln operating in the District. The kiln is operated only during ozone season to manufacture sugar.
- The current permit allows firing on distillate fuel oil (#6 fuel oil) as primary fuel and natural gas as back-up fuel.
- Current NOx limit of 0.1 lb/MMBtu is considered uncontrolled emission limit.
- Lower the NOx limits to at least 0.036 lb/MMBtu (30 ppmv) fired on natural gas fuel and 0.052 lb/MMBtu (40 ppmv) fired on liquid fuel (residual fuel oil or distillate oil), at 3% excess oxygen.
- Require firing on natural gas as primary fuel. Distillate oil firing as a back-up fuel could be allowed during natural gas curtailment period.
- A reduction of about 64% from current emissions level could be achieved by lowering the NOx limit to at least 30 ppmv for natural gas firing.
- A reduction of about 75% from current emissions level could be achieved by lowering the NOx limit to at least 40 ppmv for distillate oil firing.

Lime Kilns
(Continued)

Recommendation:

- Staff recommends this source category be controlled through regulatory method with implementation schedule not earlier than 2012 to allow time to design, procure, and install retrofit control technology. Compliance schedule for the new emission limit should coincide during off-season when the kiln is not operating so retrofit could be completed without disrupting normal manufacturing operations.
- Amend Rule 4313 to lower the NOx limits. A reduction of between 64% to 75% from current emissions level from this source category could be achieved by combustion control retrofit technologies discussed above depending on the type of fuel (natural gas or distillate) used to fire the unit.
- Consider inclusion of an alternative compliance option to improve cost effectiveness of this control measure.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category maybe planned in the future.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Residential Water Heaters (S-COM-9)

(Residential Fuel Combustion)

Source Category:
Units in this source category are water heaters located in private residences.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	1.37	1.27	1.30	1.31	1.33	1.36	1.39	1.42
VOC	0.10	0.11	0.11	0.11	0.111	0.11	0.12	0.12

- EIC Affected: 610-608-0110

Current Control: District Rule 4902 currently requires natural-gas fired, new residential water heaters, which are rated at less than 75,000 BTU heat input not to exceed 93 pounds of NOx emissions per billion Btu (lb of NOx/bBtu) of heat input.

Future Control Options:
- New water heaters are designed to be more energy efficient and emit less NOx, using low-NOx combustion technology.
- Electrification – replacement with electric water heaters – could also significantly lower NOx emissions.
- Encourage early replacement of exiting units using either a specific compliance schedule or incentive funding.

Discussion:
- Lower NOx limits are currently in place in SCAQMD Rule 1121 which have been in place since September 3, 2004.
- Because of the tendency for manufacturers to supply SCAQMD-complying products for the entire state, many new water heaters in the San Joaquin Valley may already meet the new limits.
- Nonresidential water heaters and mobile home heaters are exempt from current rule requirements, although these applications generally use similar water heating devices.
- The transition from older to newer, less NOx-emitting units will take place over a 20-year period.
- Manufacturers have indicated that they need more time to develop the technology that meets the NOx limit of 23 lb of NOx/bBtu, and in a mitigation fee program, they are required to compensate the SCAQMD for units sold that don't meet these new limits.
- The reductions are mainly NOx; the VOC reductions are negligible.
- The reductions reflect controls that come by natural attrition of the units, which is projected to take 20 years.
- The reductions are based on 75% reduction of NOx (93 to 23 lb of NOx/bBtu) for the additional applicable units.

Residential Water Heaters
(Continued)

Recommendation:

- Amend Rule 4902 to lower the NOx emission limit, similar to SCAQMD Rule 1121, and also expand its applicability to nonresidential and mobile home heaters, but consider technological limitations.
- Expand the applicability by including nonresidential water heaters less than 75,000 BTU heat input, which will be subject to the new, lower limits and by removing the exemption for mobile home heaters, which can be required to meet the current limit of 93 lb of NOx/bBtu.
- Currently this source category is not a candidate for incentive funding, but further analysis and study is necessary to determine if this source category may garner cost effective reductions in the future provided funding sources are available. Please see Chapter 7 for any additional information.
- Adoption of amendments for the new requirements must be done as soon as possible, in order for the attrition of the older units to start. This early adoption will also assist in the effort to reach the PM2.5 NAAQS, since NOx is the precursor of concern that forms secondary particulates.

Projected Reductions:

With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.20	0.25	0.40	0.55	0.70	0.85
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas-Fired, Fan-Type Residential Central Furnaces (S-COM-10)

(Residential Fuel Combustion)

Source Category:

This source category covers natural gas-fired, residential central heating furnaces. These units are in the size range of rated heat input capacity of less than 175,000 British thermal units per hour and, for combination heating and cooling units, a rated cooling capacity of less than 65,000 British thermal units per hour.

Emissions Inventory:

With current controls and regulations: does not reflect the reductions from the proposed control.

Tons per day – winter season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	4.214	4.121	4.032	3.999	3.934	3.807	3.666	3.5
VOC	0.208	0.204	0.199	0.198	0.194	0.188	0.181	0.173

Current Control:

- Adopted on October 20, 2005, Rule 4905 limits NOx emissions from residential central furnaces.
- The main rule requirement is written, as follows: No person shall supply, sell, offer for sale, install, or solicit the installation of any natural gas-fired fan-type residential central furnace for use within the District unless it has certified emissions of oxides of nitrogen less than or equal to 0.093 pounds of oxides of nitrogen per million BTU heat output or 55 ppm NOx at 3.00% O_2 stack gas by volume (dry).

Future Control Options:

- Low-NOx burner technology, capable of emitting half of the certified level of 0.093 pounds of NOx per million BTU heat input, has been developed, but it has not reached the commercially-available stage.
- Incentivize the use of more efficient “condensing” heating units, which have Annual Fuel Utilization Efficiency (AFUE) upwards of 90%, in contrast to “noncondensing” units that have 78% AFUE.
- State-of-the-art control systems that minimize energy use.

Discussion:

- Since emissions from this source category occur during the cold season, it is not relevant to the control of ozone, which is a summer problem and should be pursued as part of the future PM2.5 plan development.
- NOx from heating furnaces using natural gas contribute to the formation of PM2.5, which is a winter phenomenon.

Natural Gas-Fired, Fan-Type
Residential Central Furnaces
(Continued)

Recommendation: This control measure should be pursued as part of a future PM2.5 plan development strategy and not part of this ozone plan.

Projected Reductions: To be developed as part of the PM2.5 plan development strategy.

Tons per day – winter season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VOC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Dryers (S-COM-11)

(Mineral Processes, Other – Industrial Processes)

Source Category:
This source category includes any dryer, dehydrator, or oven. Some examples of units subject the this rule are onion dehydrators, dryers that convert liquid milk to dried milk, and units used to dry aggregate at asphalt plants.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	2.512	2.631	2.794	2.836	2.965	3.082	3.244	3.390
NOx adj	2.51	2.63	1.85	1.88	1.97	2.05	2.14	2.25
VOC	0.389	0.417	0.440	0.446	0.469	0.486	0.512	0.539

*The adjustment reflects the reductions achieved from the recently adopted Rule 4309

- EICs Affected: 430-422-7078, 430-424-7006, 430-995-7000, 499-995-0000, 499-995-5630

Current Control: District Rule 4309 requires dehydrators to be fired on PUC-quality natural gas; all others units have a NOx emission limit of 3.5 to 5.3 ppmv using an oxygen correction factor. Operators may meet NOx emission limit using a NOx emission control system.

Because this rule was recently adopted, no estimation has been made of the proportion of additional units that are at least 5 MMBtu/hr or larger that will be subject to this rule. At full implementation of the current rule requirements, NOx emissions from units subject to the rule are estimated at 66% of uncontrolled emissions.

Future Control Options:
- No new technologies that are not currently specified under current controls are known at this time.

Discussion:
- Low-NOx burners are already in use for sources subject to rule provisions. Some of the sources that are currently exempt from the rule are already using this technology as part of their Permit to Operate.
- The bulk of the dryers, dehydrators, and ovens operate at temperatures that are too low for efficient operation of NOx emission control systems, therefore add-on controls are not an option for this source category.
- Some currently exempt units operate for a short limited season, for example, dryers and humidifiers at cotton gins, so the amount of NOx emission reductions from these units would be small since nearly all exempted units run on PUC natural gas which is a clean burning technology.

Dryers
(Continued)

- Another option for this rule is to change the rule applicability by reducing the total heat input cut-off for units subject to the rule below the current 5.0 MMBtu/hr. As the heat input cut-off decreases, the sources that would be affected by the rule become more diverse. For example, commercial laundry dryers and ovens for pre-packaged tortillas are units that are in the range of 2 to 3 million Btu/hr. Since the industries would be varied, more analysis would be needed throughout the rule development project to adequately assess the technology available for these lower heat input units. Nearly all of the exempted units are firing on PUC-quality natural gas already, which is a very clean-burning technology.

Recommendation:

- The recent adoption of this rule has maximized the possible emission reductions from this source category. Future equipment advancements may produce additional reductions from exempt equipment. A future study to re-evaluate this source category is planned.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Alternative Energy Production Programs (S-COM-12.0)

(Landfills, Confined Animal Facilities, Agricultural Waste Products, Waste Water Treatment Plants, Industrial Coating Facilities)

Source Category:
This source category includes facilities or operations that have VOC-containing by-products that can be converted to electric energy by utilizing currently available technology or other byproducts such as biomass waste, from which energy could also be derived. The electricity produced may be used for internal facility needs or metered back and sold to utility companies.

Emissions Inventory:
There is no specific inventory attributable to this source category, since it can include any application for which there is technology that can produce energy without using fossil-based materials.

Current Control:

- Landfill gas is either flared or used as fuel for electric generation systems.
- VOCs and methane from confined animal facilities are controlled by a variety of mitigation measures or used, to a limited extent, as fuel for electric generation systems.
- Agricultural waste products, such as prunings, rice stalks, and uprooted vines and trees, are handled in a variety of ways, including: chipped/shredded, composted, burned, or used, to a limited extent, as fuel for boilers or power generation units.
- Solar energy projects, such as: solar-driven water pumps, solar roof, and solar water heating.
- VOCs from oil and gas production plants and VOCs from other industrial facilities are incinerated using flares or thermal oxidizers.

Future Control Options:

- Small-scale alternative energy projects that utilize locally available biomass that can be converted to methane gas, which can be used to fuel internal combustion (IC) engines or mini-turbines that drive electricity generators or which can serve as the hydrogen source for fuel cell power generation.
- VOC emissions from industrial painting processes as a hydrogen source for fuel cell power generation.
- Biomass gasification produces flammable gas that can be used in combined-cycle power generation, which combine gas turbines and steam turbines to produce energy up to as much as 60% efficiency.
- Still in the development stage is the use of biomass in biorefineries. Biomass can be transformed to component sugars that can be converted to fuels or other products, and biomass can also be converted to synthesis gas (hydrogen and carbon monoxide), which can be used for fuel or converted to other products.
- Advances in gas-to-liquid technologies using the cobalt-based Fischer-Tropsch (FT) process has led to the production of synthetic paraffin fuel (SPF), which is a promising hydrogen source for fuel cell power generation. This fuel type is being

investigated for its potential in mobile applications of fuel cells. SPF can be derived from synthesis gas, from petroleum-based products, from methane produced by biodigesters, or from the gas currently being flared at oil production facilities. Other FT fuels are touted as future alternative replacements for diesel and aviation fuel, with the concomitant benefit to air quality, since FT fuels are cleaner burning (less NOx, PM, and CO).

Discussion:

- Technology exists to convert green waste, dairy manures, and other forms of biomass into useable energy for electricity generation. However, these projects currently require considerable subsidies to make them economically viable.

This is due mainly to the still relatively lower cost of producing electricity using fossil-based stocks.

- Biomass, if left exposed to the atmosphere, can transform to ozone precursor forms, such as VOC hydrocarbons. Another hydrocarbon formed from biomass decomposition is methane, which is not an ozone precursor, but is considered as one of the stronger chemical compounds that contribute to global warming. A molecule of methane contributes twenty times more to global warming than a molecule of carbon dioxide.
- IC engines and mini-turbines that drive electricity generators produce significant amounts of NOx and VOCs, if emission control devices are not utilized.
- In some cases, landfill gases are used to fuel IC engines that power electricity generators. However, there is still a considerable amount that is flared to control for VOCs, a method that is less pernicious than just simple off gassing, but still produce NOx.
- There are several examples of biodigester technology using animal waste as methane source, with a concomitant benefit of controlling VOCs.
- Waste Water Treatment Plants are currently not subject to District prohibitory rules for VOCs, and therefore VOC emissions are uncontrolled.
- There are currently projects that use methane as the source of hydrogen in fuel-cell power generation. One such project is being done by the city of Tulare's wastewater treatment plant. The project uses cheese-processing milk waste, which organisms break down to produce methane as a byproduct. The project was awarded a $3.38 million grant by the Southern California Edison for producing energy in a nonpolluting way. It appears that the VOCs in the methane-laden waste gas also are a source of the hydrogen that the fuel cells utilize to produce electricity. Obviously, no NOx is produced, since the byproducts of fuel-cell power generation are water and smaller amounts of carbon dioxide (relative to combustion processes of producing energy). In a Ford Motor Company research project that compared the use of fuel cell technology to the traditional use of thermal oxidizers in controlling VOCs from the painting process, the VOC and CO2 from the fuel cell technology were considerably less.

- The economic viability of alternative energy projects will be improved with the emerging greenhouse gas policy that awards equivalent carbon credits, which have a corresponding value in the carbon emissions trading markets.

Recommendation:

- Promote alternative sources of energy by assisting projects with incentive funds, provided these projects have demonstrable merits, in terms of reducing criteria pollutants that are precursors to ozone formation.
- Design and implement alternative energy programs with SIP creditability as an emerging control measure, following EPA guidelines.
- Align District programs with initiatives that reduce global warming.
- See Chapter 8, Innovative Strategies and Programs, for additional information on this source category.

Projected Reductions:

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Energy Conservation Programs (S-COM-12.1)

(All energy users)

Source Category:
This source category includes equipment, facilities or operations that are amenable to energy conservation programs, including agricultural irrigation systems, residential water-heating systems, farming practices, commercial/industrial practices, and all other operations that can reduce energy usage.

Emissions Inventory:
There is no specific inventory attributable to this source category, since it can include any application for which there are technologies and practices that can improve energy use.

Current Control:

- Utility companies have various energy conservation programs, including offering rebates for using energy-efficient appliances and weatherization of homes, and a tiered system of pricing, which encourages homeowners to stay below a certain level of energy use.
- EPA's Energy Star Program provides homeowners and businesses with tools and resources for undertaking projects that reduce energy bills and improve comfort. The Energy Star label is awarded to products and facilities that have a demonstrated quality of energy efficiency.
- California State University, Fresno's Center for Irrigation Technology conducts the Agricultural Pumping Efficiency Program, with funding from Pacific Gas and Electric Company through 2008.
- Green building practices that are geared toward energy conservation, such as: site selection, building orientation, integrated structural insulation, and use of renewable energy options (solar space heating and cooling, solar water heating, purchase of green power, etc.).

Future Control Options:

- Energy efficiency projects and practices that have a demonstrable benefit to air quality, such as: energy efficient water pumps, solar water heaters, reduced agricultural field passes, use of GPS in agricultural operations, and other conservation management practices that simultaneously reduce PM and ozone precursors.
- Green certification of energy efficient homes, offices, and commercial and industrial facilities that utilized green building practices.

Discussion:

- By reducing electric usage, the construction of more power plants can be slowed down, thereby contributing to less NOx and CO_2 emissions.
- Increasing the efficiency of agricultural irrigation pumps translates to less fuel usage, which results in fewer emissions of ozone precursors. This would complement District Rule 4702's clean engine requirements.

Energy Conservation Programs
(Continued)

- Conservation management practices, such as reduced tillage, use of GPS, reduced row passes in cultural practices (pesticide application, cultivation, row cleaning/weeding), etc. results in less fuel usage and fewer ozone precursor emissions.
- Equivalent carbon credits that result from energy conservation projects are now worth a certain amount of dollars in greenhouse gases trading schemes. This vastly improves the economic viability of such projects.

Recommendation:

- Promote energy conservation through program mechanisms, such availability of rebates and other incentives to green-certified homes and buildings.
- Provide incentive funding for irrigation pumping efficiency programs and other farming technologies/practices that have a demonstrable air quality benefit.
- Design and implement energy conservation programs with SIP creditability as an emerging control measure, following EPA guidelines.
- Align District programs with initiatives that reduce global warming.
- See Chapter 8, Innovative Strategies and Programs, for additional information on this source category.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Heat Island Mitigation Programs (S-COM-13)

(Cool or Green Roofs, Cool Pavements, Urban Forestry)

Emissions Inventory:
There is no specific inventory attributable to this source category, since it can include any application for which exist technology or other means that can lower temperatures in urban areas.

Current Control: Planting shade trees in urban areas are done, but only to a very limited extent, in contrast to what is necessary to mitigate the formation of heat islands (characterized by urban air and surface temperatures, which can be 10 ºF higher than rural areas).

Future Control Options:
- Cool roofs with a high solar reflectance, or albedo.
- Green roofs or rooftop gardens, which are "living roofs" planted over existing roof structures, including industrial and commercial facilities, residences, and offices.
- Cool pavements, a term describing light-colored or permeable pavements.
- Urban forestry, which decreases ambient temperatures through shading and evapotranspiration.

Discussion:
- Heat islands can increase air conditioning demand, power plant emissions, and ground-level ozone formation, which is heat dependent.
- EPA's Energy Star Roof Product Program specifies albedo values.
- Green roof benefits include reduced rooftop temperatures.
- The U.S. Dept. of Agriculture Forest Service estimates that mid-day temperature reductions range from 1 to 5.5 ºF for every 15% increase in the canopy cover.
- The scientific know-how for estimating the emission reduction benefit accruing from heat island mitigation programs is still at an early stage of development.
- Research should also focus on the benefits that crop production has on ozone absorption potential, including the role of orchards as buffers.

Recommendation:
- Develop a model ordinance for heat island mitigation and promote its adoption by cities and counties, including providing incentive funding to "seed" projects.
- Encourage practices conducive to heat island mitigations through informational campaigns and incentives.
- Include elements of heat island mitigation as an alternative compliance option for facilities.
- Support research that adds certainty to the emission reduction potential or benefits of heat island mitigation programs. See Chapter 8, Innovative Strategies and Programs, for additional information on this source category.

Projected Reductions:
With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	TBD	TBD	TBD	TBD	TBD	TBD	TBD
VOC	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Composting and Biosolids (S-GOV-1)

(Other – Waste Disposal)

Source Category:
This source category includes all facilities that land apply, landfill, compost, or dispose of biosolids, manure, poultry litter, or any mixture containing the aforementioned.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC* estimated baseline	9.7	9.8	9.9	10.0	10.1	10.2	10.3	10.4

*Research is being conducted to refine the emission factors, control efficiencies, and growth factors. The estimated baseline is calculated using best available data. ARB emission inventory does not have a value for this source category.

- EICs Affected: Need to assign an EIC because this category is not included in the ARB emissions inventory.

Current Control: There is no District rule that covers this source category.

Future Control Options:
- Cover waste with finished compost, soil, or a waterproof covering.
- For Land application operations, rapidly land incorporate waste; rapidly cover waste.
- Require larger operators to maintain all piles within specific parameters or use a control device to reduce VOC emissions. The current District BACT and current rule development project for Rule 4565 list these parameters.
- Require largest operators to operate a VOC emission control device.

Discussion:
- These are stationary sources subject to the District's jurisdiction (CAA 172).
- The VOC mitigation measures listed in Future Control Options above have all been utilized in composting facilities within California. Several of the mitigation measures are in the most recent District BACT, other California air district rules, or BACT determinations by air districts in other states.
- District staff will consider South Coast's rule provisions requiring enclosed facilities to demonstrate 70-80% reductions depending on whether facility is existing or new.
- The mitigation measures listed in Future Control Options above would achieve approximately 40% VOC reduction from baseline emissions.

Composting and Biosolids
(Continued)

Recommendation:

- Expeditious compliance timeline is recommended. Facilities that choose to only implement management practices shall comply with rule requirements within 12 months of rule adoption. Facilities that choose to install and utilize VOC control devices shall comply with rule requirements within 36 months of rule adoption.
- Adopt Rule 4565 in 2007 so that the VOC emissions reductions can be realized in 2010.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC* Estimated	2.0	3.4	3.4	3.9	4.0	4.1	4.1

*****This does not include reductions achieved through incentive programs. Estimated reductions are based on the estimated baseline.

Municipal Water Treatment Plants (POTWs) (S-GOV-2)

(Waste Disposal)

Source Category:
This source category includes any facility that accepts and treats municipal or industrial wastewater including, but not limited to, sewage.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- The emissions from the flaring of off gassing for these facilities is found in CM S-IND-21, for flares and the emissions from sewage sludge biodegradation would be found in CM S-GOV-1, composting and biosolids.

- EICs Affected: Need to investigate the appropriateness of EICs for this source category as fugitive emissions and where they are included in the ARB emissions inventory.

Current Control: Currently no prohibitory rules directly apply to this source.

Future Control Options:
- Covering and venting of tanks to a VOC control device can reduce VOC emissions by 80%.
- Regulating the pH and volatile solid parameters of the tanks or setting emission limits for tanks can reduce VOC emissions by 5%.

Discussion:
- These are located at stationary sources for which the District has legal authority to regulate air emissions.
- The aforementioned options appear to be cost effective, reflect options in BACT determinations in other California air districts, and implemented by some facilities in California.

Recommendation:
- This is recommended for further study. District staff recommends reevaluation of the emission inventory; and rulemaking if the inventory is sufficiently large to warrant rule development.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Solid Waste Disposal Site (S-GOV-3)

(Landfills)

Source Category:
This source category includes all facilities that participate in the disposal of solid waste that is placed on or below the surface of the land.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	1.6	1.7	1.8	1.8	1.9	1.9	2.0	2.1

- EICs Affected: 120-120-0240; 120-122-0242

Current Control: District Rule 4642 requires that the surface VOC concentrations be no more than 1,000 ppmv; control devices have a VOC destruction efficiency of at least 98% or reduce the VOC concentration to 20 ppmv or less; and excavated waste be covered. Emissions at active landfills; hazardous waste sites; and sites with no VOC control devices are exempt from rule requirements. This accounts for 82% of the emissions.

Future Control Options:
- Rapidly covering waste at all landfills with vapor suppressant, finished compost, or soil will reduce VOC emissions by 1% to 20%.
- Controlling moisture at all landfills will reduce VOC emissions by 5% to 10%.
- Installing a VOC control device with a capture and destruction efficiency of at least 98% at all closed solid waste disposal sites is feasible.
- Explore possible VOC control options for active landfill sites, hazardous waste sites, and other sites with no existing VOC controls.
- Implement NOx and CO limits for landfill flares

Discussion:
- These are stationary sources for which the District has legal authority to regulate air emissions.
- Requiring all facilities to implement management practices to control VOC emissions, as described above, is achieved in practice.
- Requiring control devices at closed facilities is not recommended, since VOC emissions at these sites are negligible.

Recommendation:
- Amend District Rule 4642 to require all solid waste disposal sites to implement management practices that control VOC emissions.
- Expedient rule adoption and implementation in 2017 is recommended, since the controls are limited to management practices.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Cutback, Slow Cure, and Emulsified Asphalt Paving (S-GOV-4)

(Asphalt Paving/Roofing)

Source Category:

This source category includes the manufacture and use of cutback asphalt, slow cure asphalt and emulsified asphalt for paving and maintenance operations. Typically, the hot mix asphalt is heated in special heaters and stored in tanks prior to spreading roads.

Emissions Inventory:

With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.7

- EICs Affected: 540-562-0400; 540-564-0400; 540-566-0400; 540-590-0400

Current Control:

- District Rule 4641 includes manufacture & sales prohibition for rapid cure, medium cure, some types of slow cure, and some types of emulsified asphalt.
- The rule exempts manufacture of cutback or emulsified asphalt in the manufacturing of paving material where such materials are for shipment and use outside of the District. The rule also exempts the use of medium cure asphalt when the high temperature for a twenty-four (24) hour period following the application is below 50 degrees Fahrenheit.
- Over 90% of the facilities in this source category are subject to this rule.

Future Control Options:

- Limitation on the days that asphalt paving can occur, for example limit or prohibit non-essential paving on Spare the Air Days. This will not reduce emissions, but this may prevent the violation of the Ozone standard by minimizing VOC emissions on days when the District is close to violating the ozone standard.

Discussion:

- These are stationary sources, thus subject to the District's jurisdiction (CAA 172).
- District staff estimates that removal of the low temperature exemption for medium cure asphalt would decrease VOC emissions by 2%. At least one other air district does not have a low temperature exemption for this source category.
- Several District rules have limitations on the days that certain activities can be performed. Asphalt paving is routinely delayed or scheduled around weather events; therefore, restrictions on paving during Spare the Air Days may be a possibility.

Cutback, Slow Cure, and Emulsified Asphalt Paving
(Continued)

Recommendation:

- Since this achieves VOC reductions lower than those achieved by other potential controls, full rule implementation in 2020 is recommended to allow more expedient adoption of rule with greater potential VOC reductions.
- Removal of the temperature exemption and implementation of VOC emission control systems listed above is recommended.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Composting Green Waste (S-GOV-5)

(Other – Waste Disposal)

Source Category:
This source category includes all sources that commercially compost green waste without mixing the green waste with manure, poultry litter, or biosolids.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC *Estimated Baseline	51	53	55	57	62	64	67	70

*Research is being conducted to refine the emission factors for this source category; the above estimate is based on best available data. The ARB emission inventory does not account for green waste composting.

- EICs Affected: Need to assign an EIC because this category is not included in the ARB emissions inventory.

Current Control: No prohibitory rules currently exist that address green waste composting.

Future Control Options:
- Require all facilities to implement management practices from a list of VOC control measures.
- Require facilities to install VOC emission control devices.

Discussion:
- These are stationary sources for which the District has legal authority to regulate air emissions.
- The California Integrated Waste Management Board (CIWMB) is conducting research to identify additional VOC mitigation measures for composting facilities.
- VOC emission control devices can cost over a million dollars, per site. Since most facilities have few resources, incentives may be necessary.
- The District believes that facilities can cost-effectively implement management practices that reduce VOC emissions because several facilities in the District currently use these practices.
- Air Districts have experienced significant resistance to regulation of green waste due to concern regarding the California Integrated Waste Board's (CIWMB) requirements for waste diversion; therefore time will be needed to work with the CIWMB to come to a mutually agreeable and environmentally sound method of promoting waste diversion while protecting air and water quality.
- Time is needed to allow completion of research to identify additional control measures; refine control efficiencies; and refine emission factors.

Composting Greenwaste
(Continued)

Recommendation:

- Adopt a rule requiring all facilities to implement management practices.
- Currently this source category is not a candidate for incentive funding, but further analysis and study is necessary to determine if this source category may garner cost effective reductions in the future provided funding sources are available. Please see Chapter 7 for any additional information.
- The ARB emissions inventory does not account for the emissions from this source category. Preliminary estimate by District indicates that substantial VOC emissions should be attributed to this source category possible on the order of 50 tons per day from approximately 14 existing facilities. The California Integrated Waste Management Board has contracted research to begin sometime late 2006, to refine the emission factor, activity rates, and to identify new potential control technologies from this source category.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC*	0	0	9	10	10	11	11

* Estimated reductions based on estimated baseline.

Prescribed Burning and Hazard Reduction Burning (S-GOV-6)

(Managed Burning and Disposal)

Source Category:
This source category includes activities related to prescribed burning and hazard reduction burning in wildland/urban interface areas.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	3.41	3.40	3.39	3.38	3.38	3.36	3.34	3.32
VOC	7.85	7.82	7.79	7.78	7.76	7.72	7.68	7.63

- EICs Affected: 670-666-0200, 670-667-0200, 670-668-0200, 670-670-0200

Current Control:
- District Rule 4106 has restrictions on material; burning allocations; prescribed burning requirement; permits for hazard reduction burning; smoke management plans for prescribed burning; go/no go decisions for naturally ignited Wildland Fire Use fires
- Hazard reduction burning occurs generally from late October/early November through May 1st.

Future Control Options:
- None

Discussion:
- The District has authority over this source category for emissions to the air.

- District Rule 4106 is the most stringent regulatory strategy in California for this source category.

- While the hazard reduction burning is stringently regulated, other alternatives to burning exist. Particularly for homeowners, much green waste is generated in preparing their property to meet the guidelines adopted by the California to minimize wildfire propagation. Since these properties are outside city limits, green waste collection is not usually offered as part of the county waste collection program. A few homeowners compost their own materials, but most do not. Woody materials could be chipped to make mulch, but the cost of a chipper that could process good-sized tree limbs is too costly for most residents. Therefore, the most cost-effective solution for homeowners currently is burning the dried plant materials.

Prescribed Burning and Hazard Reduction Burning
(Continued)

- This source category could be a candidate for an incentives program. Offering free or reduced cost for hauling of the green waste from private properties at the wildland/urban interface could reduce the number of hazard reduction fires at private residences. Free or reduced cost for chipping/grinding of wood-based materials should also be considered.

- Hazard reduction burning is allowed with a burn permit within the State Responsibility Area and the Federal Responsibility Area of the District. These areas are generally the foothill and mountain areas of the District. Such burning is prohibited in the Local Responsibility Area, which represents the valley floor.

- Fire Safe Councils and Resource Conservation Districts within the urban/wildland interface often receive Federal grant monies for fuel break and hazard fuel reduction programs, of which much of the accumulated materials are chipped and not burned. Examples include the Hwy 168 Fire Safe Council, the Eastern Madera Fire Safe Council, the Central Sierra Watershed Committee, the Yosemite/Sequoia Resource Conservation and Development Area, and the Coarsegold Resource Conservation District.

Recommendation:

- This source category is recommended for an incentives program without any changes in rule provisions. Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.
- The magnitude of the current emissions inventory for this source category warrants a close look at possible methods of reducing emissions. A future study to closely examine alternatives to prescribed burning is planned.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Coatings & Ink Manufacturing (S-IND-1)

(Chemical)

Source Category:
This source category includes all manufacturers of coatings and inks.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

- It is not known if the VOC emission inventory includes emissions from the manufacture of water-based coatings. The manufacture of water-based coatings is exempt from the rule requirements.
- There are no limits on the VOC content of solvents used for cleaning in the current rule – only that the cleaning procedure must be APCO-approved. It is not known whether there are solvent-cleaning VOC emissions associated with this source category. The activity associated with the cleaning portion of this source category is covered under control measure S-SOL-11.
- EICs Affected: 410-995-8400, 410-407-9000

Current Control: District Rule 4652 specifies equipment design and operational procedures for processes associated with the manufacture of coatings or inks. The rule requires that portable mixing vats be covered, and includes lid configuration requirements. Stationary mixing vats are to be covered and grinding mills must have fully enclosed screens. For cleaning portable and stationary vats, as well as for cleaning high-speed dispersion mills, grinding mills, and roller mills, APCO-approved cleaning methods are required.

Future Control Options:
- Extend portable mixing vat lid configuration requirements to stationary mixing vats.
- Require that all stationary mixing vats be under VOC emission control system.
- Include an option in the rule to allow operator to use VOC emission control system in place of equipment specifications for coating/ink manufacture or in place of solvent cleaning limitations.
- Limit VOC content and usage for solvent cleaning.

Discussion:
- Coating and ink manufacturing operations are located at stationary sources for which the District has legal authority to regulate air emissions.
- The lid configuration standard for stationary mixing vats has been adopted in other air districts. It is not clear how much in VOC emission reductions could be realized from adopting the standard into Rule 4652.

- The cost effectiveness of requiring VOC emission control systems for stationary mixing vats must be evaluated, in light of the small size of the VOC emission inventory.
- If operators are allowed flexibility in controlling VOC emissions, individuals can make the best economic decisions for their particular sources. Since this rule does not have specific VOC emission limits, determining emission reductions associated with implementing this provision is problematic.
- The removal of the water-based coating manufacture exemption is promising. The facilities that manufacture coatings and inks within the District generally manufacture water-based coatings. Further study is needed to understand if the current VOC emission inventory includes emissions from the manufacture of water-based coatings or from non-water-based coatings only.
- Limiting the VOC content of cleaning solvent may be a potential for VOC emission reductions. Further study is needed to determine how much emissions are associated with solvent cleaning for this source category and what solvents operators are currently using.
- Commentors to the plan offered the following information: Further study is needed to determine the VOC emissions reductions that can be obtained from the manufacture of coatings, inks and adhesives, especially since the total emissions are small. Since VOC levels in architectural, industrial, and maintenance products have decreased, the VOCs from manufacturing of these products have decreased as well. The exemption in the current rule for the manufacture of water-based coating is intended to provide flexibility and incentives for the manufacturer to move towards producing lower VOC products. Drastic VOC controls for water-based coatings will result in few reductions, and these measures will be costly. The District should not take this incentive away by requiring costly VOC emission control systems.

Recommendation:

- This source category is not recommended as a control measure. No appreciable additional reductions are available from this source category considering the lack of active facilities operating within the District.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Petroleum Solvent Dry Cleaning Operations (S-IND-2)

(Laundering)

Source Category:
Facilities that use solvent other than perchloroethylene to clean clothing are included in this source category.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.06	0.06	0.07	0.07	0.07	0.08	0.08	1.09

- EICs Affected: 210-200-3300; 210-200-8102; 210-200-8150

Current Control: District Rule 4672 requires the use of add-on control devices and solvent recovery dryers. Filtration wastes are limited to 1-kilogram petroleum waste solvent per 100-kilogram dry weight of articles cleaned.

Future Control Options:
- None additional control opportunities.

Discussion:
- These units are located at stationary sources for which the District has legal authority to regulate air emissions.
- The controls included in District Rule 4672 are as stringent as rules in other air districts.
- All petroleum solvent cleaning machines in use in the District are “dry-to-dry” type, meaning that “wet” articles are not transferred between a “wet” machine and a dryer, reducing the potential for fugitive emissions from items that are saturated with petroleum solvent.

Recommendation:
- This source category is not recommended as a control measure. No appreciable additional reductions are available from this source category.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Polyester Resin Operations (S-IND-3)

(Chemical)

Source Category:
This source category includes commercial and industrial polyester resin operations, and to the organic solvent cleaning, and the storage and disposal of all solvents and waste solvent materials associated with such operations. The polyester resin users typically are making composite materials, meaning mixing the resin with glass fiber to make a product. This source category covers manufacturers of boats and yachts as well as those making fiberglass shower units.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
VOC	0.35	0.38	0.40	0.40	0.47	0.49	0.52	0.72

The emissions inventory for this source category is suspect and will be further refined.

- EICs Affected: 410-403-5018, 410-404-5016, 410-404-5028, 410-404-5030

Current Control: District Rule 4684 sets monomer content limits for resin as well as specifying application equipment and work practice standards. Except for recordkeeping requirements, operations using less than 20 gallons of polyester resin per month are exempt from the rule.

Uncontrolled VOC emissions have been controlled by about 61.5% and 66% of all possible polyester resin facilities subject to this rule. Operations that are not subject to this rule are very small, and actually use very little polyester resin.

Future Control Options:
The following control options have been identified from recent rule amendments in other air districts.

- Reduce monomer content limits for some resins.
- Add vapor suppression to rule requirements related to tub/shower open molds.
- Limit weight loss for resin systems used in closed molds. Increase overall capture and control efficiency of VOC emission control system from 85% by weight to 90% by weight.

Discussion:

- Processes that use polyester resin are located at stationary sources for which the District has legal authority to regulate air emissions.
- For the first three future control options – monomer content limits, vapor suppression, limited weight loss – operators have the option of either using compliant materials or installing and maintaining a VOC emission control system.

Since the capital cost of a VOC emission control system can be high, District staff believes that operators would choose to use compliant materials.

- The expected emission reduction associated with the change in monomer content would depend on the average usage of each type of coating. Monomer content limits in other air districts are 2% to 20% less for certain resin categories in current Rule 4684. To be conservative, District staff assumed that VOC emissions would be reduced by 2% if new monomer content limits were implemented.
- District staff does not have technical information available at this time to determine how much VOC emission reductions would result from adding vapor suppression chemicals to resins or from limiting weight loss in closed molds. For purposes of this control measure, District staff is assuming essentially no change in VOC emissions if these control measures were implemented.
- Few facilities use VOC emission control devices to meet the current resin monomer limits of the rule, so total VOC emission reductions from this control option are assumed to be small, on the order of 1% of baseline VOC emissions. The cost effectiveness of increasing the overall capture and control efficiency of a VOC emission control system must be evaluated, in light of what appears to be minimal emission reductions.

Recommendation:

- This source category is not recommended as a control measure. No additional reductions are available from this source category.

Projected Reduction:

With recommended controls

Emission Reductions Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Rubber Tire Manufacturing (S-IND-4)

(Industrial Processes-Chemical)

Source Category:
This source category includes any facility that is involved in rubber tire and recapping treadstock manufacturing facilities.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.27	0.27	0.27	0.27	0.27	0.27	0.47	0.53
VOC* adj	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*The inventory is suspect. This source category has no active facilities. This needs to be investigated further to determine the validity of the emissions inventory.

- EICs Affected: 410-402-5062-0000

Current Control: District Rule 4681 (amended 12/16/1993) requires that the cement applicator, cement tank and tread drying conveyor shall be enclosed to capture VOC evaporation; all VOC captured shall be transported to an emission control device for removal; green tire coating hall be waterborne; an approved emission control shall be used on the bead cementing line; an approved emission control system shall be used on the tread end cementing line; containers for organic solvents and cements containing organic solvents shall be free from leaks at all times and kept covered except when in use.
Currently there are no facilities in operation in the San Joaquin Valley Air Basin that are subject to this rule.

Future Control Options:
- No future control options are necessary

Discussion:
- There are no facilities operating that are subject to this rule.
- Rule 4681 meets the requirement of EPA Control Techniques Guidelines.

Recommendation:
- District staff does not recommend pursuing this as a control measure. No additional reductions are available from this source category since there are not facilities in the District.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Asphalt Roofing (S-IND-5)

(Asphalt Paving/Roofing)

Source Category:
The operators who make up this category are roofing contractors who apply asphalt roof coatings (bitumin-containing roofing compounds) to commercial and industrial buildings.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.69	0.69	0.70	0.70	0.71	0.71	0.72	0.98

- EICs Affected: 540-590-0400

Current Control: District Rule 4601 (Architectural Coatings) limits VOC content of bituminous roof coatings.

Future Control Options:
- Reduce VOC content limit for bituminous roof coatings to match limits in other air district.
- Limit temperature in heating vessels for bituminous roof coating.

Discussion:
- This is a source category for which the District has legal authority to regulate air emissions.
- The VOC content limits for bituminous roof coatings falls under District Rule 4601 (Architectural Coatings). Another air district has amended its rule corresponding to District Rule 4601 to impose a lower VOC content limit for this coating type.
- The emission inventory cited above is for asphalt roofing operations, which would more precisely be those emissions that occur during application of the material. Other air districts have source-specific rules that limit the temperature in the heating tank prior to application of the asphalt roof coating. The temperature imposed on the coating in the heating vessel is high enough so that the coating is at a workable viscosity, but not so high as to emit unnecessary VOCs. By placing a limit on the maximum temperature, operators could still continue to use this cost-effective coating, but VOC emissions during coating application are limited, possibly less than 1% reduction. District staff is recommending that this control option be explored as part of a rule development project.
- A brief discussion with an inspector in another air district indicates that there are coatings that meet the lower VOC content limit currently in use and that a temperature limit is placed on application of roof coatings, if the heating vessel is of a certain size. Based on this, District staff recommends that the proposed future control options could be implemented either as revisions to District Rule 4601 or as a separate new rule specific for roof coatings.

Asphalt Roofing
(Continued)

Recommendation:

- District staff recommends that this source category be controlled through rule development with full implementation by 2012.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Polystyrene Foam, Polyethylene, and Polypropylene (S-IND-6)

(Chemical)

Source Category:
This source category includes the manufacturing of consumer foam products such as coffee cups, food containers and packing material. There are ten manufacturers of these foam products located within the District.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.128	0.143	0.154	0.157	0.165	0.175	0.185	0.194
VOC	0.32	0.35	0.37	0.39	0.43	0.46	0.49	1.39

- EICs Affected: 410-404-5034-0000; 410-404-5036-0000; 410-404-5038-0000; 410-404-5044-0000; 410-404-5046-0000

Current Control: District Rule 4682 requires the use of non-VOC blowing agents or a VOC emission control system consisting of a thermal oxidizer with at least 95% control efficiency and collection device(s) with 90% capture efficiency. VOC-containing blowing agent may be stored in a pressure vessel preventing VOC release or within a VOC emission control system with at least 95% by weight control efficiency.

Future Control Options:
- Lower VOC limits and control emissions from storage in-process materials and warehousing of finished product.

Discussion:
- This rule would be expanded to include VOC emission reduction or control from product curing areas and general product storage, similar to those employed by some existing sources.
- Possible controls for this category include switching to an alternative, non-VOC blowing agent or employing capture and control systems for the VOC emissions. All ten manufacturers within the District are still using VOC-containing blowing agents, either directly or in the form of beads.
- A scoping meeting to present the objectives of the rule development project was held in July 2006. The first public workshop with draft rule language is anticipated in October 2006.
- Adoption of Rule 4682 amendments is expected for the third quarter of 2007, and implementation likely in the fourth quarter in 2009.
- Upon full implementation, it is estimated that less than 0.1 tons per day of VOC emission reductions would be realized.

Polystyrene Foam, Polyethylene, and Polypropylene
(Continued)

Recommendation:

- The first workshop for this rule project is tentatively scheduled for October 2006. The public hearing to consider adopting the rule changes is expected in the third quarter of 2007.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC	0.0	0.00	0.10	0.10	0.11	0.12	0.35

Mastic Removers (S-IND-7)

(Other – Cleaning & Surface Coating)

Source Category:
This source category includes operations that use mastic (also called mastic texture) which is a pasty material that can be used as an adhesive for tiles. In older buildings, mastic can contain asbestos. Mastic remover is a solvent that is used to remove mastic. The affected sources are building construction/renovation contractors as well as mastic remover manufacturing companies.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ

- The emission inventory for this source category is not known. A survey of schools, "Big Box" retailers, renovation contractors, and mastic remover manufacturers would be needed to determine the size and scope of this emission inventory category.

- EICs Affected: 510-506-6515

Current Control: Prior to December 31, 2006, California Air Resources Board (ARB) did not specifically regulate adhesive removers for floor and wall coverings, of which mastic remover is a specific type. On and after December 31, 2006, ARB will limit the VOC content limit of adhesive removers for floor and wall coverings to 5% VOC by weight. This corresponds to an equivalent VOC content of 0.42 pounds per gallon or 50 grams per liter. By contrast, a typical mastic remover currently available has 6.7 pounds VOC per gallon or about 800 grams per liter. ARB Consumer Products Regulation applies to products sold at retailers like Home Depot and Lowe's as well as products sold by distributors in containers 55 gallons or less.

Future Control Options:
- None known at this time.

Discussion:
- Mastic remover is primarily used to help remove floor tile in older school buildings. This occurs during the summer break, namely June through September, which is also the peak ozone season.
- Some mastic remover is used is to remove the floor tiles from "Big Box" warehouses. The quantity of mastic remover used for this application is expected to be small compared to the amount used in school tile removals, however, the number of renovations may make this sub-category significant.

Mastic Removers
(Continued)

- In place of solvent-based mastic remover, operators can use mechanical means using a "bead-blaster/vacuum" system to remove tiles. This method is used when no asbestos is suspected in the mastic. The bead-blaster/vacuum produces the best overall results for preparing the surface for reapplication of adhesive and tiles. If there is no asbestos in the mastic, this type of operation is the most cost effective method to remove the mastic. This process does not use solvent, and is a purely mechanical/abrasive process. No VOC is lost to the atmosphere.
- The bead blaster method is not used if there is asbestos in the mastic. By federal and state regulation, the asbestos material must be kept wet during removal. A bead-blaster/vacuum system cannot be used in this instance since the wet material, containing mastic and mastic remover, can clog the vacuum. Instead, operators can use mechanical means using mastic remover "solvent" and a "buffer/scraper." For VOC control of asbestos-laden air, a carbon canister could be added on the venting hose. This would be in addition to the particle filter used to capture asbestos dust.
- VOC reductions are expected to be about 93% of baseline at full implementation of the ARB regulation. Full implementation would be no later than January 2009.
- Since ARB regulates this source category, no further work is suggested for this source category.

Recommendation:

- District staff recommends that no further work be done for this source category since it will be regulated by ARB as a consumer product starting December 31, 2006.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NA	NA	NA	NA	NA	NA	NA

Vegetable Oil Processing Operations (S-IND-11)

(Food & Agriculture)

Source Category:
This source category includes facilities that extract oil from vegetable sources like cottonseeds and corn.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.36	0.37	0.40	0.40	0.44	0.46	0.48	0.48

- EICs Affected: 420-420-6030

Current Control:
- Extractors, Desolventizer/Toasters must not emit more than 15 lbs per day of VOC, unless equipment is installed that ensures 90% overall capture and control efficiency.
- Operators must check for fugitive VOC emissions (leaks) on a monthly basis.
- Incineration devices, used to comply with rule requirements are exempt from BACT and offset requirements of Rule 2201 (New and Modified Source Review Rule).

Future Control Options:
- Increase overall capture and control efficiency.
- Change leak definition from 10,000 ppmv to 1,000 to match other District rules.

Discussion:
- Vegetable oil processing takes place at stationary sources for which the District has legal authority to regulate air emissions.
- Rule 4691 encompasses the most stringent VOC emission limits for this source category.
- For other rule projects, EPA has voiced concern over exemptions from BACT and offset requirements in any rule other than a new source review (NSR) rule, meaning that District Rule 2201 should be the only place where the BACT and offset requirements are detailed. This rule should be revised to remove automatic exemption from BACT and offset requirements. The revision will have no effect on current facilities and sources may still be exempt from BACT and/or offset requirements if the modification meets provisions in District Rule 2201.
- Since the operator must check for leaks on a monthly basis, a change in leak definition is not expected to yield any significant emission reductions.

Vegetable Oil Processing Operations
(Continued)

Recommendation:

- District staff does not recommend pursuing this as a control measure.
- District staff recommends that the rule be modified to remove the automatic exemption from BACT and offset requirements. No emission reductions are expected for this change.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Wine Fermentation and Storage Tanks (S-IND-12)

(Food & Agriculture)

Source Category:
This source category includes all tanks used for the fermentation or storage of wine.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	3.6	3.7	3.8	3.8	3.9	4.0	4.1	4.1

- EICs Affected: None are listed at this time.

Current Control: District Rule 4694 requires facilities to reduce the VOC emissions from fermentation by 35%; installation and maintenance of a pressure vacuum relief valve; wine stored at or below 75 degrees Fahrenheit. The rule exempts storage tanks constructed primarily of concrete or wood and wineries that emit less than 10 tons of VOC per year.

Future Control Options:
- Increase the current required annual emissions reduction from 35% to over 50%. This would reduce emissions by approximately 15%.
- Remove the alternative compliance provision and require operators to place controls with 86% VOC capture and control efficiency on fermentation tanks.

Discussion:
- For wine storage tanks in major source facilities, Rule 4694 established RACT as the use of pressure-vacuum relief valves.
- The RACT analysis for this source category can be found in Appendix K of this plan.
- There are significant technical uncertainties and high costs associated with increasing the required emission reduction above 35%. This would require facilities to install additional controls or purchase additional surplus reductions, which could cost in excess of $100,000 per ton of VOC reduced per year.
- Removal of the exemption for wood and concrete fermenters would achieve reductions of 0.8%. The cost of the retrofit or emissions purchases for these facilities would be similar to the costs for facilities currently subject to rule requirements.

Recommendation:
- The recent adoption of this rule has maximized the possible emission reductions from this source category. Future equipment advancements may produce additional reductions. A future study to re-evaluate this source category is planned.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Bakery Ovens (S-IND-13)

(Food & Agriculture)

Source Category:
This source category includes all bakery ovens that are used for the baking of yeast leavened products.

Emissions Inventory:
with current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.52	0.54	0.56	0.57	0.61	0.63	0.66	0.66

- EICs Affected: 420-412-6012; 420-412-6037

Current Control: District Rule 4693 requires an emission collection system with a control efficiency of at least 95%.

Future Control Options:
- Increase the control efficiency requirement to 97%. This is expected to reduce emissions by approximately 2%.
- Expand the applicability to sources with VOC emissions less than 25 tons per year. This would affect approximately 25% of the VOC emissions from this source. Therefore, it is expected to reduce VOC emissions by 24% (95% reduction x 25% VOC emissions = 24%).

Discussion:
- Based on District source test data, some bakeries subject to Rule 4693 are achieving VOC control efficiencies of greater than 95%. This requirement would likely require retrofits or rebuilds of existing equipment at facilities not already achieving VOC control efficiencies greater than 95%.
- There are sources with VOC emissions below 25 tons per year that use catalytic thermal oxidizer to achieve VOC control efficiencies of greater than 95%.

Recommendation:
- The current rule has maximized the possible emission reductions from the affected units in this source category. Future equipment advancements may produce additional reductions from exempt equipment. A future study to re-evaluate this source category is planned.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Aging of Brandy and Wine (S-IND-14)

(Food and Agriculture)

Source Category:
This source category includes operations in the production of brandy to include distillation, aging and bottling.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	6.42	6.60	6.80	6.86	7.00	7.21	7.43	7.67
VOC adjusted *	6.42	2.10	2.30	2.30	2.50	2.70	2.90	3.10

***** The adjusted VOC takes into account the reductions from facilities that are part of alternative compliance options, totaling 4.5 tons per day, which are SIP creditable to previous 1-Hour Ozone Plan commitments.

- EIC Affected: 420-410-6090

- There are conflicting emission inventory estimates for brandy and wine aging: District survey data shows 719 tons per year in 2004, and a consultant estimates 7,196 tons per year based on Alcohol, Tobacco, and Trade data.
- The discrepancies are due to differences in the production amounts and the emission factors.
- These discrepancies will be resolved as a more thorough and effective survey of facilities and their production figures is completed and as issues regarding interpretation of emission factors are resolved.

Current Control:
- There are no current rule-based requirements for controlling VOC emissions from the aging of brandy and wine.
- In lieu of installing VOC control devices for wine fermentation to fulfill District Rule 4694 (Wine Fermentation and Storage Tanks) requirements, operators are controlling surplus emissions from the brandy production source category to obtain equivalent reductions which are creditable to the wine fermentation rule. It is expected that all SJV brandy facilities will be controlled to the maximum extent currently feasible.

Future Control Options:
- Vent the off-gasses to a VOC destruction device, such as a biofilter, or, for facilities with boilers, route the VOCs to the burners for destruction.

Discussion:
- The RACT analysis for this source category is included in Appendix K of this plan.

Aging of Brandy and Wine
(Continued)

- Major sources of VOC from the aging of brandy and wine are being controlled at RACT levels and beyond through an alternative compliance option in District Rule 4694 (Wine Fermentation and Storage Tanks).
- Brandy production facilities that have applied for permits to install VOC control devices ~~and~~ have chosen regenerative thermal oxidizers, which are cost effective if the VOC emissions throughput is large enough.
- Other smaller facilities could be controlled for VOCs with biofilters, which are cheaper to install and operate, yet can still yield approximately 80% VOC reduction from some of the facilities if technology can be proven to apply to the source without affecting product quality and stability.

Recommendation:

- Control VOCs from brandy and wine aging through alternative compliance options available to facilities applicable to Rule 4694.
- Assure that the permitting process for facilities using the alternative compliance option meet all criteria for taking SIP credits for the emission reductions.
- This source is considered to be controlled to the maximum level possible with known controls through the alternative compliance option.
- Explore the viability of alternative control technologies, such as biofilters, for the control of VOCs in facilities which are too small to use regenerative thermal oxidizers. If necessary, use incentives for demonstration projects.
- A new rule will be developed as a backstop measure to codify control requirements.

Projected Reductions:

With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Flares (S-IND-21)

(Oil & Gas Production – Combustion, Sewage Treatment, Landfills, Incinerators, Oil & Gas Production, Petroleum Refining)

Source Category:
This source category includes any operation involving the use of flares.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.070	0.082	0.083	0.083	0.084	0.091	0.093	0.090
VOC	0.045	0.049	0.050	0.050	0.051	0.053	0.054	0.055

- EICs Affected: 110-132-0130; 120-132-0136; 130-132-0136; 310-320-0110; 310-320-0120; 310-320-0130

- The current emissions inventory will be validated if it accounts for the emissions generated during emergency flaring events. Current NOx emissions appears to be low and may have only accounted for the emissions generated by the gas fuel used to keep the flare pilot flame on at all times.
- Usage records will be used to determine the total amount of gases sent to the flare during normal operation and process equipment upset or breakdown periods. Thereafter, the emissions will be calculated and the emissions inventory will be updated.

Current Control:
- Operations involving the use of flares are subject to District Rule 4311.
- District Rule 4311 specifies requirements for the following: pilot flame devices, automatic ignition systems, heat-sensing devices, use of purge gases, applicable provisions of 40CFR60.18, and emission standards for ground-level enclosed flares.

Future Control Options:
- Flare Minimization Plan (FMP), including strategies, such as: (1) Installing vapor recovery systems, (2) Increasing the vapor recovery system capacity, (3) Increasing the fuel gas treating capacity, (4) Implementing routine inspection and monitoring to detect leaking valves, (5) More rigorous monitoring and reporting requirements, and (6) Improving operational and maintenance procedures to more effectively prevent upset conditions.
- Continuous monitoring of the pressure and height within the water seal.

Discussion:
- The experience of BAAQMD and SCAQMD in incorporating FMPs have resulted in data being gathered, which can be used to evaluate the effectiveness of FMPs in reducing flaring events.

Flares
(Continued)

- The provisions in the South Coast rule regarding explicit prohibition of flaring in some instances and a reporting requirement for flare emissions that spread over 100,000 cubic feet will have to be evaluated, as to its efficacy in reducing flaring.
- During the last amendment of Rule 4311, an FMP was deemed as unproven in its ability to provide reductions, which was apparent since other districts that incorporated these were unable to state the expected emission potential of this strategy.

Recommendation:

- Evaluate the effect of FMPs and other provisions that other district rules have implemented.
- If found appropriate and applicable, amend District Rule 4311 to incorporate requirements that will result in reduced flaring events.

Projected Reductions:

With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0	0	0	0	0	0	0
VOC	0	0	0	0	0	0	0

Incinerator Burning (S-IND-22)

(Incinerators)

Source Category:
This source category includes facilities operating certain types of ovens called "burn-out ovens" as well as crematoriums and other units traditionally associated with incinerators.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
VOC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

- EICs Affected: 130-130-0110, 130-130-0266

Current Control: District Rule 4302 requires the use of multiple-chamber incinerator or APCO-approved equipment that is equally effective for the purpose of air pollution control.

Future Control Options:
- None

Discussion:
- These units are located at stationary sources for which the District has legal authority to regulate air emissions.
- This source category has a very small NOx and VOC emissions inventory. Even if advanced emission control technology were available, it is doubtful whether it would be cost effective, since emission reductions would be minimal.
- This rule could be improved through administrative change to clarify provisions for controlled burning facilities.

Recommendation:
- This source category is not recommended as a control measure. No additional reductions are available from this source category.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Reduction Of Animal Matter (S-IND-23)

(Other Miscellaneous Processes)

Source Category:

This source category includes facilities engaged in the reduction of animal matter. Reduction is defined as any heated process, including rendering, cooking, drying, dehydration, digesting, evaporating, and protein concentrating.

Emissions Inventory:

With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ

The inventory for this source category appears as zero, which reflects the activity of five facilities that are controlled at very stringent levels. However, it may not reflect all the applicable equipment used in rendering facilities, which may be accounted for in other source categories, such as fuel combustion. Additional analysis is needed to accurately account for emissions from this source category.

- EICs Affected: 699-995-0000

Current Control:

- District Rule 4104 requires incineration at 1200° F for a minimum of 0.3 seconds.
- District Rule 2201 (New and Modified Stationary Source Review Rule or NSR) mandates permit conditions on the five facilities that are also subject to Rule 4104 requirements.

Future Control Options:

- None. Development and implementation of Best Available Control Technology (BACT) is always an option, as these become available.

Discussion:

- The required incineration conditions are similar to other district requirements.
- Permit conditions require thermal oxidizers, scrubber condensers, and packed-bed odor scrubbers, all of which reflect use of the most effective pollution control technologies, as a result of NSR guidelines that involve BACT assessments.

Recommendation:

- This source category is not recommended as a control measure. No additional reductions are currently projected from this source category.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

VOC Emissions from Decontamination of Soil (S-IND-24)

(Soil Remediation, Petroleum Marketing)

Source Category:
This source category includes all activities involving the remediation of contaminated soils. Soil contamination from organic material occurs due to leaking storage and handling systems, operating losses, and accidental spills.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.11	0.11	0.12	0.12	0.14	0.14	0.15	0.75

- EICs Affected: 140-995-0010; 140-995-0240; 330-995-0010

Current Control: District Rule 4651 requires management practices for excavation; sets limits on aeration; and requires VOC collection and control systems for treatment of contaminated soil.

Control Options:
- Eliminate allowances for aeration and increase the overall capture and control efficiency requirements for VOC collection and control systems.

Discussion:
- Soil remediation projects are short-lived. Over 99% of the projects are subject to District best available control technology (BACT) requirements, which is more stringent than any existing air district regulation. Therefore, despite the fact other air districts have more stringent rules, no reductions are achievable.
- A rule development project is being concluded to amend Rule 4651 to ensure it is as stringent as other district rules in order to minimize reliance on BACT. No reductions are expected from this project.

Recommendation:
- Not recommended as a control measure, no additional reductions are available from this source category but a rulemaking will be completed to satisfy the one hour ozone plan commitment.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants and Organic Liquid Loading (S-PET-1)

(Petroleum Marketing, Chemical)

Source Category:
This source category includes the transfer of gasoline between delivery vessels and storage containers and loading racks that are used to load organic liquids with a TVP of 1.5 psia or greater.

Emissions Inventory:
Does not reflect reductions from proposed controls

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.019	0.021	0.023	0.023	0.024	0.027	0.028	0.03
VOC	3.4	3.6	3.7	3.8	4.1	4.2	4.4	4.5

The emissions inventory does not account for emissions of VOC or NOx from mobile fuelers.

- EICs Affected: 330-382-1100, 330-382-1110, 330-382-1120, 330-382-1130, 330-384-1100, 330-384-1120, 330-384-1130, 330-374-1100, 330-376-1100, 330-390-0010, 330-390-1100, 330-390-1200, 330-392-1100, 330-395-1100, 330-396-1100, 330-397-1100

Current Control: District Rule 4621 requires permanent submerged fill pipe & ARB certified Phase I vapor recovery system; pressure relief valve; delivery vessel requirements. Rule 4624 sets allowable VOC emission limits based on loading rack throughput.

Future Control Options:
District Rules 4621 and 4624 are control measures under the Extreme Ozone Attainment Demonstration Plan and are a current rule development project. No further control options are available.

Discussion:
Rule 4621 is currently undergoing rule development process along with Rule 4624 as part of the Extreme Ozone Attainment Demonstration Plan control measures. Possible amendments to Rules 4621 and 4624 include:

- Removal of exemptions
- Increase inspection frequency
- ARB recently required certified Phase I systems to achieve 98 percent control efficiency. Change Rule 4621 language to require this increased efficiency.
- Widen applicability to include mobile fuelers and require that they have ARB certified vapor recovery. Other districts have incorporated this requirement into their equivalent rules.
- Reduce allowable limit of vapor leak from
- Expand applicability to include a third loading category.

Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants and Organic Liquid Loading (Continued)

Adoption for this control measure is expected in the fourth quarter of 2007 with implementation of VOC control in 2010. Upon final implementation of this measure, with the related S-PET-2 control measure, 2010 reductions are estimated to achieve at least 0.9 tons per day.

Recommendation:

- Continue current rule development and adopt proposed amendments to Rule 4621 in the fourth quarter of 2007.
- Currently this source category is not a candidate for incentive funding, but further analysis and study is necessary to determine if this source category may garner cost effective reductions in the future provided funding sources are available. Please see Chapter 7 for any additional information.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC	0.0	0.90	0.92	0.99	1.03	1.07	1.08

No NOx reductions are expected Rule 4621 is a VOC rule and does not address NOx.

Gasoline Transfer into Motor Vehicle Fuel Tanks (S-PET-2)

(Petroleum Marketing, Other – Petroleum Production and Marketing)

Source Category:
This source category applies to all locations storing and dispensing gasoline into motor vehicle fuel tanks.

Emissions Inventory:
Does not reflect reductions from proposed controls

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	2.7	2.8	2.9	3.0	3.3	3.4	3.6	3.6

The emission inventory does not take into account emissions from mobile fuelers.

- EICs Affected: 330-374-1100, 330-376-1100, 330-378-1100, 330-378-1210, 330-380-1100

Current Control: District Rule 4622 currently requires an ARB certified Phase II vapor recovery system, a periodic self-maintenance inspection program based on facility throughput, and period inspections and repairs within a certain time frame.

This rule currently exempts facilities that are exempt from the vapor recovery requirements of Rule 4621 and facilities with a throughput of less than 24,000 gallons per calendar year or 10,000 gallons or less per consecutive 30-day period.

Control Options:
District Rule 4622 is a rule development project that is currently under development by district staff.

Discussion:

Rule 4622 is currently part of the rule development process with possible amendments including:

- Improved effectiveness of compliance with ARB vapor recovery testing and certification standards.
- Expand controls to include mobile fuelers as other districts have done.
- Require self-maintenance frequency for vapor path to match frequency for other self-maintenance items.
- Increase inspection frequency for vapor leaks.
- Lower the allowable vapor leak threshold.
- Require mandatory replacement of breakaways once they have been engaged.

Adoption of this control measure is expected for 2007 with implementation of VOC controls by 2010. Upon final implementation of this measure, with the related S-PET-1 control measure, 2010 reductions are estimated to achieve at least 0.9 tons per day.

Gasoline Transfer into Motor Vehicle Fuel Tanks
(Continued)

Recommendation:

Continue current rule development and adopt proposed amendments to Rule 4622 by fourth quarter 2007. Please see S-PET-1 for the corresponding emission reduction estimates.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Aviation Fuel Transfer (S-PET-3)

(Other - Petroleum Production and Marketing)

Source Category:
This measure would affect operations with bulk aviation fuel storage, including military, civilian, and private airports or air fleet services. These tanks typically hold either aviation gasoline or a variety of kerosene-based jet fuel. There are 43 airports in the SJVAB that sell one or both types of these fuels.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20

ARB emission inventory does not include an emission category for aviation fuel for the SJVAB. Sonoma Technology, Inc. (STI), an outside consultant, has done work that will be used to update this source category.

- EICs Affected: 330-321-1000-0000; 330-321-1410; 330-322-1410; 330-322-1420; 330-326-1410; 330-326-1420; 330-328-1410; 330-330-1140; 330-330-1410; 330-392-1400

Current Control: There is no current District rule that covers this source category. District Rule 4621 (Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plant) addresses Phase 1 requirements for tanks holding motor vehicle fuel, but not aviation fuel. Phase 1 operations at facilities using aviation fuel include filling aviation fuel bulk storage tanks using primary fuel delivery trucks as well as the filling of airport fuel delivery trucks from the bulk storage tanks. It does not include filling an aircraft's on-board fuel tanks. While District Rule 4622 (Gasoline Transfer into Motor Vehicle Fuel Tanks) addresses fueling motor vehicles, it does not apply to fueling aircraft since aircraft do not have uniform fueling points and the Phase 2 equipment for gasoline is not certified for aviation fuel use.

Future Control Options:

- Fugitive emissions can be controlled with pressure-vacuum relief valves on storage tanks, submerged fill tubes to reduce splashing, and vapor recovery or destruction systems similar to those used for Phase I motor vehicle fueling operations.
- VOC reduction equipment may be feasible for aviation fuel storage vessels.

Discussion:

- This category is a Post-2003 Control Measure in the *Ozone ROP Plan*.
- Fugitive VOC emissions are released from these tanks due to spillage and vapor displacement during Phase 1 operations and from venting through relief valves to prevent excessive pressure from diurnal heating. The new rule would reduce fugitive VOC emissions created during Phase 1 aircraft refueling operations.

Aviation Fuel Transfer
(Continued)

Recommendation:

- Adoption for this control measure is anticipated in the fourth quarter of 2007 with implementation projected for the year 2010.

- Based on previous emission inventory information from the One-hour Ozone Attainment Plan, the emissions from sources affected by the control measure are estimated at 0.2 tons VOC per day in 2008. Upon final implementation of the proposed control measure, a reduction of less than 0.05 tons of VOC per day is anticipated.

- Further refinement of the emission inventory is needed to incorporate recent findings of STI, Inc, as appropriate.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.05	0.05	0.05	0.05	0.05	0.05

Steam Enhanced Crude Oil Production Well Vents (S-PET-11)

(Oil & Gas Production)

Source Category:
This source category includes all steam enhance crude oil production well vents and associated vapor control or collection equipment.

Emissions Inventory:
With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	13.5	13.2	12.6	12.5	11.7	11.3	11.0	12.1

- EICs Affected: 310-342-1600; 310-344-1600

Current Control: District Rule 4401 requires total uncontrolled VOC to be reduced by 99%; set maximum time limits for leak repair; and sets limits on the number of allowable leaks.

Future Control Options:
- Reduce the leak threshold from 10,000 ppm to 1,000 ppm and the number of allowable leaks to achieve VOC emission reductions of approximately 1.16 tons per day.
- Reduce the time period for facilities to repair to achieve VOC emission reductions of at least 0.001 tons per day.

Discussion:
- District staff does not believe that facilities could control VOC emissions by more than 99%.
- The control options discussed above have been achieved at facilities, and are included in the proposed amendments to Rule 4401. The proposed amendments to Rule 4401 are scheduled for adoption hearing on December 14, 2006.
- ~~A~~dopt the currently proposed amendments to Rule 4401 that incorporates all of the control options by December 14, 2006.

Recommendation:
- This is not a recommended control measure as it was recently adopted in December 2006. Please see the recently adopted rules and the associated emission reductions in Appendix B of this plan.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Components Used in Oil/Gas Production & Processing (S-PET-12)

(Oil & Gas Production)

Source Category:

This source category pertains to components carrying VOC-containing fluids that are used in crude oil production, natural gas production, and natural gas processing facilities. Components are devices such as flanges, connectors, valves, pumps, compressors, well head polished stuffing boxes, pressure relief devices (PRDs), etc.

Emissions Inventory:

With current controls and regulations: does not reflect reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
VOC	5.0	4.9	4.8	4.7	4.5	4.3	4.3	11.6
VOC* adj	9.943	3.94	3.80	3.76	3.68	3.57	3.47	3.40

* Emissions inventory does not reflect reductions resulting from recently adopted Rule 4409. This adjustment to the baseline inventory accounts for the 60% reduction from previously controlled emissions level resulting from Rule 4409 implementation effective April 2006.

- EICs Affected: 310-302-0110; 310-302-1600; 310-304-1600; 310-306-1600; 310-308-1600; 310-308-0110; 310-310-0110; 310-310-1600; 310-316-1600; 310-352-0100

Current Control:

- Previous Rule 4403 regulates VOC emissions from components used in crude oil production, natural gas production, and natural gas processing facilities. Rule 4403 has been superseded by more stringent leak detection and repair (LDAR) requirements of recently adopted Rule 4409 effective April 2006.
- Leak thresholds: Major gas leak: >10,000 ppmv
  Minor gas leak: 200 – 10,000 ppmv (depending on component type and whether components are in liquid or gas service). Major liquid leak: visible mist or continuous flow. Minor liquid leak: not a major liquid leak and >3 drops/minute.
- Major provisions of the rule:
  - Daily audio-visual inspections of accessible pumps, compressors, and PRDs located in manned facilities, and weekly for such components located in unmanned facilities.
  - Physical identification (affixing tag or label) of major components and critical components to facilitate inspection and repair of leaks.
  - Quarterly inspection of components using a portable hydrocarbon analyzer to detect leaks, except for inaccessible components and pipes which must be inspected annually. Critical components and unsafe-to-monitor must be inspected during each process equipment turnaround period.
    Minimizing leaks to the maximum extent possible within 1 hr of leak detection, and then repairing them within 2 to 7 days, depending on the leak concentration level (i.e., larger leaks must be repaired within a shorter period than allowed for smaller leaks).
  - Re-inspection of components within 15 days after being repaired or replaced.

Components Used in Oil/Gas Production & Processing
(Continued)

- Frequently leaking components must be replaced with BACT type equipment, vent the components to a closed vent system, remove components from operation.
- Limit on allowable number of leaking components, and includes provisions on conditions that constitute a violation of rule.
- Initial inspection within 24 hours and re-inspection within 15 days after the date of each PRD that releases into the atmosphere.
- Maintaining records of inspection results and leak repair action taken.
- Submission of a comprehensive and detailed Operator Management Plan, including information on the number of components and location, inspection schedule, leak detection training, etc.

Future Control Options:

- Rule 4409 implements the most stringent requirements that are technologically feasible.

Discussion:

- These sources are located at stationary sources for which the District has legal authority to regulate air emissions.
- Rule 4409 implements BARCT and All Feasible Control Measure and establishes the most effective LDAR standards to date.
- The rule is effective in 2006 and is expected to achieve 60% (approximately 6 tons/day) reduction from calculated emissions of 10 tons per day of VOC from this source category.
- The rule currently exempts components serving light oil wells and natural gas wells with streams containing less than 10% VOC. Further study is needed to characterize production wells between 1% and 10% VOC content.
- The rule currently defines light oil as greater than 30 API gravity. Within the industry, oil that is 20 API gravity or more is considered light oil. Further study is needed to classify the number of wells and the baseline emissions for the wells with API gravity between 20 and 30.

Recommendation:

- Rule 4409 implements the most stringent requirements that are technologically and economically feasible. Further study is needed to determine if changing the exemptions could bring in new sources, what baseline inventory is associated with the new sources and how much in emission reductions could be expected by instituting a stringent LDAR program.
- This source category is not recommended as a control measure. No additional reductions are available from this source category.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Crude Oil Production Sumps (S-PET-13)

(Oil & Gas Production)

Emissions Inventory:

With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.42	0.41	0.40	0.39	0.37	0.36	0.35	0.39

- Based on District consultant's emission inventory reports on sumps operating within the District, the VOC emissions are about 3 tons/day. Another District consultant estimated the VOC emissions of about 60 tons/day. The difference between the two estimated emission levels is due to the uncertainty in the total number of active sumps and respective surface areas.
    - A survey will be conducted to verify the inventory.

- EIC Affected: 310-300-1600

Current Control:

- Current District Rule 4402 is as stringent as other air districts for similar source category.
- Rule 4402 requires sumps to have a flexible floating cover, rigid floating cover, or fixed roof cover. The flexible floating cover has to be equipped between the sump wall and the cover edge, and the gap between the wall and at every point around the perimeter must not exceed 1 inch. The fixed-roof cover must have a PV and meet certain specific requirements.
- If sumps are replaced with above-ground fixed roof tanks, the tanks must comply with the provisions of Rule 4623.
- Exemptions include certain sumps of small producers and those located at petroleum refineries.

Future Control Options:

- Replace sumps with fixed roof tanks equipped with a VOC control device that has a control efficiency of 99%. Replacing sumps with controlled fixed roof tank could achieve about 80% reduction from current controlled level.
- Retrofit existing rigid or flexible cover of sumps with a closure device similar to the dual-seal system (primary seal and secondary seal) used on external floating roof tanks roofs with design specifications and gap thresholds similar to Rule 4623. The control efficiency of dual-seal system with minimal seal gap requirements could achieve about 90% reduction in emissions.
- Instead of a floating cover, a vapor tight fixed roof or dome cover over the sump could be installed and the collected vapors would be sent to a VOC control system. The VOC emission reduction efficiency associated with these types of cover is at least 90 percent according to information published in California Air Resources Board document "Suggested Control Measure for the Control of Organic Compound Emissions from Sumps Used in Oil Production Operations".

Crude Oil Production Sumps
(Continued)

Discussion:

- This is a source category for which the District has legal authority to regulate air emissions.
- Best control option is to replace sumps with fixed roof tanks equipped with a VOC control device that has control efficiency of 99%. A reduction of about 80% from current controlled emissions level could be achieved by this control option. Another option to reduce emissions is to retrofit existing rigid or flexible cover of sumps with a dual-seal system closure device. This retrofit method costs less than replacing sumps with controlled fixed roof tanks, and it could achieve about 10% reduction from current controlled emission level. The cost effectiveness of the two options must be determined and compared to each other. The viability of the control options should be the subject of a socioeconomic analysis.
- Evaluate appropriateness of existing exemptions and determine likely emissions reduction that could be achieved by removal of some exemptions and associated cost effectiveness and economic impacts.
- The control options discussed above would need longer implementation schedule. Staff recommends implementation of this control measure by 2012.

Recommendation:

- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:

With recommended replacement of sumps with controlled fixed roof tanks

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Crude Oil Production Wells Using In-Situ Combustion (S-PET-14)

(Oil & Gas Production)

Emissions Inventory:

With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- ARB emissions inventory database does not currently account the emissions from in-situ-combustion crude oil production wells and associated fugitive VOC emissions from component leaks.
- Currently, there are no permitted in-situ combustion wells operating in the District. A review of the most recent August 2006 DOGGR crude oil wells database showed there were only 28 in-situ-combustion wells in the District but they were all shut-in. Wells that are shut-in do not emit air pollutants, therefore, there are no emissions from this source category

- **EIC Affected:** 310-436-1600

Current Control:

- District Rule 4407 requires emissions from in-situ combustion crude oil production wells be controlled with a VOC control device that achieves a control efficiency of 85%, or by using a fuel burning equipment or a flare.
- Current rule achieves 85% control from uncontrolled emission level through the use of VOC control device.
- The leak detection and repair (LDAR) provisions for components requires quarterly inspection, a VOC leak standard of 10,000 ppmv, 15 days to repair leaking components, and an allowable leak of no more than two percent of the total number of components per quarterly inspection period.
- Exempts in-situ combustion crude oil production wells that are not producing or undergoing repair and maintenance.

Future Control Options:

- Best control option is to use of a VOC collection and control system consisting of a closed system with high capture efficiency and a control device that reduces or destroys the captured VOC at high control efficiency.
- The captured VOC emissions could be incinerated by using a regenerative thermal oxidizer, used as fuel for available continuously operating combustion device such as a boiler, a steam generator or a flare, send to a field gas gathering pipeline to a gas processing plant, or injected into a DOGGR approved injection well.
- Upgrade the existing LDAR to the degree similar to Rule 4409 provisions by lowering the current leak threshold of 10,000 ppmv, instituting leak minimization requirements, shortening the time frame to repair leaking components, and submission of Operator Management Plan.

Crude Oil Production Wells Using In-Situ Combustion
(Continued)

Discussion:

- There are no in-situ combustion wells currently operating in the District. Therefore, the emission from this source category is zero.
- In the event new in-situ combustion wells are placed into operation in the District, these wells would require operating permits, and would be subject to BACT and offset requirements of Rule 2201 (New and Modified Stationary Source Rule. BACT would require control of VOC emissions from the wells by at least 99 percent. In other words, VOC reductions from new wells are achieved through the District permitting process by requiring BACT and offset.
- The District has the legal authority to regulate this source category. Other air districts that have crude oil production fields currently do not have an equivalent prohibitory rule as Rule 4407.

Recommendation:

- Since there are no in-situ combustion oil wells operating in the District and no emissions reduction could be achieved, District staff is not recommending this source category as a control measure.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Glycol Dehydration Systems (S-PET-15)

(Oil & Gas Production)

Source Category:

This source category includes facilities that have glycol dehydration systems with glycol dehydration vents. Glycol dehydration is employed in the natural gas production industry to remove water vapor from the produced gas.

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- The emission inventory for this source category is not available. Further research into the particular source category emissions inventory is needed.
- District Rule 4408 was adopted December 19, 2002 and applied to 29 permitted natural gas dehydration units in the SJVAB. Currently there are 13 permitted units in the SJVAB.
- EIC Affected: 310-356-0110-0000

Current Control:

- District Rule 4408 requires gas dehydration facilities to control VOC emissions from glycol regenerator vents by using one of the following methods:
  - Vapor collection and disposal systems
  - Venting of collected vapors to a combustion source
  - Any control that reduces the VOC emissions by 95% averaged over 1 hour, or that controls glycol dehydration vent VOC emissions to a level no higher than 1.7 pounds of VOC per million dry standard cubic feet of gas dehydrated, averaged over 24 hours
- Sources within the District must meet the federal Maximum Achievable Control Technology (MACT) requirements for Hazardous Air Pollutants (HAPS). The federal MACT for glycol dehydration is currently covered under District Rule 4002, which incorporates the requirements in 40 CFR Part 63, subpart HH, the *National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities*. The MACT standard requires controls of the HAPs, which in general, are also VOCs.

Future Control Options:

- None. The current rules and requirements fulfill MACT standards.

Discussion:

- Gas production facilities are stationary sources for which the District has legal authority to regulate air emissions.
- The District rule is as stringent as any existing rule. It also requires more advanced testing methods. There are no Best Available Retrofit Control Technologies (BARCT) or requirements that are more effective than the current rule requirements. Current controls meet MACT standards.

Glycol Dehydration Systems
(Continued)

Recommendation:

- District staff does not recommend pursuing this as a control measure. No additional reductions are available from this source category.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Heavy Crude Oil Components (S-PET-16)

(Oil and Gas Production; Petroleum Refining)

Emissions Inventory:

With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ

- ARB emissions inventory database does not account for VOC emissions from heavy crude oil components.
- A District consultant's recent report indicated that the uncontrolled emissions from heavy crude oil components is about 0.6 tons per day based on extrapolation of the average number of components per light crude oil well used by District staff during the development of Rule 4409. A better method of estimating emissions is to determine the actual total number of components used in heavy crude oil production and oil refining facilities and calculate the emissions based on CAPCOA or EPA methodology.
- A thorough survey of all heavy crude oil producers within the District should be conducted to determine the total number of heavy crude oil components. Upon completion of the survey, the emissions will be calculated and the ARB emissions inventory database will be updated.
- EICs Affected: 310-302-0110; 310-302-1600; 310-304-1600; 310-306-1600; 310-308-1600; 310-308-0110; 310-310-0110; 310-310-1600; 310-316-1600; 310-352-0100; 320-302-0010; 320-304-0010; 320-306-0010; 320-316-0010

Current Control:

- The District has no existing prohibitory rule for controlling VOC emissions from heavy crude oil components.
- Existing District Rule 4401 regulates VOC emissions from steam enhanced crude oil production well vents. However, the component leak provisions of Rule 4401 only applies to components that carry gaseous streams and are associated with the VOC control system used in controlling casing gas emissions from well vents. Components that carry liquid streams are exempt from Rule 4401.

Future Control Options:

- Implement a leak detection and repair (LDAR) program to control VOC emissions from leaking heavy crude oil components.

Discussion:

- The sources are located at stationary sources for which the District has legal authority to regulate air emissions.
- Implement a leak detection and repair program (LDAR) similar to existing Rule 4409 and Rule 4455. LDAR would include leak thresholds, periodic inspection to identify leaking components, repair of leaking components within a specified period of time. An effective LDAR program may achieve at least 90% reduction from current uncontrolled emission level for specific components.

Heavy Crude Oil Components
(Continued)

- Other air districts have implemented rules that regulate fugitive VOC emissions from leaking components from light crude oil production as well as heavy crude oil production facilities.
- Establish prohibitory rule requirements that regulate VOC emissions from heavy crude oil components. The rule should apply to heavy crude oil production facilities and crude oil and crude oil refineries.

Recommendation:

- Due to the lack of emissions inventory for heavy crude oil components, staff recommends this source category as a control measure for further study.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Storage of Organic Liquids (S-PET-17)

(Oil & Gas Production, Petroleum Refining, Petroleum Marketing, Chemical, Mineral Processes)

Source Category:

Rule 4623 (Storage of Organic Liquids) controls volatile organic compound (VOC) emissions from organic liquids in storage tanks. These businesses are engaged in the general activities of petroleum production, petroleum pipelines, petroleum refining, petroleum bulk stations and terminals, and petroleum and petroleum products wholesalers; and chemical and mineral processes.

Emissions Inventory:

With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.107	0.109	0.109	0.109	0.11	0.12	0.12	0.107

- There are at least 3,000 chemical tanks less than 1,100 gallons capacity located in crude oil production facilities within the District.
- Emissions these chemical tanks are not accounted in the current ARB emissions inventory. Emissions inventory will be upgraded after conducting a survey of oil producers or providers of chemicals tanks.
- EICs Affected: 310-326-1600; 310-326-1610; 310-328-1130; 310-328-1600 310-995-1600; 320-324-1224; 320-326-1000; 320-326-1214; 320-326-1410; 320-326-1610; 320-328-1000; 320-328-1110; 320-328-1214; 320-328-1410; 320-328-1610; 330-322-1214; 330-322-1224; 330-322-1600; 330-322-1610; 330-324-1224; 330-324-1600; 330-326-1110; 330-326-1210; 330-326-1420; 330-326-1610; 330-328-1000; 330-328-1110; 330-328-1130; 330-328-1222; 330-328-1600; 330-328-1610; 410-400-2036; 410-400-2038; 410-400-2054; 410-400-2058; 410-400-2062; 410-400-3286; 410-400-5700; 410-400-5800; 410-995-3000; 410-995-4999; 410-995-5800; 430-328-7006

Current Control:

- District Rule 4623 regulates VOC emissions from tanks that store organic liquids if the tank capacity is 1,100 or greater and the true vapor pressure (TVP) of the stored liquid is 0.5 psia or greater.
- Current VOC controls require pressure-vacuum relief valves, internal floating roof tanks, external floating roof tanks, fixed roof tanks with vapor recovery system of at least 95% control efficiency, or pressure vessels. Specific control requirements vary depending on the tank capacity and TVP of the stored liquid.
- Different tank control requirements are specified for tanks operated by small producers or by non-small producers.
- Leak detection and repair (LDAR) provisions include periodic inspection and repair of leaking components within a specified time frame. The component leak standard is 10,000 ppmv.

Storage of Organic Liquids
(Continued)

Future Control Options:

- Control of VOC emissions from tanks could be achieved by operating a VOC capture and control system on fixed roof tanks with a control efficiency of 99%. This option may require retrofit of existing tanks.
- External floating roof tanks and internal floating roof tanks could be retrofitted with state-of-the-art dual-seal (primary seal and secondary seal) and by minimizing the gaps between the seal system and the tank wall. This option would require replacement of existing seal systems. A reduction of at least 20% may be achieved by replacing with BACT type seals.
- Pressure vessels designed to handle high pressure vapors that prevents venting to the atmosphere could be used for high TVP organic liquids. Control efficiency of pressure vessels is about 99%.

Discussion:

- These operations are located at stationary sources for which the District has legal authority to regulate air emissions.
- Current Rule 4623 is the most stringent rule in the state and the nation.
- Best control option is to replace all floating roof tanks with fixed roof tanks that have a VOC control system with at least 99% control efficiency.
- Upgrading seal systems of floating roof tanks to BACT type seals cost less than replacing such tanks with controlled fixed roof tanks. Upgrading to BACT type seals could achieve about 20% emissions reduction from current controlled emissions from existing floating roof tanks.
- Lowering the current TVP threshold from 0.5 psia to 0.1 psia could reduce current emissions by as much 80% from current controlled emission level.
- Changing the tank size applicability from 1,100 gallons to 251 gallons to realign the rule to current permitting threshold for tanks pursuant Rule 2020 could also achieve some emission reduction. Emissions reduction could be calculated after conducting a survey as stated above.
- Lowering the current component leak threshold of 10,000 ppmv similar to the standards of Rule 4409 and Rule 4455 could achieve about 90% reduction in fugitive VOC emissions from leaking components. Actual number of tank components would need to be determined to evaluate reductions from lowering the leak threshold.

Recommendation:

- This is not recommended as a control measure since no appreciable additional reductions are available from this source category, which is very well controlled.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Heavy Oil Test Stations and Gauge Tanks (S-PET-18)

(Oil & Gas Production)

Source Category:
This source category pertains to heavy oil test station (HOTS) and gauge tanks that are used in crude oil production facilities.

Emissions Inventory:
With current controls and regulations: does not reflect reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.26	0.25	0.24	0.24	0.22	0.22	0.21	0.23

- ARB emissions inventory only includes emissions from HOTS. Emissions from uncontrolled gauge tanks subject to Rule 4401 are not accounted in the current inventory.
- EIC Affected: 310-350-1600

Current Control:
- District Rule 4404 regulates VOC emissions from HOTS used in heavy crude oil production facilities by prohibiting operation of HOTS unless the emissions are controlled to at least 99% by weight.
- Rule 4404 also requires tank roof openings be equipped with a cover, seal, or lid that must be closed at all times, with no visible gaps, maintained in gas-tight condition except when the device or appurtenance is in use. Pressure-vacuum valves on the tanks must be set within 10% of the maximum allowable operating pressure of the tank.
- District Rule 4401 regulates VOC emissions from steam enhanced crude oil production well vents (casing gas) by requiring 99% reduction of uncontrolled emissions.

Future Control Options:
- For Rule 4404, there is no future control option for HOTS because they are already controlled to 99%. District staff does not believe that facilities could control HOTS VOC emissions by more than 99%.
- For Rule 4401, staff would need to determine the total number of uncontrolled gauge tanks operating within the District and then evaluate their emissions. Emissions from uncontrolled gauge tanks could be reduced to at least 99% by retrofitting the tanks with a VOC collection and control system. The cost effectiveness of such a retrofit has to be evaluated, and it may be a factor in pursuing alternative compliance methods for this source.

Discussion:
- These sources are located at facilities for which the District has legal authority to regulate air emissions.

Heavy Oil Test Stations and Gauge Tanks
(Continued)

- Rule 4404 regulates VOC emissions from HOTS. The rule defines HOTS as a family tank and a test tank. A family tank is a tank that receives crude oil produced from more than one steam drive well. A test tank is a tank that measures the production rate from a steam drive well. Based on the District's permit database and Compliance Division's recent oil field evaluation, there is only one facility within the District that is currently operating permitted HOTS and the emissions are already controlled to 99% pursuant to Rule 4404.
- For Rule 4401 is currently undergoing rule development process as a control measure commitment in the 1-hour Ozone Plan. Gauge tanks are used to measure the production rate of steam drive wells and cyclic wells. Under the current draft rule proposal, emissions from existing gauge tanks would not require control provided the capacity is 100 barrels or less and the true vapor pressure of crude oil in the tank is less than 0.5 psia. These small tanks are exempt from permits pursuant to Rule 2020 because the capacity and TVP are below the applicability thresholds of Rule 4623.
- Preliminary data indicate approximately 196 permit exempt gauge tanks in Kern River oil field. One stakeholder reported that the estimated the VOC emissions from their 196 uncontrolled gauge tanks is about at 0.007 tons per day, and the cost effectiveness of controlling the tanks is about $1.1 million per ton of VOC reduced.
- A survey to determine the total number of uncontrolled gauge tanks in the District is needed to establish a more accurate emissions inventory, and then evaluate cost effective methods of controlling the emissions for this source category.
- No other California air districts have rules that regulate HOTS. SCAQMD and Monterey Bay AQMD have rules regulating steam enhanced crude oil production well vents and their requirements are comparable to existing Rule 4401.

Recommendation:

- Since Rule 4404 implements the most stringent control requirements of 99% control efficiency no further emissions reduction is technologically achievable.
- Staff recommends Rule 4401 as a control measure for further study to determine the total number of gauge tanks and then establish the emissions inventory for this source category.
- Investigate an alternative compliance method or incentive programs to more cost effectively reduce emissions from the retrofitting of small gauge tanks.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Components at Refineries, Gas Processing Facilities, and Chemical Plants (S-PET-21)

(Petroleum Refining, Chemical)

Source Category:
This source category pertains to components carrying VOC-containing fluids that are used in petroleum refineries, chemical plants, and natural gas liquids processing facilities. Components are devices such as flanges, connectors, valves, pumps, compressors, well head polished stuffing boxes, pressure relief devices (PRDs), etc.

Emissions Inventory:
With current controls and regulations: does not reflect reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.120	0.120	0.120	0.120	0.120	0.120	0.120	0.190
VOC* adj	0.233	0.026	0.026	0.026	0.026	0.026	0.026	0.026

* Emissions inventory does not reflect reductions resulting from recently adopted Rule 4455. The adjusted inventory accounts for the 89% reduction from previously controlled emissions level resulting from Rule 4455 implementation effective April 2006.

- EICs Affected: 320-302-0010; 320-304-0010; 320-306-0010; 320-316-0010

Current Control:
- Previous Rule 4451 and Rule 4452 regulate VOC emissions from components used in petroleum refineries, chemical plants, and natural gas liquids processing facilities. These rules have been superseded by more stringent leak detection and repair (LDAR) requirements of recently adopted Rule 4455 effective April 2006.
- Leak thresholds: Major gas leak: >10,000 ppmv
  Minor gas leak: 100 – 10,000 ppmv (depending on component type and whether components are in liquid service or gas service). Major liquid leak: visible mist or continuous flow. Minor liquid leak: not a major liquid leak and >3 drops/minute.
- Major provisions include:
  - Daily audio-visual inspections of accessible operating pumps, compressors, and PRDs.
  - Physical identification (affixing tag or label) of major components and critical components to facilitate inspection and repair of leaks.
  - Quarterly inspection of components using a portable hydrocarbon analyzer to detect leaks, except for inaccessible components and pipes which must be inspected annually. Critical components and unsafe-to-monitor must be inspected during each process equipment turnaround period.
  - Minimizing leaks to the maximum extent possible within 1 hr of leak detection, and then repairing them within 2 to 7 days, depending on the leak concentration level (i.e., larger leaks must be repaired within a shorter period than allowed for smaller leaks).
  - Re-inspection of components within 15 days after being repaired or replaced.

Components at Refineries, Gas Processing Facilities,
and Chemical Plants
(Continued)

- Frequently leaking components must be replaced with BACT type equipment, vent the components to a closed vent system, remove components from operation.
- Limit on allowable number of leaking components, and includes provisions on conditions that constitute a violation of rule.
- Monitoring of PRDs using electronic process control instrumentation or telltale indicators. Conducting failure analysis or connecting the PRDs to a closed vent system, depending on the quantity of gas that releases into the atmosphere and frequency of the release.
- Initial inspection within 24 hours and re-inspection within 15 days after the date of each PRD that releases into the atmosphere.
- Maintaining records of inspection results and leak repair action taken.
- Submission of a comprehensive and detailed Operator Management Plan, including information on the number of components and location, inspection schedule, leak detection training, etc.

Future Control Options:

- No future control option is available for this source category. Rule 4455 implements the most stringent requirements that are technologically feasible.

Discussion:

- These sources are located at stationary sources for which the District has legal authority to regulate air emissions.
- Rule 4455 implements BARCT and All Feasible Control Measure and establishes the most effective LDAR standards to date.
- The rule is effective in 2006 and is expected to achieve 89% (0.37 tons/day) reduction from calculated emissions of 0.42 ton per day of VOC from this source category.

Recommendation:

- Not recommend as a control measure because no additional reductions are available from this source category. Rule 4455 implements the most stringent requirements that are technologically feasible.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Refinery Process Unit Turnaround (S-PET-22)

(Petroleum Refining)

Source Category:
The units subject to this source category are process units located at petroleum refineries, more specifically, during the time that the process units undergo "turnaround," a petroleum industry term meaning a scheduled shutdown of the process for maintenance and repair. There are four refineries within the District whose processes are subject to this rule.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ

- The current emission inventory does not have a specific emission source category for process unit turnaround. Further research and an industry survey would be needed to quantify the VOC emissions in this source category. In 2005, the total VOC emissions from all non-combustion sources at refineries were estimated at about 0.5 tons per day, summer season.

- EICs Affected: No assigned EIC is associated with this source category in the ARB emissions inventory.

Current Control:
District Rule 4454 limits VOC emissions from the venting of refinery process vessels during turnaround by specifying that the vented emissions be controlled until the pressure in the process vessel is 5 pounds per square inch, gauge (psig), or less.

Future Control Options:
- Restrict emission to the atmosphere to those units with headspace VOC concentration less than 10,000 parts per million by volume (ppmv) to match other air districts.

Discussion:
- Refinery process units are located at stationary sources for which the District has legal authority to regulate air emissions.

- By restricting the VOC concentration for that portion of process unit venting that is uncontrolled the uncontrolled venting of process units, the total amount of VOC released to the atmosphere would be less than under the current rule provisions.

- Further work is needed to determine how many units undergo process turnaround each year, and the approximate VOC concentration of the headspace just before the process unit is vented in an uncontrolled manner.

Refinery Process Unit Turnaround
(Continued)

Recommendation:

- District staff recommends that further study be done on this source category for the following reasons;
  - Total fugitive emissions from process unit turnaround only are not known because there is no specific emission category
  - The number of process unit turnarounds carried out each year is not known.
  - The VOC concentration in the headspace just before the process unit is allowed to vent uncontrolled is not known.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Refinery Vacuum-Producing Devices or Systems (S-PET-23)

(Petroleum Refining)

Source Category:
District Rule 4453 rule applies to any vacuum-producing device or system, including hot wells and accumulators installed in a refinery operation. There are four refineries in the District.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from the proposed control

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

- The emission inventory does not have a category for this type of equipment. Further study is needed to determine the emission inventory for this source category.

- o EICs Affected: No assigned EIC is associated with this source category in the ARB emissions inventory.

Current Control:
District Rule 4453 applies operational requirements for refinery hot wells and accumulators as well as VOC control requirements for all other types of refinery vacuum-producing devices and systems.

Control Options:
- None

Discussion:
- Refineries are stationary sources for which the District has legal authority to regulate air emissions.

- No other air district has a more stringent limit or operational requirements than District Rule 4453; therefore no emission reductions are expected.

Recommendation:
- No additional reductions are available from this source category.
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Refinery Wastewater Separators (S-PET-24)

(Petroleum Refining)

Source Category:
The source categories include all wastewater separators that remove petroleum or petroleum derived compounds from wastewater.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.19

- EIC Affected: 320-340-0010

Current Control: District Rule 4625 requires vessels used to recover oil to be covered or have a vapor recovery system. Separators with a surface area to volume loss ratio of greater than 420 are exempt.

Control Options:
- Require a 95% control efficiency for all vapor recovery systems. This will reduce VOC emissions by 5%.
- Establish leak thresholds and leak repair frequency requirements for treatment systems. Further study is needed to quantify VOC reductions.
- Other controls identified during rule development.

Discussion:
- The units in this source category are located at stationary sources for which the District has legal authority to regulate air emissions.
- Available VOC emission control systems achieve 95% control efficiency.
- Several components that carry and store streams of wastewater can develop leaks. Leak thresholds and repair frequency requirements can reduce VOC emissions. A survey is needed to determine the frequency, duration, and size of leaks in order to quantify the reductions from this control.

Recommendation:
- Based on the current emissions inventory or lack thereof, control level, and existing technology, emission reductions are not quantifiable for this source category. However a future study to re-evaluate this source category is planned.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Architectural Coatings (S-SOL-1)

(Architectural Coatings and Related Process Solvents)

Emissions Inventory:

With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	9.1	9.4	9.6	9.7	10.2	10.5	10.9	11.2

- EICs Affected: 520-520-91XX-0000; 520-520-92XX-0000

Current Control: District Rule 4601 specifies VOC coating limits from the state's 2000 Suggested Control Measure (SCM).

Future Control Options:

- Lower VOC limits, where feasible, to match those of other air districts, such as the limits proposed by the SCAQMD in their Draft Ozone Attainment Plan.
- Voluntary or incentivized non-use of high-VOC coatings during high-ozone days, as part of the Expanded Spare-the-air Day Program.

Discussion:

- Rule 4601 is currently at the same level of stringency as other air district rules that used the state's 2000 SCM as a template.
- Since the 2002 amendment of Rule 4601 and other district architectural coatings rules that reflect the 2000 SCM, SCAQMD has introduced new coating limits that are more stringent. As a result, coatings that meet these new limits have been introduced in the South Coast area beginning in 2005. The new limits are phased-in and by July 1, 2008, all new limits will be applicable.
- Stakeholders are encouraged to comment on technical feasibility, potential future technological advances, and costs and economic impacts.
- Sell-through provisions for products would assist sellers in complying with new VOC limits.

Recommendation:

- Amend Rule 4601 to lower VOC limits, matching South Coast limits where feasible.
- Explore the inclusion of provisions for sell-through of products.
- Include this source category in the Expanded Spare-the-air Day Program for voluntary or incentivized non-use during the ozone season.

Projected Reductions:

With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.00	0.00	2.0	2.1	2.1	2.2	2.3

The reductions accruing from lowering the VOC limits of the thinning/cleaning solvents category is being determined. The thinning VOC reductions will be added to the architectural coatings reductions above. The cleaning VOC reductions will be part of the current rule making reductions for the cleaning and degreasing operations rule.

Motor Vehicle and Mobile Equipment Coating Operations (S-SOL-2)

(Coatings and Related Process Solvents)

Source Category:

This source category includes operations that apply, supply, sell, offers for sale, or solicits the application of VOC-containing coatings used in the finishing or refinishing of Vehicles and Equipment, and their parts and components. This also includes the organic solvent cleaning, and the storage and disposal of all solvents and waste solvent materials associated with such coating operations.

Emissions Inventory:

With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	2.048	2.098	2.134	2.146	2.169	2.199	2.228	2.256
VOC adj.	2.05	2.10	1.54	1.55	1.57	3.04	1.61	1.63

- District Rules 4602 and 4612 have been recently been amended. The estimated emission reductions have been incorporated in the VOC adj. emission inventory.

Current Control: District Rules 4602/4612 limits the VOC content limit of coatings used to coat motor vehicles and mobile equipment. In lieu of complying with VOC content limits, operators may operate an APCO-approved VOC emission control system. District Rule 4612 replaces District Rule 4602 on January 1, 2009. District Rule 4612 incorporates all of the elements of the California Air Resources Board's (ARB's) Suggested Control Measures (SCM) for this source category.

Future Control Options:

- Solvent cleaning provisions are being added to District Rule 4612 as part of the "Solvent Cleaning" control measure; please see the S-SOL-7 & 8 control measure for solvent cleaning and degreasing for the elements of that control strategy. These new provisions will incorporate more stringent VOC content limits for cleaning solvents adopted in other air districts.

Discussion:

- All of the coating operations and associated solvent-cleaning operations are located at stationary sources for which the District has legal authority to regulate air emissions.
- The recently completed rule project encompasses the most stringent coating VOC content limits for this source category.
- Solvent cleaning provisions added to Rule 4612 are expected to be the most stringent available for the source category.

Recommendation:

- No additional reductions are available from this source category.

- Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Surface Coating of Metal Parts and Products (S-SOL-3)

(Coatings and Related Process Solvents)

Source Category:
This source category covers permitted stationary sources that coat metal furniture and fixtures, metal parts and products. The coatings may be oil-based or water-based.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.57	0.60	0.66	0.68	0.76	0.81	0.86	0.88

- EICs Affected: 230-226-9000; 230-226-9100; 230-226-9200; 230-230-9020; 230-230-9050; 230-230-9052; 230-230-9054; 230-230-9100; 230-230-9200

Current Control: District Rule 4603 requires the use of compliant VOC coating and solvent limits.

Future Control Options:
- Lower coating limits to match recently amended rule in another air district
- Cleaning solvents VOC is being lowered, as part of general solvent cleaning rule project, currently in progress.

Discussion:
- Air-dried coatings have a VOC content limit of 275 grams per liter compared to the current content limit of 340 grams per liter. This represents a 19% reduction for this coating.
- Consider removing the exemption for touchup coatings or revising the exemption for touch-up coatings to allow only for facilities using small quantities.
- If the air-dried coatings represent 20% of the total baseline emissions, then estimated emissions reductions would be about 3.8%.
- Consider an added or limited exemption for users of specialty coatings that require high VOC limits for special applications.

Recommendation:
- This source category is not recommended as a control measure. No appreciable additional reductions are available from this source category.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Wood Products Coating Operations (S-SOL-4)

(Coatings and Related Process Solvents)

Source Category:
This source category includes all material applied onto or impregnated into wood for protective, decorative, or functional purposes, such as paints, varnishes, sealers, and stains.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	1.2	1.3	1.4	1.4	1.6	1.7	1.8	1.9

- EICs Affected: 230-232-9XXX

Current Control: District Rule 4606 sets VOC content limits for coatings. In lieu of adhering to the VOC limits, owners/operators may use VOC control devices with a control efficiency of at least 85%, by mass. District Rule 4606 exempts aerosol coatings; coating used in quantities of less than 20 gallons per year; coatings used for specific limited uses; and coatings used for specific limited finishes.

Control Options:
- Reduce certain VOC limits by 30% to 50% to match limits in other air district rules. Operators using these materials would be required to either switch to a compliant coating or install and maintain a VOC emission control system. Ten percent of the emissions will be affected by this change thus; overall VOC reductions are approximately 3%.
- Increase the control efficiency of VOC control devices by 10%, which would require retrofit or replacement of existing equipment. Few facilities operate systems that would not comply with the proposed control efficiency, thus reductions are negligible.

Discussion:
- Coating use is located at stationary sources for which the District has legal authority to regulate air emissions.
- If the limits for VOC content were reduced, operators would have the option to either install and maintain a VOC emission control system or switch to compliant material. In light of the capital costs associated with a VOC emission control system, it is mostly likely that operators would choose to use compliant material.
- During the rule development process, District staff will consider the following options:
    - Allow the exemption threshold of less than 20 gallons per year of coating to remain as it is, or

- Reduce the exemption threshold of 20 gallons of coatings per year to 1 gallon of coatings per year and some of the exemptions for furniture operations could be removed. This would reduce emissions by approximately 5%.

Recommendation:

- This source category is not recommended as a control measure. No appreciable additional reductions are available from this source category considering the lack of active facilities operating within the District.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Glass Coating Operations (S-SOL-5)

(Coatings and Related Process Solvents)

Source Category:
District Rule 4610 applies to any major source that coats glass products with VOC-containing materials.

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

- EIC Affected: 230-226-9100

Current Control: Operators have VOC content limits for coatings with an option to use a VOC emission control system, if they use non-compliant coatings. Mirror backing coating has the additional requirement that the VOC emissions from this operation be reduced by an additional 90%. The following operations are exempt from the VOC content limits: touch-up and repair; stencil coatings on clear or transparent substrates; coatings applied at a paint manufacturing facility while conducting performance tests on the coatings; and aerosol coating products.

There is one known facility that was subject to this rule; however, the facility has subsequently reduced its total permitted emissions so that the facility is no longer subject to this rule but the source continues to meet the rule limits through permit requirements which still apply.

Future Control Options:
- Change the rule applicability to apply to all glass-coating operations at stationary sources. No additional industrial sources for this type of coating operation currently exist within the District.

Discussion:
- Glass coating operations are located at stationary sources for which the District has legal authority to regulate air emissions.

- No other California air district regulates this source category. The VOC coating content limits established in the rule, for some coating categories, require both the use of a compliant coating and 90% VOC emission reduction which is a more stringent control approach than any other coating limit in the state.

Glass Coating Operations
(Continued)

- The only known facility in this source category is already meeting the stringent limits set by the rule as conditions in their Permit to Operate. There are no other industrial sources for this type of coating operation in the District therefore; no additional VOC emission reductions are expected from this source category.

Recommendation:

- This source category is not recommended as a control measure. No additional reductions are available from this source category.

Projected Reductions:

With recommended controls

Emission Reductions - Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Adhesives (S-SOL-6)

(Adhesives & Sealants)

Source Category:
This source category includes the manufacture, sale, and use of adhesives and the solvents associated with the use of adhesives.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	3.2	3.3	3.5	3.6	3.9	4.1	4.3	4.9

- EICs Affected: 250-292-8200; 250-292-8202; 250-292-8250

Current Control:
- District Rule 4653 sets VOC content limits for adhesives. In lieu of adhering to the VOC limits, owners/operators may use VOC control devices with a control efficiency of at least 85%, by mass. Adhesives used in laboratories, sold for specific limited uses, sold in quantities no more than 8 ounces, or used in quantities of no more than 20 gallons per year are exempt. VOC emissions are over 80% controlled, compared to uncontrolled emissions.

Future Control Options:
- Reduce certain VOC limits by 30% to 50% to match limits in other air district limits. Operators using these materials would be required to either switch to a compliant coating or install and maintain a VOC emission control system. Ten percent of the emissions will be affected by this change, thus overall VOC reductions are approximately 3%.
- Increase the control efficiency of VOC control devices by 10%, which would require retrofit or replacement of existing equipment. Few facilities operate systems that would not comply with the proposed control efficiency, thus reductions are negligible.
- Require use of high volume low pressure (HVLP) spray equipment for specific applications. A survey is needed to determine which applications could cost-effectively install HVLP spray equipment, and thus the reductions achievable.
- The solvent limits in Rule 4653 are being amended in a current rule development project and addressed in the Solvent Clean control measures.

Discussion:
- Adhesive manufacture, sales, and use are located at stationary sources for which the District has legal authority to regulate air emissions.
- If the limits for VOC content were reduced, operators would have the option to either install and maintain a VOC emission control system or switch to compliant material. In light of the capital costs associated with a VOC emission control system, it is mostly likely that operators would choose to use compliant material.

Adhesives
(Continued)

- HVLP spray equipment reduces the amount of adhesives used, time needed to apply adhesives, and possibly 25% of the VOC emissions from the source if this technology can be used for these types of coatings. Adhesives are more viscous than traditional coatings. Facilities with high adhesive or labor costs can cost-effectively install and maintain HVLP equipment. Other facilities may not be able to cost-effectively install HVLP without significant incentivization.
- District staff estimates that this rule project will take 16 months to go from scoping meeting to public hearing

Recommendation:

- Pursue as a control measure lowering the VOC content of adhesives. The VOC emission reductions would be approximately 3% of the baseline emissions. A 12-month compliance schedule is recommended to allow operators sufficient time to find alternative compliant materials for their operations.
- Explore inclusion of HVLP spray equipment requirements during rule development, taking into consideration the socioeconomic cost impacts of such requirements.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.11	0.12	0.12	0.13	0.15

*The reductions listed above only include reductions achieved by lowering the limits for VOC content in the adhesives.

Aerospace Assembly And Component Coating Operations (S-SOL-7)

(Coatings and Related Process Solvents)

Source Category:
District Rule 4605 applies to the manufacturing, assembling, and coating of aerospace components, the cleanup of equipment, and the storage and disposal of solvents and waste solvent materials associated with these operations.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

- EICs Affected: 230-238-9100, 230-238-9200

Current Control:
District Rule 4605 sets VOC content limits for coatings, adhesives, and other related VOC-containing materials for coating operations related to aerospace assemblies and components. The flushing of jet or rocket engines using any solvent other than trichloroethylene is exempt. Aerospace assembly and component coating operations using less than four gallons per day of VOC-containing products are exempt as are other coatings or adhesives. Materials used in laboratories associated with research and development, quality control, or production testing are exempt from VOC content limits. There is also a limited exemption from application equipment standards. VOC emissions are 50% controlled compared to uncontrolled emissions.

Future Control Options:
- Reduce VOC content limit for two coatings and one chemical maskant to match other air districts limits. Operators using these materials would be required to either switch to a compliant coating or install and maintain a VOC emission control system.

Discussion:
- Aerospace coating operations are located at stationary sources for which the District has legal authority to regulate air emissions.

- If the limit for VOC content were reduced for some coatings/maskants, operators would have the option to either install and maintain a VOC emission control system, or switch to compliant materials. In light of the capital costs associated with a VOC emission control system, District staff believes that operators would chose to use compliant materials.

(Continued)

- The quantity of the identified coatings and chemical maskant used within the District is not known at this time. It is expected that the amount of emission reductions will be small since the baseline VOC emission inventory is small and the number of materials to be adjusted is small compared to the number of coatings/adhesives/sealants associated with the entire source category and rule.

- District staff estimates that this rule project will take about 16 months to go from scoping meeting to public hearing.

Recommendation:

- This source category is not recommended as a control measure. No additional reductions are available from this source category.

Projected Emission Reduction:

With recommended controls

Emission Reductions Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Solvent Cleaning Operations (S-SOL-11)

(Coatings and Related Process Solvents; Wood and Paper; Other [Cleaning and Surface Coating]; Chemical; Degreasing)

Source Category:
This source category includes the organic solvent degreasing operations and any other organic solvent cleaning operation performed outside of a degreaser. The operations subject to source category are diverse, encompassing a broad range of industries.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	7.1	7.5	8.0	8.1	8.5	8.9	9.3	9.9

- EICs Affected: 220-204-0500, 220-204-3008, 220-204-3022, 220-204-3083, 220-204-3176, 220-204-3204, 220-204-3246, 220-204-3333, 220-204-3339, 220-204-3344, 220-204-8104, 220-204-8106, 220-206-3083, 220-206-3107, 220-206-3246, 220-206-3300, 220-206-3301, 220-206-3328, 220-206-3344, 220-206-3346, 220-206-8106, 220-208-0500, 220-208-3022, 220-208-3083, 220-208-3176, 220-208-3204, 220-208-3246, 220-208-3333, 220-208-3339, 220-208-3344, 220-208-3346, 220-208-8104, 220-208-8106, 230-216-8350, 230-240-0500, 230-240-3008, 230-240-3060, 230-240-3202, 230-240-3232, 230-240-3252, 230-240-3372, 230-240-8300, 230-240-8302, 230-240-8350

Current Control: District Rule 4662 controls VOC emissions from organic solvent degreasing operations by specifying solvent VOC limits, allowable application equipment, and emission control options. District Rule 4663 controls VOC emissions from organic solvents used to clean parts and equipment outside of the degreasers covered by District Rule 4662. The other District rules address solvents used to prepare surfaces and clean equipment used in the applicable operation addressed by the rules.

Future Control Options:
- Reduce the allowable VOC content of cleaning solvents to match other air districts.

Discussion:
- All of the solvent-cleaning operations are located at stationary sources for which the District has legal authority to regulate air emissions.
- Amending these rules was identified as a state-required "All Feasible Measure". This control measure is intended to reduce VOC emissions from organic solvents used in parts and equipment cleaning by incorporating more stringent VOC content limits.

Solvent Cleaning Operations
(Continued)

- District staff will consider the following stakeholder suggestions during the rule development project:
  - SCAQMD's current VOC limits for cleaning solvents and Yolo-Solano's proposed control measure to set all solvents used in graphic arts cleaning at 72 grams per liter.
  - Solvent vapor pressure in lieu of VOC content will be considered as an option for the end user.
  - Exempting cleaning operations associated with the manufacture of paint, coatings, resins, and adhesives and exempting the stripping of cured coatings, cured ink, or cured adhesives. As noted by commentors to the plan, the manufacture and use of paint, resins, and adhesives require strong solvents to effectively clean production/process equipment. Coatings, ink, and adhesive manufacturing and application industries need to be able to use recycled or reclaimed solvents in cleaning operations, otherwise the industries will be faced with increased hazardous waste disposal and purchasing of cleaning materials.
  - Cost effectiveness and availability of lower VOC cleaning materials.
- Amendments to these rules are scheduled for the third quarter of 2007 with full implementation scheduled for the fourth quarter in 2008.

Recommendation:
The second workshop for this rule project is tentatively scheduled for late January 2007. Tentative public hearing is anticipated for the third quarter of 2007.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.00	1.3	1.32	1.39	1.46	1.53	1.62

Graphic Arts (S-SOL-20)

(Coatings and Related Process Solvents; Printing)

Source Category:
This source category includes any graphic arts printing operation, to any paper or fabric coating operation, to the organic solvent cleaning, and to the storage and disposal of solvents and waste solvent materials associated with such operations.

Emissions Inventory:
With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	1.7	1.7	1.9	1.9	2.1	2.2	2.3	2.3

- EICs Affected: 240-240-3314, 240-240-8302, 240-995-8000, 240-260-8400, 240-262-8400, 240-264-8400, 240-266-8350, 240-266-8400.

Current Control:
District Rule 4607 sets VOC content limits for inks, coatings, and other related VOC-containing materials for printing and coating operations related to graphic arts. VOC content limits are as stringent as any other air district in California, with the exception of flexography printing on porous substrates. Except for the keeping of records, the current rule does not apply to graphic arts printing operations that emit less than 400 pounds of VOC per calendar month. The provisions VOC content limits for paper and fabric coating do not apply to the application of coatings via aerosol containers. Certain operations are also exempt from the rule.

In 2005, the rule applied to approximately 58% of all graphic arts operations, with actual VOC emissions ranging from 35% to 51% of the uncontrolled emissions.

Future Control Options:
- Increase overall capture and control efficiency of VOC emission control system from the current range of 67%-75% to 75%-85% for certain types of coating operations. This would match similar provisions in other air districts.
- Reduce VOC content limits for flexography printing on porous substrate by 25% to match limits in other air districts.
- Amend the exemption section so that the exemption applies to all operations that emit less than 60 lbs of VOC per month.

Discussion:
- Graphic arts operations are located at stationary sources for which the District has legal authority to regulate air emissions. The most straightforward option for VOC emission reductions would be to increase the overall capture and control efficiency of VOC emission control systems to reduce VOC emissions from this source category. For operations that already have VOC emission control systems, the change in overall control efficiency would most likely require redesign of the capture devices to increase capture (collection) efficiency, since VOC control devices are typically VOC

destruction devices with VOC control efficiencies greater than 95%. However, few facilities use VOC emission control devices to meet the current VOC content limits of the rule, so total VOC emission reductions from this control option are assumed to be less than 1% of the total VOC emission inventory.

- For most flexography printing, a change in VOC content limit would mean choosing a different coating/ink rather than installing a VOC emission control system, since VOC emission control systems can cost hundreds of thousands of dollars to install. At this time, it is assumed that 1) the VOC emission inventory reflects all graphic arts operations, of which flexography is but one type, and 2) all of the flexography printing in the District is done on porous substrate, namely paper. Taken together, the assumptions would point to realizing at least some VOC emission reductions from tightening the VOC content limits for this specific process. Exact usage of flexography inks and coatings is not known at this time, therefore, District staff believes that VOC emission reductions would be 25% reduction in the VOC content limit, based on an assumption that flexography inks are 15% of the inventory and that all flexography printing occurs on paper (porous substrate).
- It is not known how many graphic arts printing operations take advantage of the 400 pounds VOC per month exemption in the current rule. Further VOC emission reductions might occur if the exemption is modified to include smaller facilities. Further study as part of a rule development project is needed to determine if it is feasible to pursue tightening the small facility exemption, especially the cost of compliant inks versus non-compliant inks as it impacts small businesses.
- It is expected that this rule project will take about 16 months to go from scoping meeting to public hearing.

Recommendation:
It is recommended that the future control options outlined above be pursued as a control measure. The total VOC emission reduction associated with increasing the overall capture and control efficiency of VOC emission control systems and decreasing the VOC content limit for certain operations is expected to be 4% of the baseline emissions. At this time, there is no estimate available for the number of graphic arts printing operations that would be added to the rule if the exemption level is changed. A 12-month compliance schedule is recommended, since District staff believes that most operators would choose compliant inks rather than installing VOC emission control systems.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	0.0	0.0	0.07	0.07	0.08	0.08	0.08

Consumer Products (S-SOL-21)

(Consumer Products)

Source Category:

This source category includes chemically formulated products used by household and institutional consumers such as detergents, cleaning compounds, polishes, floor finishes, cosmetics, personal care products such as antiperspirants & hairsprays, lawn & garden products, disinfectants, sanitizers, automotive specialty products & aerosol paints. Other paint products such as furniture/architectural coatings are regulated under separate District rules.

Emissions Inventory:

With current controls and regulations; does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	23.48	24.00	25.14	25.63	26.63	28.12	29.61	31.19

- EICs Affected: Series 510-500-XXXX-XXXX, and Series 510-506-XXXX-XXXX.

Current Control:

- Under the Clean Air Act, the Air Resources Board (ARB) has authority to achieve maximum technologically and commercially feasible reactive organic gas (ROG) emission reductions from consumer products. (Health and Safety Code 41712)

- ARB has adopted regulations, which contain nearly 200 emission limits affecting over 100 categories of consumer products.

- The following regulations fulfill the requirements of the California Clean Air Act:
  - Antiperspirants & Deodorants Regulation: Sets emission standards & requirements for only antiperspirants and deodorants.
  - Consumer Products Regulation: Sets VOC limits & regulations for 112 categories of household and institutional products such as detergents, cleaning compounds, polishes, floor finishes, cosmetics, personal care products, home, lawn and garden products, disinfectants, sanitizers, and automotive specialty products.
  - Aerosol Coatings Regulation: Establishes set emission standards & requirements for 36 categories of pressurized coating products including but not limited to spray paints.
  - Alternative Control Plan: Provides an alternative method to comply with VOC standards for consumer products and aerosol coating products.
  - Hairspray Credit Program Regulation: A voluntary program that provides incentives & rewards for early & over compliance with second-tier 55%VOC standard for hairsprays.

Future Control Options:

- The 2006 proposed Amendments to Consumer Products Regulation & Aerosol Coatings Regulation sets 18 new VOC limits affecting 15 categories achieving 10.6 tpd VOC emission reductions statewide by 2008 & 11.5 tpd by 2010. These amendments meet 2003 SIP Ozone commitments for Consumer Products & also fulfill certain requirements

of a settlement agreement on ARB's progress under the SIP and were approved November 17, 2006 by the ARB Board. Products whose VOC limits have been made more stringent include automotive windshield wiper fluids, bathroom and tile cleaners, engine cleaners, floor polishers and waxes, general-purpose cleaners and degreasers and oven cleaners. Additional amendments are tentatively planned for consideration in March 2007 to clarify the definition of multi-function product categories of 'Multi-purpose Solvent" and "Paint Thinner", and clarify overlapping requirements for certain other consumer products. Other amendments will prohibit use of chlorinated toxic compounds; adjust VOC limits for nail polish removers; and exempt certain electronic cleaners from a soon-to-be effective VOC limit.

- Extensive product reformulations toward low or zero-VOC products.

- Pursue even more stringent emission standards.

- Enhance rule consistency by eliminating discrepancy between some stationary source and consumer product regulations allowing higher VOC limits for products sold as commercial products for home use versus the same product sold for industrial or commercial application under stationary source rules.

Discussion:

- Consumer products constituted 11% of total anthropogenic ROG emissions statewide in 2005. Due to population growth, ARB projects these emissions will increase to 12% of the total by 2010, even with significant reductions from control measures considered. Current controls have reduced emissions by 40% in 2010.

- ARB does not have authority to eliminate any product form-aerosol, liquid, solid or gel.

- A significant portion of consumer product emissions are not easily available for reduction: 1) Many represent very small categories emitting less than 0.1 tpd which make setting cost-effective limits difficult; 2) Multi-purpose solvents are a large source category, replacement with water or exempt solvents has not proved to be a viable option; and 3) The remaining portion comprise categories such as rubbing alcohol which are difficult to regulate due to health or efficacy concerns.

- The District has limited regulatory authority over consumer products, but can assist in reducing emissions by incorporating voluntary episodic control use of consumer products during Spare the Air days. Enhanced public education about the major contribution consumer products play on the environment could lead to more personal responsibility when choosing products.

Consumer Products
(Continued)

Recommendation:

- Support the ARB proposed March 2007 Amendments, which will clarify and strengthen the Consumer Products Regulation.
- Investigate feasibility of a labeling program to identify lower VOC products to enhance public awareness of available, more environmentally friendly products that are equally effective.
- Investigate feasibility of a usage limitation program for high VOC products.
- Increase public awareness of the emissions generated from the use of consumer products. Use the Spare the Air program to educate the public about available lower emitting, equally effective products. Encourage episodic control during Spare the Air days.
- Support state regulations promoting rule consistency between Consumer Products Rules and Stationary Source Rules (commercial/industrial) for identical products.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NA	NA	NA	NA	NA	NA	NA

Farm Equipment (M-IND-1)

(Farm Equipment)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	63.7	55.2	48.0	44.6	38.3	30.3	23.4	18.0
VOC	10.7	9.0	7.7	7.0	5.8	4.4	3.4	2.8

Current Control:

- The federal Clean Air Act prohibits states from regulating emissions from engines used in farming less than 175 horsepower-these "preempted" engines represent 80%of the compression-ignition engines operating in California
  Tier 1 standard for engines 50 to 750 hp is 6.90 g/bhp-hr.
  Tier 2 standards for engines 50 to 750 hp ranges from 4.5 to 5.2 g/bhp-hr, depending on model year and engine size.
  Tier 3 standards for engines 50 to 750 hp ranges from 2.8 to 3.3 g/bhp-hr, depending on model year and engine size.
- Carl Moyer Program-incentives to obtain early emission reductions

Future Control Options:

- The Tier 4 emission standard for NOx, will be phased in for engines 75 to 175 hp from 2012-2014, is 0.30 g/bhp-hr.
- The Tier 4 emission standard for NOx, will be phased in for engines 175 to 750 hp from 2011-2014, is 0.30 g/bhp-hr.
- Provide incentives for accelerated change-outs
- Implement registration and inspection program to detect excess emissions
- Work with EPA to establish nationwide lower-emission standards for new compression-ignition engines
- Episodic controls: restrict hours of operation during ozone season

Discussion:

- Support EPA and ARB efforts to strengthen standards
- Incentives can be used to accelerate change-outs to achieve earliest emission reductions possible
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Enhance the District's incentive programs for compression-ignition engines to increase modernization / engine retrofits and replacement rates.
- Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.

Farm Equipment
(Continued)

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Forklifts, Specialty Vehicles/Portable Generators, Pumps, Compressors, Farm Equipment, & Construction Equipment (M-IND-2)

(Off-Road Equipment)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Current Control:

- The federal Clean Air Act prohibits states from regulating emissions from engines used in farming less than 175 horsepower-these "preempted" engines represent 80%of the compression-ignition engines operating in California
- Emission standards for LSI model year 2007 and subsequent: 3.0g/bph-hr
- Carl Moyer Program-incentives to obtain early emission reductions

Future Control Options:

- Set lower emission standards for new gas engines (off-road spark-ignition engines 25 hp and greater
- District incentives for replacements
- Episodic controls to shift time of use
- Work with EPA to establish nationwide lower-emission standards for new compression-ignition engines
- Further incentivize electric forklifts
- Enhance and expand the Indirect Source Review program

Discussion:

- Support EPA and ARB efforts to strengthen standards
- Incentives can be used to accelerate change-outs to achieve earliest emission reductions possible
- Investigate episodic control to shift time of engine use on Spare the Air Days
- The Carl Moyer program has provided incentives to introduce 200 electric, near-zero emission forklifts
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Enhance the District's incentive programs for compression-ignition engines to increase modernization / engine retrofits and replacement rates.
- Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.

Forklifts, Specialty Vehicles/Portable Generators, Pumps, Compressors, Farm Equipment, & Construction Equipment (Continued)

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

- Reductions for this source category can be found in the ISR control measure

Land-Based Port Equipment **(M-IND-3)**

(Off-Road Equipment)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1
VOC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Current Control:

- EPA and ARB engine standards:
  Tier 1 standard for engines 50 to 750 hp is 6.90 g/bhp-hr.
  Tier 2 standards for engines 50 to 750 hp ranges from 4.5 to 5.2 g/bhp-hr, depending on model year and engine size.
  Tier 3 standards for engines 50 to 750 hp ranges from 2.8 to 3.3 g/bhp-hr, depending on model year and engine size.
- ARB regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards, Best Available Control Technology (BACT)

Future Control Options:

- ARB Emission Reduction Plan-November Infrastructure Bonds-Port improvements
- Carl Moyer Program
- New lease agreements at ports-market participation concepts
- Cleaner engines, add-on emission controls, faster replacement with newer models, alternative fuels, electrification
- Emission control regulations
- Incentive programs
- Operational controls
- Education programs

Discussion:

- ARB's new regulation will accelerate modernization
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Investigate funding opportunities to accelerate implementation of ARB regulation

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Large Diesel Engines **(M-IND-4)**

(Off-Road Equipment)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Current Control:

- ARB emission standards on new equipment
- Fleet changeout standards
- Heavy duty engine changeout incentive program

Future Control Options:

- Alternative diesel fuels
- Reduced idling from construction equipment
- Blue skies series engines
- NOx emission control retrofit technology
- Off-road engine fleet upgrade
- Enhance and expand the Indirect Source Review program

Discussion:

- Support EPA and ARB efforts to strengthen standards
- Additional incentives can be used to accelerate change-outs to achieve earliest emission reductions possible
- Investigate episodic control to shift time of engine use on Spare the Air Days
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Enhance the District's incentive programs for compression-ignition engines to increase modernization / engine retrofits and replacement rates.
- Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Off-Road Equipment **(M-IND-5)**

(Off-Road Equipment)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	58.60	48.24	40.45	37.58	32.10	24.94	20.10	16.80
VOC	17.44	14.54	12.24	11.58	10.39	9.10	8.44	8.03

Current Control:

- Tier 1 standard for engines 50 to 750 hp is 6.90 g/bhp-hr.
- Tier 2 standards for engines 50 to 750 hp ranges from 4.5 to 5.2 g/bhp-hr, depending on model year and engine size.
- Tier 3 standards for engines 50 to 750 hp ranges from 2.8 to 3.3 g/bhp-hr, depending on model year and engine size.

Future Control Options:

- Reductions from federally preempted equipment could be used by alternative compliance facilities
- Implement Registration and Inspection Program for Existing Heavy-Duty Off-Road Equipment to Detect Excess Emissions [Compression-Ignition Engines]
- Pursue nationwide lower emission standards for HC, NOx, and PM emissions for new off-road Compression Ignition engines
- The Tier 4 emission standard for NOx, will be phased in for engines 75 to 175 hp from 2012-2014, is 0.30 g/bhp-hr
- The Tier 4 emission standard for NOx, will be phased in for engines 175 to 750 hp from 2011-2014, is 0.30 g/bhp-hr.

Discussion:

- Support EPA and ARB efforts to strengthen standards
- Investigate episodic control to shift time of engine use on Spare the Air Days
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Explore wider use of incentives to encourage fleet modernization.
- Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

SI Utility Engines (M-IND-6)

(Off-Road Equipment)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Current Control:

- ARB regulations on new engines. 3.0 g/bhp-hr HC+NOx for engines with displacement of less than 1.0 liter produced after 2001. 9.0 g/bhp-hr HC+NOx for engines with displacement of greater than 1.0 liter produced after 2002.
- Durability certification required for engines produced in 2007 and for subsequent years.

Future Control Options:

- Set lower emission standards for new non-preempt gas engines
- Clean up off-road gas equipment fleet through retrofit controls

Discussion:

- Retrofit of existing equipment could achieve an 80 percent reduction in exhaust emissions or meet emission levels equivalent to 3.0 g/bhp-hr HC+NOx. The retrofit technology would include a three-way catalyst and a closed loop control of the fuel system on some engines.
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Currently this source category is not a candidate for incentive funding, but further analysis and study is necessary to determine if this source category may garner cost effective reductions in the future provided funding sources are available. Please see Chapter 7 for any additional information.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Off-Road Portable Engines (M-IND-7)

(Off-Road Equipment)

Source Category: This source category includes facilities that operate portable engines & equipment used in a variety of applications such as well drilling & servicing, power generation, pumping, gas compression, pile driving, cranes, ground support equipment, wood chipping, dredging, abrasive blasting, concrete batching, rock, sand, or gravel processing.

Emissions Inventory:

With current controls and regulations: does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	16.6	14.0	10.0	10.8	9.2	7.4	7.0	5.2
VOC	1.5	1.3	1.3	1.0	0.9	0.7	0.6	0.5

Based on the District's database, there are approximately 2,500 portable diesel engines registered under the ARB PERP operating within the District. In addition, there are approximately 450 portable engines registered with the District under Rule 2280. Forty five percent of the total portable diesel engines are rated between 175-750 bhp, and the remaining 55% are rated less than 175 bhp and greater than 750 bhp. A more thorough analysis of this source category's inventory is needed to determine their current operation, in terms of location and model distribution.

Current Control:

- Federal Preemption: New off-road engines less than 175 hp used in farm and construction operations follow federal standards, as follows:
  (1) US EPA emission standards for newly manufactured diesel-fueled portable engines are tiered (i.e. Tier 1, 2, 3, and 4), with each standard phased in over several years based on the power rating of the engine and becoming progressively more stringent with each tier.
  (2) Newly manufactured large (greater than 25 hp) spark-ignition (LSI) engines sold in California are subject to ARB's LSI standards, which the US EPA also adopted. In addition US EPA has a more stringent standard: beginning in 2007, new LSI engines must meet a combined standard for NOx & hydrocarbons (HC) of 2.0 grams per brake horsepower-hour (g/bhp-hr).
- ARB's Airborne Toxic Control Measure (ATCM) for Diesel-Fueled Portable Engines: Requires portable diesel-fueled engines not permitted or registered prior to 1/1/2006; meet the most stringent of the federal or California emission standards for nonroad engines. Specifically, after 1/1/2006, engines rated 175 to 750 bhp must meet Tier 3 standards & engines rated greater than 750 bhp must meet Tier 2 standards to be accepted in ARB's Portable Engines Registration Program (PERP).
- Portable Equipment Unit Standards: Registered ARB's PERP units are required to meet emission limits (82 lbs/day of PM10 & 10 tons/year per pollutant per district per year per equipment unit), in addition to emission control requirements.
  Local Air District Permit Programs: Related to their attainment status, districts either exempt portable engines altogether or require emission limits, which some districts specify to BACT level & equivalent to ARB/US EPA off-road emissions standards.
- District Rule 2280 requires diesel-fired engines to be retarded by at least 4 degrees or NOx emissions not to exceed 10 g/bhp-hr (7.2 g/bhp-hr for turbocharged engines).

Off-Road Portable Engines
(Continued)

- The rule also limits sulfur content of diesel fuel to no more than 0.05% by weight. For spark ignition internal combustion engines, Rule 2280 has a NOx emission limit of 1.5 g/bhp-hr or less (100 ppmv or less at 15% O2), VOC is 1.5 g/bhp-hr (650 ppmv or less at 15% O2), and 2.0 g/bhp-hr or less (500 ppmv or less at 15% O2).
- The PERP: In lieu of obtaining multiple permits from individual districts, a portable engine owner can register the engine in PERP. By January 1, 2010, only engines certified to ARB/US EPA off-road engine emission standards (Tier 1, 2, or 3) can continue to operate in PERP. This means that any engines currently registered in the program that do not meet at least Tier 1 standards must be replaced with certified engines by that date.

Future Control Option:

- Upgrade District standards in Rule 2280 to ARB PERP standards.

Discussion:

- Based on emission level differences, a potential emission reduction from upgrading District portable engine standards to ARB' PERP standards appears significant. Sixty percent NOx reduction from the 450 portable engines registered with the District is approximately 1.5 tons per day.
- A small number of spark-ignited portable engines are operating within the District, however, they are not expected to generate comparable emissions reductions compared to upgrading existing non-certified diesel engines since spark-ignited engines typically meet or exceed applicable ARB or EPA standards.
- Emissions from older diesel engines can be reduced by replacing such units with cleaner EPA-certified diesel engines before allowing new registration or renewal of existing registration with the District.
- Inspection & maintenance (I/M) of off-road engines guarantees emissions remain at levels consistent with rule-based standards. Cost-effectiveness for I/M programs, in terms of $/ton of pollutant reduced is less than most ozone mitigation strategies.
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Upgrade District standards in Rule 2280 to ARB PERP standards.
- Institute I/M programs for off-road engines, & Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Green Contracting Programs (M-OTH-1)

(Use of low-emission vehicles and equipment, clean fuels, employer-based trip reduction programs, and other practices such as green building and energy-reducing construction by companies contracting with public agencies)

Emissions Inventory:

With current controls and regulations: does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Current Control: With the growing concern for global warming, green contracting programs are gaining ground in cities and counties across the U.S., and this has mostly taken the form of adopting ordinances voluntarily, since air districts do not have regulatory authority to require local government agencies to adopt these ordinances.

Control Options:

- Develop a model ordinance and promote its adoption by cities and counties for incorporation into local codes.
- Make green contracting an attractive option for companies by awarding incentive funding for the retrofit of off-road construction equipment, vehicle fleets, and other machines.
- Issue “Green Contractor Certification” to companies that fulfill certain criteria, as established by the District, including meeting fleet standards and completion of courses about equipment maintenance and operation.

Discussion:

- Reduction of NOx and VOC precursors occurs in conjunction with the reduction of CO_2 from fuel combustion processes, which is one of the ways of mitigating global warming.
- Off-road equipment emissions make-up a significant portion of the NOx inventory, approximately 57 tons per day.
- Government agencies may incur higher costs when contracts are awarded to certified green contracting companies that incur higher operating costs due to the purchase of cleaner equipment.
- Green contracting programs could encourage participation in incentive programs, due to the business opportunities from being a certified green contractor.
- See Chapter 8, Innovative Strategies and Programs, for additional information on this source category.

Green Contracting Programs
(Continued)

Recommendation:

- Promote the voluntary adoption of the green contracting model ordinance.
- Through incentive funding, encourage the conversion of off-road equipment fleets of companies that strive for green certification.
- Implement certification programs for green contractors.

Projected Reductions:

With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Fuel Storage and Handling (M-OTH-2)

(Fuel Storage and Handling)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
VOC	2.7	2.3	2.4	2.4	2.5	2.6	2.7	2.7

Current Control: ARB 2005 Portable Fuel Container (PFC) regulation on fuel cans

Future Control Options:

- Strengthening standards, continuing spill-proof PFC research by ARB
- Incentives to speed replacement of metal cans with cans that meet regulation

Discussion:

- Incentives will speed replacement of older, non compliant cans
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Research availability of funds for incentives to replace older gas cans, investigate feasibility as an additional program associated with the Clean Green Yard Machine electric lawn mower exchange program

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Lawn Care Equipment **(M-OTH-3)**

(Off-Road Equipment)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	1.1	1.0	0.9	0.9	0.9	0.9	0.9	0.9
VOC	8.5	7.5	6.7	6.4	5.9	5.4	5.2	5.0

Current Control:

- ARB regulations on new engines

Future Control Options:

- Fund replacement of lawn equipment
- More stringent EPA and ARB standards
- Reformulated gasoline/alternative fuels
- Operational efficiency enhancements
- Land use decisions/landscaping alternatives
- Enhance and expand the Indirect Source Review program

Discussion:

- The 2006 District Clean Green Yard Machine exchange program reduced smog-forming emissions by 2.24 tons by retiring 800 gas-burning mowers and providing a 60% discount on the purchase of a new cordless electric mower. The exchange program was held in 5 valley locations.
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Encourage more stringent EPA and ARB standards
- Expand programs to exchange older polluting equipment with newer, cleaner engines, electric options

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

- Reductions for this source category can be found in the ISR control measure

Off-Road Recreational Vehicles (M-OTH-4)

(Off-Road Recreational Vehicles)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.19	0.20	0.22	0.23	0.25	0.27	0.30	0.30
VOC	6.57	7.00	7.52	7.71	8.08	8.71	9.40	9.40

Current Control:

- ARB emissions limits and test procedures for off-highway recreational vehicles, including off-road motorcycles and ATVs.
- Use restrictions for non-compliant vehicles
- Engines 90 cc or greater, built prior to 1997 are not subject to new emission limits
- Engines 90 cc or less, built prior to 1999 are not subject to new emission limits

Future Control Options:

- Strengthen standards
- Alternative fuels
- Operational efficiency
- Fees for non-compliant vehicles

Discussion:

- Vehicles in compliance with ARB standards are issued green registration stickers that allow year-round operation. Non-compliant vehicles are eligible to receive red registrations stickers that allow operations only during designated months when ozone levels are low.
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Encourage ARB efforts to strengthen standards for new vehicles
- Develop strategy to reduce emissions from in-use recreational vehicles

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Aircraft (M-OTH-5)

(Aircraft)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	3.0	4.1	4.5	4.6	4.8	5.0	5.2	5.3
VOC	6.8	8.7	9.5	9.7	9.9	10.4	10.8	10.9

Current Control:

- Aircraft Engines: U.S.EPA works its standard-setting process through International Civil Aviation Organization because aircraft engines are international commodities and operated internationally.

Future Control Options:

- Long-term Advanced Technologies Strategy-Federal Responsibility
  - Pursue more stringent engine standards, retrofit controls, cleaner fuel, apply standards to non-tactical military aircraft
  - Control measure to limit idle and taxi time
  - Incentives for engine replacement and retrofits

Discussion:

- Proposed control options to cut emissions for new and existing aircraft would help mitigate net increase in aircraft emissions. New technology, new standards, research and development would be required. U.S. EPA has the regulatory authority over aircraft emission reductions.
- Typical idle and taxi times of aircraft averages from 13-35 minutes, in many cases much longer. Emissions range from 0-60.8 lb/hr VOC and 0 to 7.5 lb/hr of NOx during idling (varies by aircraft type)
- Incentives would facilitate earlier modernization.
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Encourage U.S. EPA to set more stringent aircraft emission standards, to require engine emission retrofits, to require the reformulation of jet fuel to lower the sulfur content, and to apply commercial aircraft engine standards to non-tactical military aircraft.
- Research technological and economic feasibility of idle and taxi control measure
- Investigate feasibility of incentives for engine replacement/retrofits.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Recreational Boats (M-OTH-6)

(Recreational Boats)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	6.14	6.01	5.65	5.56	5.40	5.26	5.18	5.14
VOC	25.92	23.80	21.97	21.50	21.70	19.87	19.14	18.43

Current Control:

- Recreational Marine engine standards for inboard and sterndrive engines- Beginning of 2007 requires 45% product sales comply with 5 g/kW-hr emission cap, 75% by 2008, and 100% 2009 and later.
- The U.S. EPA standards for outboard engines and personal watercraft, which phase in between 1998 and 2006, require a 75% HC reduction for new engines

Future Control Options:

- Strengthen standards
- Episodic control to restrict time of use in ozone season
- Alternative fuels
- Operational efficiency
- Fee on highest emitters

Discussion:

- New marine will meet the 5g/kW-hr standard through the incorporation of catalytic converters
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Encourage EPA and ARB efforts to strengthen standards
- Investigate the feasibility of episodic control, and gross polluter fees

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Ships and Commercial Boats (M-OTH-7)

(Ships and Commercial Boats)

Emissions Inventory:
With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	1.3	1.3	1.3	1.3	1.3	1.4	1.6	1.8
VOC	0.1	0.1	0.1	0.1	0.1	0.1	0.	0.1

Current Control:
- MARPOL Annex VI standards (International)
- U.S. EPA and ARB emission standards

Future Control Options:
- Voluntary measures for existing fleet
- Retrofit/replacement modernization of fleet
- Idling reduction/smart operations/"cold ironing" using port electric power
- Low sulfur regulations/rule for clean auxiliary engine fuel
- Expanded ship speed reduction
- Bring the newer/clean ships to California service
- Ship modernization-November Election: Infrastructure Bonds

Discussion:
- With limited jurisdictional authority, the District should investigate the use of incentives and funding to speed the modernization/replacement/retrofitting of ship's engines
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:
- Support MARPOL Annex VI negotiations to develop more stringent Tier II NOx and SOx standards and to expand coverage to PM and existing engines
- Tighter U.S. EPA and ARB emission standards
- Us incentives to speed modernization and emission reductions

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Indirect Source Review (ISR) Enhancement (M-OTH-8)

(Light and medium duty vehicles, heavy-duty vehicles, and off-road equipment)

Source Category:
In terms of NOx reductions, ISR impacts three main source categories: (1) Vehicles used for commuting to and from the development project, before and after its completion; (2) Heavy-duty vehicles such as trash haulers; and (3) Off-road equipment, including street sweepers, small off-road engines (lawn equipment using IC engines-mowers, edgers, leaf blowers), and heavy-construction machinery.

Emissions Inventory:
The baseline inventory for ISR is in the three source category groups mentioned above. For further information on the baseline emissions, please refer to those individual control measure write-ups: M-TRAN-6, M-TRAN-4 & 5, M-IND-5, and M-OTH-3.

Current Control: The Indirect Source Rule, Rule 9510, is designed to mitigate emissions associated with development projects that exceed two tons per year of NOx and PM10. Specifically, for the construction phase of a development project, Rule 9510 requires a 20% NOx reduction from the statewide average resulting from the use of construction equipment that is greater than 50 horsepower. For the operational emissions, defined as the combination of the area and mobile emissions associated with the project, Rule 9510 requires 33% NOx reduction from the operational baseline, as computed using an APCO-approved model (e.g. URBEMIS). Both sources of NOx reductions can be met by on-site emission reduction measures or off-site mitigation fees.

VOC reductions are not part of the mitigation requirements of Rule 9510, since the effects of VOC emissions have been deemed as insignificant in the formation of PM2.5. However, ozone formation involves both VOC and NOx. Therefore, VOC emissions associated with development projects and its reduction through mitigation measures are now an integral part when considering Rule 9510 as a current ozone control mechanism.

Future Control Options:

- Increase the required reduction from the use of construction equipment greater than 50 horsepower from 20% to 50% NOx reduction from the statewide average.
- Increase the required reduction from the operational baseline from 33% to 50% NOx reduction.
- Add VOC reduction as a mitigation requirement.

Discussion:

- The 20% reduction from the statewide average for construction emissions was based on the assumption that it was sufficient from the point of controlling emissions in order for the District to meet its one-hour ozone plan requirements.

Indirect Source Review (ISR) Enhancement
(Continued)

- The 33% operational baseline emission reduction for NOx was based on the assumption that mobile source emissions will come down by 50% over 10 years due to improved tailpipe emissions. Instead of mitigating 100% of the remaining emissions, after deducting the emission reduction attributable to ARB's tailpipe control, Rule 9510 required only 33% mitigation. This method was used in order to assure that development projects do not over-mitigate its emissions.
- The potential NOx emission reduction from increasing the mitigation requirements from 33% to 50% reduction of the operational baseline emissions is approximately 2 tons per day.
- A future reevaluation of Rule 9510 must include analysis of VOC emissions and its reduction through mitigation requirements.

Recommendation:

- There are no specific recommendations at this time. At this point, the District is exploring all possibilities of gaining emission reductions from sources under its jurisdiction. Legal limitations in state law are also being examined.
- The District invites comments and suggestions to further improve control options, within legal limitations set by state law.
- A future feasibility study to re-evaluate this source category is planned. See Chapter 8, Innovative Strategies and Programs, for any additional information on this source category.

Projected Reductions:

With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Expanded Spare-The-Air Programs (M-OTH-9)

(Lawn-care equipment, architectural coatings and solvents, asphalt paving and roofing operations, barbecue cooking, off-road construction machinery, recreational vehicles and watercrafts, household aerosols, and other stationary sources)

Emissions Inventory:

With current controls and regulations: does not reflect the reductions from proposed controls.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Current Control: Public service announcements which encourage residents and employees to curtail activities that cause air pollution; partnerships with 700 public and private entities enable workers to participate in Spare-The-Air (STA) day activities, including receiving rewards and recognition; various outreach programs, including: clean yard machines trade-ins, air quality school curriculums, and public forums.

Future Control Options:

- Recruit more public agencies and private companies as clean air partners; add additional programs, including assisting businesses and public agencies in establishing alternative transportation programs.
- Emphasize trip reduction programs during STA days by increased public awareness campaigns and by recruiting more STA participants, of which the District currently has 700 private and public partners, who implement VMT reduction activities.
- Voluntary no-sell policy of VOC-emitting products, such as paints and solvents, during the STA days.
- Curtailment of recreational activities, such as off-road motorcycling and motorized watercraft use, during STA days.
- Postpone the use of heavy construction machinery, such as bulldozers, levelers, and pavers, to days that are less conducive to ozone formation.
- Postpone nonessential activities in stationary sources, such as structural repairs, maintenance, or painting, which result in emissions of NOx and VOC to days that are less conducive to ozone formation.

Discussion:

- The District's in-house approach to encouraging employees to curtail activities during STA days is a good model for other public and private entities to follow. During STA days, district employees take part in activities, such as: (1) Staying in for lunch, (2) Carpooling for lunch, (3) Carpooling and trip linking with fellow employees for lunchtime errands, and (4) Stepped-up efforts to use alternative transportation to and from work. The District's public education unit, which award prizes to outstanding participants, coordinates these efforts.

Expanded Spare-The-Air Programs
(Continued)

- The District's alternative transportation program gets 20% participation, wherein employees taking part use alternative transportation for three days out of a five-day workweek (60%) and get rewarded $25 for a two-week pay period. This 20% participation is approximately 8% higher than the general working population's use of alternative transportation (US Census 2000).
- Free transit rides, as done in the Bay Area during STA days, have increased ridership in buses and trains. However, these free rides have relatively very high costs in reducing vehicle miles traveled (VMT), compared to other programs that reduce VMT.
- Curtailment of activities that contribute to ozone formation will be on a voluntary basis, since the District does not have the authority to impose an outright ban on these activities. Local government entities are empowered by state law to limit certain activities, as has been done by cities in limiting usage of lawn equipment, such as leaf blowers.

Recommendation:

- Expand the District's current STA programs with the following improvements:
    - Assist public and private agencies to organize and implement alternative transportation programs.
    - Promote voluntary curtailment of activities that produce NOx and VOC.
    - Write model ordinances that prevent NOx and VOC emissions by restricting certain activities, such as use of recreational vehicles and watercraft, lawn-maintenance equipment, drive-thorough, etc. Promote the adoption of these ordinances by cities and counties, with the District providing technical and scientific assistance in subjects pertaining to air quality.
    - Explore ways to incentivize the voluntary participation of stationary sources in curtailing activities that contribute to ozone formation.
    - As a form of voluntary and emerging measures for which EPA has provided guidelines for SIP credits, design expanded STA projects so that EPA criteria for SIP creditation are fulfilled.
- See Chapter 8, Innovative Strategies and Programs, for additional information on this source category.

Projected Reductions:

With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Employer-based Trip Reduction Programs (M-TRAN-1)

(Van Pools, Carpools, Public Transit Use, Employer-based Alternative Transportation Programs, and Other Trip Reduction Programs Impacting Vehicle Miles Traveled and Targeting Light-Duty Vehicles)

Emissions Inventory:
With current controls and regulations: does not reflect the reductions from the proposed control.

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	10.2	7.8	6.3	5.8	4.8	3.7	2.9	2.4
VOC	69.5	60.4	50.2	46.8	40.5	33.3	28.1	24.4

Reflects emissions from Light-Duty Vehicles.

- EICs Affected: 710-XXX-XXXX; 722-XXX-XXXX; 723-XXX-XXXX

Current Control: Existing trip reduction programs, such as van pools and employer-based transportation trip reduction programs, exist, but are limited in scope and have not resulted in significant reductions in vehicle miles traveled (VMT).

Future Control Options:

- Organize and incentivize more participation, both private and public, in trip reduction programs.
- Emphasize trip reduction programs during Spare The Air (STA) days by increased public awareness campaigns and by recruiting more STA participants, of which the District currently has 700 private and public partners, who implement VMT reduction activities.
- Adopt a rule requiring employer-based trip reduction programs.

Discussion:

- District Rule 9001 (Commuter-based Trip Reduction) was adopted in January 20, 1994, and it was repealed in February 15, 1996, with the passage of state Senate Bill 437, which prohibited mandatory employer-based trip reduction programs.
- On February 21, 2003, an act to add Chapter 5.7 to part 3 of Division 26 of the Health and Safety Code, was enacted, and it includes Section 40601(d) which allow the District board to adopt, by the earliest feasible date, rules and regulations that require all businesses employing at least 100 people, as described further by Section 40601(d)(1 & 2), to establish rideshare programs.
- Single-occupancy vehicle commuting to work sites contributes significantly to traffic congestion and ozone formation.

Employer-Based Trip Reduction Programs
(Continued)

- High polluting cars, trucks, and vans continue to be used in worksites that are amenable to vanpooling or carpooling.

Recommendation:

- Adopt a rule requiring businesses with at least 100 employees, as defined in the CH&SC 40601, to establish rideshare programs.
- Implement trip reduction programs following EPA guidelines for SIP reductions.
- Explore the applicability of state laws governing parking pay-out programs in California, and work to strengthen that law and its enforcement in the San Joaquin Valley.
- See Chapter 8, Innovative Strategies and Programs, for additional information on this source category.

Projected Reductions:

With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	0.0	0.23	0.24	0.25	0.26	0.27	0.28
VOC	0.00	0.61	0.62	0.64	0.65	0.66	0.68

- Using the program example in the Houston-Galveston area, which assumed that 10 percent of employees would use alternative transportation one day of the week (using a 5-day workweek), work-commute VMT can be reduced by 10% x 0.2 or 2%.
- These reductions are typical of trip reduction programs, which are conservative and take into account the many challenges faced by existing programs.
- Trip reduction programs fall in the category of voluntary and emerging measures, for which EPA has provided guidance, including fulfilling criteria for claiming SIP credits, such as enforceability and verifiability.
- Surveys that gauge participation are often done to verify SIP credits.

Accelerated Fleet Turnover (M-TRAN-2)

(Light-duty, Medium-duty, Heavy-duty vehicles, and Off-road equipment)

Source Category:
This source category includes all fleets listed above.

Emissions Inventory:
The baseline inventory for accelerated fleet turnover is in the four source category groups mentioned above. For further information on the baseline emissions, please refer to those individual control measure write-ups.

Current Control:
- Emission standards for vehicle categories have steadily become more stringent, reflecting improvement brought by new technology. For heavy-duty diesel engines, the 2007 EPA standards for NOx reflect a 90% reduction (2 to 0.2 g/bhp-hr) from the 2004 EPA standards. Light and medium-duty vehicles have been subject to emission standards reflecting Lower Emission Vehicles (LEV) regulations and testing procedures, as well as greenhouse gas regulations.
- ARB's Fleet Rule For Transit Agencies reduces public exposure to diesel particulate PM and NOx emissions from transit fleet vehicles.

Future Control Options:
- Fleet average standards for public fleets and private fleets engaged in contract services to government agencies could be specified in a command-and-control rule, in order to hasten the faster turnover of older to newer vehicles. The fleet average standards reflecting the 2004 EPA standards and the 2007 EPA standards could be phase-in over a certain period of time.
- Assist in the turnover of private fleets by providing incentives for purchasing new vehicles and for improving fleet averages by retrofitting older vehicles.
- Incentive funding for inspection and maintenance programs for both types of fleets.

Discussion:
- Cleaner vehicles in all categories are now available and will have even lower NOx emissions in the years to come. However, the transition to new vehicles by attrition is not fast enough, in order for these improvements to assist in early attainment of the NAAQS standards.
- Natural gas-powered and other alternative fuel engines have been successfully integrated in existing fleets, new diesel and gas engines are approaching the emissions level of alternative-fuel engines, making "fuel neutrality" a viable path for accelerating fleet turnover.
- Diesel emission retrofit control technologies have been proven to be effective and becoming increasingly more cost-effective for both NOx and PM. NOx reduction retrofits include: diesel oxidation catalyst, lean NOx catalyst, selective catalytic reduction, NOx adsorbers, and exhaust gas recirculation. Likewise, for PM reduction, technologies are now widely available, such as: active and passive diesel particulate filters, flow-through filters, and several types of alternative diesel fuels.
- ARB's private fleet rulemaking is in progress, and formal board consideration of the upcoming rule is scheduled for mid-2007.

Accelerated Fleet Turnover
(Continued)

- South Coast fleet rules were challenged in federal court by the Engine Manufacturers Association (EMA). U.S. District Court ruled against EMA and the case was elevated to the U.S. Supreme Court, which reversed the lower court's decision. However the U.S. Supreme Court did not resolve the validity of the fleet rules and remanded the case to the lower court to consider whether some of the fleet rules could be characterized as internal state purchase decisions, thereby directing the lower court to consider the scope of EMA's challenge. The lower court concluded that the South Coast fleet rules are constitutional as they apply to state and local government actors and that they fall within the market participant doctrine.
- The South Coast AQMD issued an advisory notice based on the May 2005 lower court order. In summary, South Coast AQMD stated it would fully enforce the fleet rules as they apply to private entities under contract to state or local public entities, including the State of California, counties, cities and special districts. Note, this excludes private entities that are not under contract to state or public entities and/or federal public entities. It also excludes federal entities from fleet rule requirements.

Recommendation:

- Explore all possibilities of reducing fleet emissions in shortest time possible. Implement all viable methods including command & control rules, retrofits, & inspection & maintenance programs.
- Implement fleet modernization with "fuel neutrality" as a guiding principle.
- Use incentive funding for acceleration of private fleet turnover.
- Adopt fleet rules applicable to the following vehicle categories, as operated by public agencies or by private fleets under contract to government agencies:
  Light- and medium duty vehicles; Public transit fleets that provide passenger transportation services including intra- and intercity shuttle services; Solid waste collection fleets; Commercial airport ground access; Less polluting sweepers (PM10 and NOx); Onroad heavy-duty public fleets; Offroad construction fleets- earthmovers, pavers, levelers, water trucks, etc.; Offroad grounds keeping equipment; Other offroad equipment types operated as fleets.
- Specify exempt vehicles including emergency vehicles operated by federal, state, or local law enforcement agencies; fire departments; or to paramedic & rescue vehicles.
- The fleet requirements would be: (a) Purchase of low-emitting vehicles and equipment classified as such under ARB's certification system when purchasing or replacing vehicles and equipment and (b) Specify replacement schedule according to year of manufacture of old vehicle/equipment and the availability of replacement.
- Coordinate with ARB to implement both regulatory & incentive measures to promote consistency and effectiveness of all efforts to accelerate fleet turnovers.

Projected Reductions:

With recommended controls

Emissions Reduction, Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Diesel Trucks **(M-TRAN-3)**

(Light Heavy Duty Diesel Trucks - 1, Light Heavy Diesel Duty Trucks – 2, Medium Heavy Duty Diesel Trucks, Heavy Heavy Duty Diesel Trucks)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	225.8	198.5	162.0	150.1	127.4	100.7	83.1	72.5
VOC	13.4	11.7	9.9	9.4	8.4	7.2	6.3	5.8

Current Control:

- EPA and ARB Model Year Based Emission Standards
- Heavy-Duty Vehicle Inspection/Periodic Smoke Inspection Programs (ARB)
- ARB rules for low sulfur diesel /truck idle limits/international border trucks

Future Control Options:

- Enhanced renewable fuel standards /Alternative fuels
- Episodic controls-regulate time of use during ozone season
- No deadhead-full truck utilization
- Short Sea Shipping
- Greater use of rail for goods movement
- Port truck modernization-November Election: Infrastructure Bonds
- Augment Community Based Inspections (ARB)
- Capture and Control Vapors from Gasoline Cargo Tankers (ARB)
- Fleet Modernization: engine software upgrades, on-board diagnostics, reduced idling, on board emission controls (ARB) (SJVUAPCD)
- Encourage the use of I 5 for through travel
- International trucks must meet U.S. standards
- Green Contracting
- Enhance and expand the Indirect Source Review program

Discussion:

- Support ARB and EPA efforts to strengthen standards
- Use incentives for fleet modernization/replacement/retrofits
- Greater use of I-5 would move emissions source away from heavy population areas/Land use decisions
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Explore incentives to encourage I-5 use
- Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.

Diesel Trucks
(Continued)

- Explore Green Contracting as a way to speed fleet modernization.
- Supplement and accelerate incentives for truck stop electrification programs/auxiliary power units/ IdleAir/ direct-fired heaters and thermal storage technologies to provide power when trucks are parked.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Gasoline Trucks **(M-TRAN-4)**

(Light Heavy Duty Gas Trucks - 1, Light Heavy Gas Duty Trucks – 2, Medium Heavy Duty Gas Trucks, Heavy Heavy Duty Gas Trucks)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	8.4	8.0	7.4	7.2	6.7	6.2	5.8	5.4
VOC	11.6	10.5	9.3	8.9	8.1	7.1	6.0	5.0

Current Control:

- 2008 and later model year heavy-duty gasoline engines/vehicle standards
- Fleet change-out standards
- Vehicle inspection programs; boarder inspections; truck idling programs (ARB)

Future Control Options:

- Incentives for scrappage programs; fleet modernization/engine replacement/retrofits (SJVUAPCD)
- Green contracting
- Episodic controls: restrict hours of operation during ozone season
- Enhanced renewable fuel standards /Alternative fuels
- Episodic controls-regulate time of use during ozone season
- No deadhead-full truck utilization
- Short Sea Shipping
- Greater use of rail for goods movement
- Port truck modernization-November Election: Infrastructure Bonds
- Augment Community Based Inspections (ARB)
- Capture and Control Vapors from Gasoline Cargo Tankers (ARB)
- Fleet Modernization: engine software upgrades, on-board diagnostics, reduced idling, on board emission controls (ARB) (SJVUAPCD)
- Encourage the use of I 5 for through travel
- International trucks must meet U.S. standards
- Enhance and expand the Indirect Source Review program

Discussion:

- Support ARB and EPA efforts to strengthen standards
- Incentives can be used for modernization, replacements/retrofits to assure emission reductions occur as early as possible
- Green contracting encouraged by local jurisdictions will speed fleet modernization
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Gasoline Trucks
(Continued)

- Supplement and accelerate incentives for truck stop electrification programs/auxiliary power units/ IdleAir/ direct-fired heaters and thermal storage technologies to provide power when trucks are parked

Recommendation:

- Explore wider use of incentives to encourage fleet modernization.
- Investigate feasibility of episodic control-restricted hours of operation.
- Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

- Reductions for this source category can be found in the ISR control measure

Heavy Duty Diesel Urban Buses (M-TRAN-5)

(Heavy Duty Diesel Urban Buses)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.8
VOC	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Current Control:

- 2007 and later model year heavy-duty diesel engines/vehicle standards
- Inspection/Maintenance Program

Future Control Options:

- ARB Zero-emission Bus Regulation
- Fleet change out standards
- Augment Community Based Inspections (ARB)
- Fund scrappage programs
- Incentive for faster fleet turnover/modernization
- Remote tailpipe sensing
- Episodic controls-restrict hours of use during ozone season
- Alternative fuels/add on emission controls
- Operational efficiency
- Land use decisions

Discussion:

- Support ARB and EPA efforts to strengthen standards
- Use incentives for fleet modernization/replacement/retrofits
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Supplement and accelerate incentive programs (some are already in progress) for engine replacement/retrofits to accelerate fleet modernization
- Investigate operational efficiency to maximize ridership
- Encourage land use decisions to maximize public transit

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Heavy Duty Gas Urban Buses (M-TRAN-6)

(Heavy Duty Gas Urban Buses)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
VOC	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2

Current Control:

- 2008 and later model year heavy-duty gasoline engines/vehicle standards
- Fleet change-out standards

Future Control Options:

- ARB Zero-emission Bus Regulation
- Fleet change out standards
- Augment Community Based Inspections (ARB)
- Fund scrappage programs
- Incentive for faster fleet turnover/modernization
- Remote tailpipe sensing
- Episodic controls-restrict hours of use during ozone season

Discussion:

- Support ARB and EPA efforts to strengthen standards
- Incentivize fleet modernization/replacement/retrofits
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Currently this source category is not a candidate for incentive funding, but further analysis and study is necessary to determine if this source category may garner cost effective reductions in the future provided funding sources are available. Please see Chapter 7 for any additional information.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Light and Medium Duty Vehicles (M-TRAN-7)

(Light Duty Passenger, Light Duty Trucks – 1, Light Duty Trucks – 2, Medium Duty Trucks)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	63.1	52.5	42.1	38.7	32.6	25.3	19.9	16.1
VOC	79.2	69.4	58.6	54.9	48.1	40.2	34.4	30.2

Current Control:

- LEV 1, LEV 2, and ZEV programs reduce emissions from light and medium duty vehicles
- Smog-Check Program ensures that in-use vehicles stay clean as they age.

Future Control Options:

- Replace or Upgrade Emission Control Systems on Existing Passenger Vehicles
- Improve Smog Check to increase emission reductions
- Expanded Spare-the-air Programs, to decrease VMTs.
- Incentives for voluntary vehicle retirement
- Expand use of HOV lanes
- Alternative fuels
- Carpool subsidies
- Traffic synchronization
- Fee on high emitters
- Pay as you go insurance
- Enhance and expand the Indirect Source Review program

Discussion:

- Fleet retrofits and modernization assure that emission reductions occur at the fastest rate possible.
- All methods to reduce VMT should be investigated
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Support ARB and EPA efforts to strengthen standards
- Explore opportunities for incentive funding to achieve additional emission reductions from this source category through a decrease in VMT or investigate high emission vehicle buy back/replacement program; see Chapter 7 of this Plan for additional information regarding incentive funding.

Light and Medium Duty Vehicles
(Continued)

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

- Reductions for this source category can be found in the ISR and Trip Reduction control measures

Motor Homes (M-TRAN-8)

(Motor Homes)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	1.1	1.1	1.1	1.0	0.9	0.8	0.7	0.6
VOC	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.1

Current Control:

- EPA and ARB Model Year Based Emission Standards
- Heavy-Duty Vehicle Inspection/Periodic Smoke Inspection Programs (ARB)

Future Control Options:

- Enhanced renewable fuel standards
- Alternative fuels
- Augment Community Based Inspections (ARB)
- Fleet Modernization: engine software upgrades, on-board diagnostics, reduced idling, on board emission controls (ARB) (SJVUAPCD)
- Encourage the use of I 5 for through travel
- Episodic controls-regulate time of use in ozone season

Discussion:

- Support ARB and EPA efforts to strengthen standards
- Use incentives for fleet modernization/replacement/retrofits
- Greater use of I-5 would move emissions source away from heavy population areas/Land use decisions
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Explore incentives to encourage I 5 use
- Expand incentive program for engine replacement/retrofits

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Motorcycles (M-TRAN-9)

(Motorcycles)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	1.2	1.3	1.2	1.2	1.2	1.2	1.3	1.3
VOC	6.0	6.0	5.2	5.1	5.0	5.0	5.0	5.1

Current Control:

- ARB emission standards implemented for 50 cubic centimeters and greater in 1978, amended in 1984 allowing standards to be set on a “corporate average”. 2004 new standards set for 280 cc and larger motorcycles. Restrictions on modifications to post-1978 that increase emissions.

Future Control Options:

- Enhanced renewable fuel standards /Alternative fuels
- Episodic controls-regulate time of use during ozone season

Discussion:

- Support ARB and EPA efforts to strengthen standards
- Incentives can be used for modernization, replacements/retrofits to assure emission reductions occur as early as possible
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Currently this source category is not a candidate for incentive funding, but further analysis and study is necessary to determine if this source category may garner cost effective reductions in the future provided funding sources are available. Please see Chapter 7 for any additional information.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Other Buses (M-TRAN-10)

(Other Buses)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	0.8	0.8	0.7	0.7	0.6	0.5	0.4	0.3
VOC	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1

Current Control:

- Engine/vehicle standards depending on engine/fuel type

Future Control Options:

- ARB Zero-emission Bus Regulation
- Fleet change out standards
- Augment Community Based Inspections (ARB)
- Fund scrappage programs
- Incentive for faster fleet turnover/modernization
- Remote tailpipe sensing
- Episodic controls-restrict hours of use during ozone season
- Alternative fuels/add on emission controls
- Operational efficiency
- Land use decisions

Discussion:

- Support ARB and EPA efforts to strengthen standards
- Use incentives for fleet modernization/replacement/retrofits
- Investigate operational efficiency to maximize ridership
- Encourage land use decisions to maximize public transit
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Currently this source category is not a candidate for incentive funding, but further analysis and study is necessary to determine if this source category may garner cost effective reductions in the future provided funding sources are available. Please see Chapter 7 for any additional information.

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

School Buses (M-TRAN-11)

(School Buses)

Emissions Inventory:

With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	2.1	2.3	2.3	2.3	2.3	2.2	2.1	2.0
VOC	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Current Control:

- Replacement of pre-2002 buses by 2016 (District rule 9310)
- ARB School Bus Idling Program

Future Control Options:

- Fund scrappage programs
- Fund faster fleet turnovers/modernization

Discussion:

- District Rule 9310 will accelerate the replacement schedule of the oldest buses
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- Expanded funding programs for engine replacement/retrofits to accelerate fleet modernization

Projected Reductions:

With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

Trains (M-TRAN-12)

(Trains)

Emissions Inventory:
With current controls and regulations

Tons per day – summer season

Pollutant	2005	2008	2011	2012	2014	2017	2020	2023
NOx	23.6	21.1	20.4	20.5	20.7	21.0	21.5	22.0
VOC	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6

Current Control:

- U.S. EPA has sole authority to set emission standards for new and remanufactured locomotives
- ARB -Memorandum of Understanding with BNSF and UP requires installation of ILD on over 99% of interstate locomotives between June 30, 2006 and June 30, 2008. It also requires that 80% of the diesel fuel dispensed to UP and BNSF locomotives to be low-sulfur by the end of 2006

Future Control Options:

- Funding for anti-idling devices
- Re-power
- Retrofits
- Alternative technology switch locomotives

Discussion:

- Supplementation and acceleration of incentive funding to encourage the earliest fleet modernization
- Investigate new technologies
- Please refer to Chapter 7 for any additional information on possible incentive programs which may reduce emissions from this source category.

Recommendation:

- More stringent federal emission standards
- Support agreements with the railroads to place the newest locomotives into California service
- Explore opportunities for incentive funding to achieve additional emission reductions from this source category; see Chapter 7 of this Plan for additional information regarding incentive funding.

Projected Reductions:
With recommended controls

Tons per day – summer season

Pollutant	2008	2011	2012	2014	2017	2020	2023
NOx	NQ	NQ	NQ	NQ	NQ	NQ	NQ
VOC	NQ	NQ	NQ	NQ	NQ	NQ	NQ

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PROPOSED MODIFICATIONS TO THE DRAFT 2007 AQMP APPENDIX IV-A

DISTRICT'S STATIONARY AND MOBILE SOURCE CONTROL MEASURES

FEBRUARY 2007

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

Chairman: WILLIAM A. BURKE, Ed.D.
Speaker of the Assembly Appointee

Vice Chairman: S. ROY WILSON, Ed.D.
Supervisor, Fourth District
Riverside County Representative

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Senate Rules Committee Appointee

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Mayor, City of Riverside
Cities Representative, Riverside County

GARY OVITT
Supervisor, Fourth District
San Bernardino County Representative

JAN PERRY
Councilmember, City of Los Angeles
Cities Representative, Los Angeles County, Western Region

MIGUEL A. PULIDO
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Cities Representative, Orange County

TONIA REYES URANGA
Councilmember, City of Long Beach
Cities Representative, Los Angeles County, Eastern Region

CYNTHIA VERDUGO –PERALTA
Governor's Appointee

DENNIS YATES
Mayor, City of Chino
Cities Representative, San Bernardino County

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MODIFICATIONS TO DRAFT APPENDIX IV-A

Since the release of the Draft 2007 AQMP, several changes have been made to this Appendix. The following is a list of the more significant changes:

- All Control Measures:

  The baseline emission has been changed from 2020 to 2023. This change is due to the "bump-up" request to the U.S. EPA for the Air Basin to be designated as an "extreme" non-attainment area with a possible extended attainment date of 2024 for ozone

- CTS-01 – *Emission Reductions from Lubricants*:

  Refinements have been made to the emission inventory and reductions. A range in cost-effectiveness has been added.

- CTS-03 - *Consumer Product Certification and Emission Reductions from Use of Consumer Products Institutional and Commercial Facilities*:

  Refinements have been made to the emission inventory. Estimated emission reductions have been added to the measure. For cost-effectiveness there is an expectation of no increase in cost.

- CTS-04 – *Emission Reductions from the Reduction of VOC Content of Consumer Products not Regulated by the State Board*:

  This is a new control measure. This measure places a VOC limit for selected consumer products that are primarily used by institutional and industrial facilities and are currently unregulated by CARB.

- FUG-02 - *Emission Reductions from Gasoline Transfer and Dispensing Facilities*:

  An estimated cost-effectiveness of $1,673 per ton VOC reduced has been added to the measure.

- FUG-04 - *Further Emission Reductions from Pipeline and Storage Tank Degassing*:

  Emission baseline, reductions and cost-effectiveness have been added to the control measure.

- CMB-02 - *Further SOx Reduction for RECLAIM*:

  A range in cost-effectiveness has been added to the control measure. The proposed method of control section has been expanded.

- MCS-01 – *Facility Modernization*:

  Cost-effectiveness estimates have been added to the control measure for sources of NOx, VOC, and PM2.5 emissions. Emission baselines and reductions have undergone further refinements. The estimate for NOx reductions has been reduced to reflect the exclusions of some equipment categories. A subsequent analysis indicates that NOx reductions may not be cost-effective for infrequently operated equipment, such as those used for emergency purposes only. For both PM2.5 and VOC, the emissions from petroleum refineries have been transferred to CM #2007FLX-02 *Petroleum Refinery Pilot Program*. For VOC emissions, facilities subject to Rule 1132 are excluded from this measure.

- MCS-05 – *Emission Reductions from Livestock Waste*:

  Baseline emissions and estimated emission reductions have been added to this measure. The proposed methods of control have been expanded to include various manure management practices.

- MCS-07 – *Application of All Feasible Measures*:

  This measure now includes the application of all feasible measure from RECLAIM sources. These sources were previously addressed in CM #2007LTM-02 *Further Reduction from NOx RECLAIM Facilities*.

- MCS-08 - *Emission Charges of $5,000 Per Ton for Stationary Sources with Potential to Emit Over 10 Tons Per Year*:

  This is a new control measure carried over from the 2003 AQMP. This measure is based on a court ruling that although EPA has the authority to revoke the 1-hour ozone standard it must require the District to continue to implement control requirements at least as stringent as those in effect under the 1-hour standard. On this basis, a $5,000 per ton fee would apply to every "major source" of VOC and NOx. This fee would apply to emissions in excess of 80 percent of the sources baseline emissions (i.e., 2010 emissions) beginning in 2011 since the former federal 1-hour ozone standard will not be met in 2010.

- FLX-02 – *Petroleum Refinery Pilot Program*:

  This measure now only seeks VOC and PM2.5 emission reductions from petroleum refineries. Emission baseline, reductions and cost-effectiveness have been added to the control measure. Cost-effectiveness is estimated based on potential projects adjacent to the refineries. In the Draft Plan emission reductions from these facilities were addressed in CM #2007 MCS-01*Facility Modernization.*

- EGM-01 – *Emission Reductions from New or Redevelopment Projects*:

  EGM-01 was revised to reflect a new conceptual approach to mitigating emission growth from new or redevelopment projects based upon input

received from a working group of stakeholders. Details were added on the implementation of the new approach, implementation issues to be considered, and future steps to be taken during the rule development process. For purposes of illustrating the potential emissions inventory, a table showing emission sources that could be affected by the measure was added to the Emission Reduction Section.

- MOB-05 – *AB 923 Light-Duty Vehicle High-Emitter Identification:*

  This measure calls for the identification of high-emitting on-road light- and medium-duty vehicles up to 8,500 lbs gross vehicle weight. The District is currently conducting a pilot program to identify high-emitters using remote sensing technologies. Owners of identified vehicles will be offered the ability to repair or scrap their vehicles as part of the program. The District is currently allocating a portion of the AB 923 funds for this purpose and CARB has developed guidelines to implement the program.

- MOB-06 – *AB 923 Medium-Duty Vehicle High-Emitter Identification:*

  This measure is similar to SCONRD-02 and would include medium-duty and light-heavy-duty vehicles with 8,501 lbs and up to 14,000 lbs gross vehicle weight. Currently, vehicles in this weight category are not subject to in-use testing program. The AB923 program described in MOB-05 could be expanded to cover this category of vehicles.

- MOB-07 – *Concurrent Reductions from Global Warming Strategies*:

  This measure was LTM-04. In addition, instead of setting concurrent criteria pollutant reduction targets, this measure will track AB32 program development and incorporate such reductions into baseline inventories via future AQMP revisions.

  LTM-01 – *Reactivity Based Controls*:

  This measure is no longer in Appendix IV-A. In the draft 2007 AQMP, Control Measure LTM-01 (Reactivity-Based Controls) was proposed to achieve further VOC reductions from coatings, solvents, and consumer products by using lower-reactivity formulations. For the draft final AQMP, this measure is replaced with another long-term measure which is aimed at reducing VOC emissions from consumer products through any combination of product reformulations or replacements. Lower-reactivity formulations could provide an alternative means of compliance for achieving these reductions. For coatings and solvent categories, the District will continue to evaluate the feasibility of reactivity-based controls (as well as ultra low-VOC formulations) and pursue additional technical studies to support these efforts.

- LTM-02 – *Further Emission Reduction from NOx RECLAIM Facilities*:

  This measure is no longer in Appendix IV-A. Phase I of the measure is now addressed in the contingency measure CM #2007CTY-02 *Offsetting the Potential Emission Increase Due to the Change in Natural Gas Specifications.*

Phase II of the measure is now addressed in CM #2007MCS-07 *Application of All Feasible Measures.*

- LTM-03 – *Long Term Control Measure for Fugitive Emissions*:

  This measure is no longer under consideration in this AQMP. VOC reductions are now being sought from short and intermediate term control measures.

- LTM-04 – *Concurrent Reductions from Global Warming Strategies*:

  This measure was revised and introduced as MOB-07.

- LTM-05 – *Further VOC Reductions from Mobile Sources*:

  This measure is no longer in Appendix IV-A. Control Measure LTM-05 (Further VOC Reductions from Mobile Sources) proposed in the draft 2007 AQMP is deleted, since the recent modeling analysis indicates that a heavy-NOx control strategy will be a more effective ozone attainment strategy in the long-term. However, VOC reductions in the near term will still be necessary for the PM2.5 attainment and for making continuous progress in reducing ozone concentrations in the Basin.

- CTY-01 – *Offsetting the Potential Emission Increase Due to the Change in Natural Gas Specifications*:

  This is a new control measure based on Phase I of CM #2007LTM-02 *Further Emission Reduction from NOx RECLAIM Facilities*.

- CTY-02 – *Emission Charges of $5,000 Per Ton for Stationary Sources with Potential to Emit Over 10 Tons Per Year*:

  This is a new control measure. Due to the potential of not meeting the 8-hour ozone standard in 2024, a $5,000 per ton fee would apply to every "major source" of VOC and NOx. This fee would apply to emissions in excess of 80 percent of the sources baseline emissions (2024) beginning in 2025, should the air basin fail to meet the 8-hour ozone standard.

- CTY-03 – *Banning Pre-Tier 3 Off Road Diesel Engines During High Pollutant Days*:

  This measure specifically proposes to ban the use of pre-Tier 3 off-road diesel engines during high pollution days if the PM2.5 standard is not attained in 2015.

- CTY-04 – *Accelerated Implementation of CARB'S Mobile Source Control Measures*

  This contingency control measure proposes to accelerate the adoption and implementation dates of the mobile source control measures by one year. Upon determining that an RFP milestone target has not been reached, or the air basin fails to demonstrate attainment with the PM2.5 standard by 2015, or the ozone standard by 2024, the District will request that CARB proceed with

accelerating the adoption and/or implementation of the remaining control measures by one year for those measures that have not yet been adopted or fully implemented, to the extent feasible.

- Attachment A – *Evaluation of Control Measures Proposed by Other Districts/States*

  An evaluation of control measures developed by San Joaquin Valley Air Pollution Control District, Sacramento Metropolitan Air Quality Management District, Bay Area Air Quality Management District Bay Area, North Central Texas Council of Governments for Dallas-Fort Worth and Houston-Galveston-Brazoria areas in Texas, and Lake Michigan Air Directors Consortium (or Midwest Regional Planning Organization) for the five Midwest states of Illinois, Indiana, Michigan, Ohio and Wisconsin) is included as Attachment A. In general, the evaluation shows that the control measures developed by the District are equivalent to or more stringent than those developed by other air districts.

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SECTION 1

STATIONARY SOURCE CONTROL MEASURES

INTRODUCTION

This Appendix describes the South Coast Air Quality Management District (District) staff's proposed stationary and mobile source control measures to be included in the 2007 AQMP. Control measures presented in this appendix for PM2.5 are based upon a variety of market incentives and control strategies that are commercially available and/or technologically feasible in the next several years. This appendix also includes seven~~three~~ mobile source measures that the District is proposing to implement. ~~Since~~ CARB ~~will not~~ released its State and federal strategy for the California SIP in~~until~~ January 2007 (Appendix IV-B-I). District staff's recommended policy options to supplement CARB's control strategy~~measures for CARB consideration~~ are included in Appendix IV-B-II.

STATIONARY SOURCE CONTROL MEASURES

The draft 2007 AQMP includes 37~~32~~ short-term control measures for stationary and mobile sources developed by the District staff that are expected to be implemented within the next several years. ~~Five long-term measures for stationary and mobile sources are also included in this draft plan.~~ Stationary source measures contained in the 2007 AQMP include the remaining revised and partially implemented measures from the 2003 AQMP with 28~~24~~ additional new control measures.

It should be noted that the emission reduction targets for the proposed control measures (those with quantified reductions) are established based on available or anticipated control methods or technologies. However, emission reductions associated with implementation of these and other control measures or rules in excess of the AQMP's projected reductions can be credited toward the overall emission reduction targets for the proposed control measures in this appendix.

Each of the Control Measures falls into one of seven strategies. These strategies and the corresponding Control Measure are presented in Table 1:

TABLE 1

List of District Staff's Control Measures Categorized by Control Strategy

Facility Modernization	
Number	**Title**
MCS-01	Facility Modernization [NOx, VOC, and PM2.5~~All Pollutants~~]
Energy Efficiency/Conservation	
Number	**Title**
MCS-02	Urban Heat Island [All Pollutants]
MCS-03	Energy Efficiency and Conservation [All Pollutants]

TABLE 1 (continued)

Good Management Practices	
Number	**Title**
FUG-01	Improved Leak Detection and Repair [VOC]
FUG-02	Emission Reductions from Gasoline Transfer and Dispensing Facilities [VOC]
FUG-04	Further Emission Reductions from Pipeline and Storage Tank Degassing [VOC]
BCM-01	PM Control Devices (Baghouses, ~~Leak Detectors/~~Wet Scrubbers, ~~/~~Electrostatic Precipitators, and Other Devices) [PM]
MCS-04	Emissions Reduction from Green Waste Composting [VOC and~~,~~ PM~~ and NH_3~~]
MCS-06	Improved Start-up, Shut-down & Turnaround Procedures [All Pollutants]
Market Incentives/Compliance Flexibility	
Number	**Title**
CTS-02	Clean Coatings Certification Program [VOC]
CMB-02	Further SOx Reduction for~~of Emissions in~~ RECLAIM ~~(BARCT)~~ [SOx]
MCS-08	Emission Charges of $5,000 per Ton for Stationary Sources with Potential to Emit Over 10 Tons per Year [VOC and NOx]
FLX-01	Economic Incentive Programs [All Pollutants]
FLX-02	Petroleum Refinery Pilot Program [VOC and PM2.5~~NOx~~]
Emission Growth Management	
Number	**Title**
EGM-01	Emission Reductions from New or Redevelopment Projects [NOx, VOC and PM2.5]
EGM-02	Emission Budget and Mitigation for General Conformity Projects [All Pollutants]
EGM-03	Emissions Mitigation at Federally Permitted Projects [All Pollutants]

TABLE 1 (continued)

Area Source Programs	
CTS-01	Emission Reductions from ~~Industrial~~ Lubricants [VOC]
CTS-03	Consumer Product Certification~~Labeling~~ and Emission Reductions from Use of Consumer Products at Institutional and Commercial Facilities [VOC]
CTS-04	Emission Reductions from the Reduction of VOC Content of Consumer Products not Regulated by the State Board [VOC]
FUG-03	Further Emission Reductions from Cutback Asphalts [VOC]
CMB-01	NOx Reduction from Non-RECLAIM Ovens, Dryers and Furnaces [NOx]
CMB-03	Further NOx Reductions from Space Heaters [NOx])
CMB-04	Natural Gas Fuel Specifications [All Pollutants~~NOx~~]
BCM-02	PM Emission Hot Spots – Localized Control Programs [PM]
BCM-03	Emission Reductions from Wood Burning Fireplaces and Wood Stoves [PM]
BCM-04	Additional PM Emission Reductions from Rule 444 – Open Burning [PM]
BCM-05	Emission Reductions from Under-Fired Charbroilers [PM]
MCS-05	Emission Reductions from Livestock Waste [VOC~~ and NH3~~]
MCS-07	Application of All Feasible Measures [All Pollutants]
Mobile Source Control	
Number	**Title**
MOB-01	Mitigation for Federal Sources [NOx]
MOB-02	Extended Exchange Program [All Pollutants]
MOB-03	Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Facilities [NOx, SOx, and PM~~All Pollutants~~]
MOB-04	Emission Reductions from the Carl Moyer Program [NOx and PM]
MOB-05	AB 923 Light-Duty Vehicle Program [VOC, NOx, PM]
MOB-06	AB 923 Medium-Duty Vehicle Program [NOx, PM]
MOB-07	Concurrent Reductions from Global Warming Strategies [All Pollutants]

Emission reduction associated with the District's SIP commitment to adopt and implement short-term VOC, PM10, NO_x, and SO_x emission reductions from sources under the District's jurisdiction will be prepared in the next several months based on revised emission inventories and public comments on strategies. Once the SIP commitment is accepted, should there be emission reduction shortfalls in any given year, the District would identify and adopt other measures to make up the shortfall. Similarly,

if excess emission reductions are achieved in a year, they can be used in that year or carried over to subsequent years if necessary to meet reduction goals.

Coating and Solvents

The category of coatings and solvents is primarily targeted at reducing VOC emissions from VOC-containing products such as coatings and solvents. This category includes four~~three~~ control measures that are based on additional emission reductions from lubricants, institutional and commercial consumer products and other miscellaneous coatings and an introduction of consumer product certification~~labeling~~, representing an expansion of the current Clean Solvent Certification Program and, limiting the VOC content in consumer products not regulated by the State Board.

Petroleum Operations and Fugitive VOC Emissions

This category pertains primarily to operations and materials associated with the petroleum, chemical, and other industries. Within this category, there is one control measure targeting fugitive VOC emissions with improved leak detection and repair. Other measures include reductions from gasoline transfer and dispensing, pipeline and storage tank degassing and cutback asphalt facilities.

Combustion Sources

This category includes four measures targeting stationary combustion equipment. There is one control measure reducing NOx from non-RECLAIM ovens, dryers, and furnaces. A second measure targets the reduction of SOx emissions from RECLAIM facilities. In addition, there is one new control measure that seeks to further reduce NO_x emissions from space heaters. The last measure seeks to specify fuel standards for natural gas used in stationary sources as a means of preventing potential increase in NO_x emissions.

PM~~Fugitive Dust~~ Sources

This category includes three new control measures which would require further reductions from PM control devices and a localized control and enhanced open burning programs. The localized controls would be introduced in high PM areas to ensure PM10 attainment demonstration. There are also two control measures that have been carried over from the 2003 AQMP, i.e., PM reductions from wood stoves and charbroilers.

Multiple Component Sources

There are a total of eight~~seven~~ control measures in this category. The first measure seeks reductions of all criteria pollutants through the modernization of permitted equipment and the application of supercompliant materials. The approach behind this measure is to either replace or retrofit existing equipment at the end of a pre-determined life span with

today's BACT and utilize today's supercompliant materials at a future date. In addition a new control measure has been introduced to promote energy efficiency and conservation.

Two of these control measures are included in this category that address VOC and ammonia emissions from non-dairy livestock waste and composting operations. A~~nother~~ ~~third~~ measure promotes the use of lighter color roofing, road materials, or tree planting. ~~The last~~ T~~t~~wo measures seek to minimize emissions during equipment start up and shut down and reduce emissions by applying the state requirement of all feasible control measures. The last measure would place an emission charge for VOC and NOx major stationary sources.

Compliance Flexibility Programs

This category includes a control measure carried-over from the 2003 AQMP that enhances regulatory compliance by providing additional flexibility and compliance options thereby lowering compliance costs and incentivizing early reductions and advancement of clean technologies. A second control measure was mentioned in the 2003 AQMP but not listed as a Control Measure. This measure is a pilot program that could be used by the Petroleum Refining businesses as a compliance option to achieve their emission reduction obligations through either on-site or off-site controls.

Emission Growth Management

There are three control measures within this category. The first measure addresses emission reductions from new or redevelopment projects. District staff convened a working group made up of stakeholders from industry, local governments, and community representatives. Three working group meetings were held and staff prepared the following approach: The District will develop a rule that specifies applicability criteria for new or redevelopment projects and will involve the selection of mitigation measures from a menu of technically feasible mitigation options.~~Several options are being considered. Projects could be evaluated for significant air emissions pursuant to the California Environmental Quality Act (CEQA). The AQMD seeks to provide the lead agencies a voluntary mitigation fee program to mitigate emissions that are remaining after applying feasible mitigation measures. Another option would be a rule specifying mitigation measures for development projects.~~ The last two new control measures address the General Conformity projects. The first of these measures creates an emissions budget and mitigation program for these projects. The second measure addresses the impacts of federally permitted projects on the District.

District's Mobile Source Control Measures

The District is proposing seven~~four~~ control measures for mobile sources. One control measure seeks to impose a mitigation fee program on federal sources such as planes, trains, and ships in order to fund emission reduction projects. The second measure

promotes accelerated turn-over of in-use small off-road engines (SORE) and other engines such as recreational outboard engines through expanded voluntary exchange programs. The third measure introduces backstop measures for indirect sources of emissions from ports and port-related facilities. The fourth measure proposes to take credit for the emission reductions achieved through past and future projects funded under the Carl Moyer Program. The fifth and sixth measures identify categories of vehicles and augments the current smog check program. The last measure relies on concurrent reductions in criteria pollutants associated with implementation of strategies to reduce global warming gases as specified in Assembly Bill 32.

~~District's Long-Term Control Measure~~

~~The District is also proposing five long-term measures. The first measure examines further reductions of VOC by lowering reactivity. The second measure addresses the offsetting of emissions due to the introduction of natural gas with a wobbe index greater than 1360 and future BARCT assessment for NOx RECLAIM facilities. The third measure addresses further fugitive VOC reductions from such sources as gasoline transfer and dispensing, petroleum refining and chemical plants. The fourth control measure relies on concurrent reductions in criteria pollutants associated with implementation of strategies to reduce global warming gases as specified in Assembly Bill 32. The fifth long-term measure seeks further VOC reductions from various mobile source categories beyond the reductions from the short-term measures.~~

EVALUATION OF CONTROL MEASURES PROPOSED BY OTHER DISTRICTS/STATES

In an effort to ensure that all feasible measures are incorporated in the 2007 AQMP, in additional Reasonably Available Control Measure (RACM) demonstration included in Appendix VI, staff has review and evaluated control measures proposed by other districts and states for inclusion into their respective SIPs. Specifically, staff reviewed the following documents:

- Final Draft 8-Hour Ozone Plan for San Joaquin Valley, California (Serious)
- Draft 8-Hour Ozone Plan for Sacramento Metropolitan, California (Serious)
- Final 2006 1-hour Ozone Plan for San Francisco Bay Area, California (Moderate)
- Final list of control strategies of North Central Texas Council of Governments developed to be used for Dallas-Fort Worth and Houston-Galveston-Brazoria, Texas (Moderate)
- Final list of control measures of Lake Michigan Air Directors Consortium (LADCO) or Midwest Regional Planning Organization (Midwest RPO)

developed to be considered by the five states in the Midwest (Illinois, Indiana, Michigan, Ohio and Wisconsin).

In general, the District's current rules and regulations and control measures proposed in the 2007 AQMP are equivalent to or more stringent than those developed by other air districts. A summary of the control measures and the process of developing these control measures in other air districts is provided below and is summarized in Table A-1 of Attachment A.

RULE EFFECTIVENESS

The 1990 federal Clean Air Act requires that emissions inventories be adjusted to reflect the rule effectiveness. As defined by EPA, rule effectiveness reflects how emission reductions due to implementation of a regulatory program are estimated. EPA suggests a default value of 80 percent if emission reductions are estimated based on projected control efficiencies and emission factors. If a higher rule effectiveness value is used the District needs to demonstrate how these emission reductions will be achieved.

As described below under Rule Compliance and Test Methods, the compliance demonstration for each proposed control measure, where the District accounted for emission reductions, identifies the compliance mechanisms such as recordkeeping, inspection and maintenance activities, etc., and test methods such as District, ARB, and EPA approved test methods. The District's on going source testing and on-site inspection programs also strengthen the status of compliance verification. In addition, the District conducts workshops, compliance education programs to inform facility operators on rule requirements and assist them in performing recordkeeping and self inspections. These compliance tools are designed to ensure rule compliance would be achieved on a continued basis. As a result, the control measures proposed in this appendix with quantifiable emission reductions are based on a rule effectiveness of 100 percent.

FORMAT OF CONTROL MEASURES

Included in each control measure description is a title, summary table, description of source category (including background and regulatory history), proposed method of control, estimated emission reductions, rule compliance, test methods, cost effectiveness, and references. The type of information that can be found under each of these subheadings is described below.

Control Measure Number

Each control measure is identified by a control measure number such as "CM #2007MCS-04" located at the upper right hand corner of every page. "CM #" is the

abbreviation for the "control measure number" and is immediately followed by the year of the AQMP revision.

The next three-letter designation, "CTS" represents the abbreviation for a source category or specific programs. For example "CTS" is an abbreviation for "Coatings and Solvents." The following provides a description of the abbreviations for each of the measures.

- CTS Coatings and Solvents
- CMB Combustion Sources
- FUG Fugitive Emissions
- MCS Multiple Component Sources
- BCM Best Available Control Measures for Fugitive Dust Sources
- FLX Compliance Flexibility Programs
- EGM Emission Growth Management
- MOB Mobile Source Programs
- ~~LTM Long-Term Measures~~

If the measure is based on a control measure from the 2003 AQMP, the former control measure number appears in parentheses after the 2007 AQMP number. For example, 2007 AQMP Control Measure CM #2007CMB-04 Natural Gas Fuel Specifications would also have the designation (CM #2003MSC-07).

Title

The title contains the control measure name and the major pollutant(s) controlled by the measure. Titles that state "Control of Emissions from..." indicate that the measure is regulating a new source category, not presently regulated by an existing source- specific District rule. Titles that state "Further Emission Reductions of" imply that the measure would result in an amendment to an existing District rule.

Summary Table

Each measure contains a table that summarizes the measure and is designed to identify the key components of the control measure. The table contains a brief explanation of the source category, control method, emission reductions, control costs, and implementing agency.

Description of Source Category

This section provides an overall description of the source category and the intent of the control measure. The source category is presented in two sections, background and regulatory history. The background has basic information about the control measure such as the number of sources in the Basin, description of emission sources, and pollutants.

The regulatory history contains information regarding existing regulatory control of the source category such as applicable District rules or regulations and if the source category was identified in the 1999 or prior AQMPs.

Proposed Method of Control

The purpose of this section is to identify potential control options an emission source can use to achieve emission reductions. If an expected performance for a control option is provided, it is intended for informational purposes only and should not be interpreted as the targeted overall control efficiency for the proposed control measure. To the extent feasible, the overall control efficiency for a control measure should take into account achievable controls in the field by various subcategories within the control measure. A more detailed type of this analysis is typically conducted during rulemaking, not in the planning stage. It has been the District's long standing policy not to exclude any control technology and to~~have~~ intentionally identified as many control options as possible to spur further technology development. ~~Therefore, potential control options described in this section do not ensure their viability when subject to further technology assessment conducted during the rulemaking process.~~

In addition to the proposed control methods discussed in each control measure, affected sources may have the option of partially satisfying the emission reduction requirements of each control measure with compliance flexibility programs currently available, or those that will become available in the future from the on-going implementation of control measure CM #2007FLX-01. Examples of compliance flexibility programs currently available include Rule 2020 – RECLAIM Reserve and the pilot credit generation rules under Regulation XVI – Mobile Source Offset Programs. Future enhancements to Regulation XVI may include additional opportunities to generate and use credits from mobile sources which could advance the utilization of these credit rules and other compliance flexibility programs similar to regulation XVI.

Emissions Reduction

The emission reductions are estimates based on the baseline inventories prepared for the 2007 AQMP and are provided in the Control Measure Summary Table. The emissions data are based on the annual average inventory for all five criteria pollutants. The planning inventory adjusts the emissions by taking into consideration a source category's

seasonal variations. The emissions affecting ozone concentration (i.e., VOC and NO_x) are presented under the Summer Planning Inventory. The emissions section of the summary table includes the 2002, 2014, and 2023~~0~~ inventory. The 2014 and 2023~~0~~ emission projections reflect implementation of District adopted rules. Based on the expected reductions associated with implementing the control measure, emission data are calculated for 2014 and 2023~~0~~ assuming the implementation of the control measure in the absence of other competing control measures.

The emission reductions listed in the summary table represent the current best estimates, which are subject to change during rule development. As demonstrated in previous rulemaking, the District is always seeking maximum emission reductions when proven technically feasible and cost-effective. For emission accounting purposes, a weighted average control efficiency is calculated based on the targeted controls. The concept of weighted average acknowledges the fact that a control measure or rule consists of several subcategories, and the emission reduction potential for each subcategory is a function of proposed emission limitation and the associated emission inventory. Therefore, the use of control efficiency to estimate emission reductions does not represent a commitment by the District to require emission reductions uniformly across source categories. In addition, due to the current structure of emission inventory reporting system, a control measure may partially affect an inventory source category (e.g., certain size of equipment or certain level material usage). In this case, an impact factor is incorporated into the calculation of a control efficiency to account for the fraction of inventory affected. During the rule development, the most current inventory will be used. However, for tracking rate-of-progress on the SIP emission reduction commitment, the approved AQMP inventory will be used. More specifically, emission reductions due to mandatory or voluntary, but enforceable, actions will be credited under SIP obligations.

Rule Compliance

This section was designed to satisfy requirements in the 1990 Clean Air Act in which EPA has indicated that it is necessary to have a discussion of rule compliance with each control measure. This section discusses the recordkeeping and monitoring requirements envisioned for the control measure. In general ~~As discussed under this section of the control measure,~~ the District would continue to verify rule compliance through site inspections and submittal of compliance plans.

Test Methods

In addition to requiring recordkeeping and monitoring requirements, EPA has stated that "An enforceable regulation must also contain test procedures in order to determine whether sources are in compliance." This section of the control measure write-up identifies appropriate approved District, ARB, and EPA source test methods.

Cost Effectiveness

The Discounted Cash Flow (DCF) method is used to calculate the cost-effectiveness of each control measure. As control measures undergo the rule making process, more detailed control costs will be developed.~~, and therefore, may differ from the data presented here.~~

The cost effectiveness values contained herein, may overestimate actual levels because of a ~~the~~ number of affected factors.~~facilities may also include those that presently are not regulated by the District.~~ As additional information on costs and more accurate numbers of affected facilities becomes available, the cost effectiveness will be revised and analyzed in the socioeconomic assessment report of the 2007 AQMP.

Implementing Agency

This section identifies the agency(ies) responsibility for implementing the control measure. Also included in this section is a description of any jurisdictional issues that may affect the control measure's implementation.

References

This section identifies directly cited references, or those references used for~~to provide~~ general background information.

GROUP 1

Coatings and Solvents

EMISSION REDUCTIONS FROM LUBRICANTS [VOC]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	INDUSTRIAL LUBRICANTS		
CONTROL METHODS:	PHASE I: REFINE EMISSIONS INVENTORY IDENTIFY LOW-EMITTING ALTERNATIVES AND ENCOURAGE INDUSTRIES TO SWITCH FROM HIGH VOC CONTENT LUBRICANTS TO ALTERNATIVE SOLVENTS PHASE II: RULE DEVELOPMENT TO LIMIT EMISSIONS AT THE SOURCE AND/OR LIMIT VOC CONTENT AT POINT OF SALE/USE		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	~~6.6~~5.2	~~7.6~~6.0	~~8.0~~6.4
VOC REDUCTION		~~1.5~~1.9	~~1.6~~2.0
VOC REMAINING		~~6.1~~4.1	~~6.4~~4.4
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	~~6.6~~5.2	~~7.6~~6.0	~~8.0~~6.4
VOC REDUCTION		~~1.5~~1.9	~~1.6~~2.0
VOC REMAINING		~~6.1~~4.1	~~6.4~~4.4
CONTROL COST:	~~TO BE DETERMINED~~$1,000 TO 5,000 PER TON VOC REDUCED		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

The proposed control measure seeks to reduce VOC emissions from the use of lubricants which are utilized by a variety of different industries and new facility processes.

Background

A control measure was included in the 2003 AQMP to reduce VOC emissions from miscellaneous industrial coatings and solvent operations. The total estimated annual average emissions from these sources, without mitigation, were 13.9 tons per day in 2006 and 15.2 tons per day by 2010.

This 2007 AQMP control measure would seek to reduce VOC emissions from industrial lubricants, a category under solvent operations, over a defined implementation period. Lubricants include products such as coolants in manufacturing processes; stamping fluids; vanishing oils; and cutting, forming, and honing oils, and are used by various companies in the

South Coast Air Basin including, but not limited to, machine shops, auto rebuilders, and auto parts manufacturers. Many lubricants and their additives, such as rust and corrosion inhibitors, are at least 50 percent VOC solvents and are believed to emit a significant amount of VOCs. In addition, mineral spirits and kerosene used to dilute lubricants contain traces of benzene, toluene, and xylene, which are all classified as Hazardous Air Pollutants (HAPs) by the EPA and Toxic Air Contaminants (TACs) by the state of California. Benzene is established as a human carcinogen and toluene and xylene, respectively, have been proven to cause central nervous system damage and birth defects. `

Regulatory History

As stated in the previous section, lubricants are categorized under miscellaneous solvent operations. They are currently subject to Rule 442, "Usage of Solvents," which reduces VOC emissions from VOC-containing materials that are not subject to VOC limits in any Regulation XI rule. Currently, there are no regulations or emissions restrictions specifically concerned with industrial lubricants in place at the local, state, or federal levels.

PROPOSED METHOD OF CONTROL

There would be two potential implementation phases, enacted in an order that would bring about reductions in the most expedient manner. The first phase would involve refining the emissions inventory and identifying low-emitting alternatives to existing high-VOC lubricants and encouraging industries currently using high-VOC content products to voluntarily switch over to less-polluting ones. The second phase would involve developing a rule that would further reduce source emissions by either placing an overall emissions limit by source, or by limiting VOC content in lubricant formulations at the point of sale and/or use. This reduction is based on the fact that a smaller fraction of all industrial lubricants are virtually 100 percent VOC. Implementation of this control measure would target a minimum overall VOC reduction of ~~20~~35 percent or ~~1.3~~1.9 tons per day by year 2014.

There are important points that should be noted when discussing these phases. First, there are low- and non-emitting alternatives to petroleum-based lubricants available on the market, including synthetics, semi-synthetics, and vegetable oils. Thus, feasible reduction requirements could apply to the end user, as well as be imposed at the point of sale. A second notable point is that different types of machinery require different lubricant formulations. It should be made certain that the technological feasibility and cost impact of all alternatives to specific lubricant materials be assessed. Further consideration must also be given to possible toxic constituents in any reformulation or other alternatives.

EMISSIONS REDUCTION

Feasible emission reductions from currently available alternative products are estimated to be ~~1.6~~2.0 tpd in the year ~~2020~~2023.

RULE COMPLIANCE

Rule compliance would be achieved with compliance requirements under Regulation XI - Source Specific Rules. Recordkeeping and monitoring requirements would be similar to Rule 109.

TEST METHODS

~~To Be Determined~~The applicable testing methods are uncertain at this time and would require further analysis during the rulemaking process.

COST EFFECTIVENESS

The cost effectiveness of this control measure ranges between $1,000 per ton of VOC reduced to $5,000 based on the annualized cost comparisons conducted by the Institute for Research and Technical Assistance in their report entitled "Assessment, Development and Demonstration of Alternatives to VOC-Emitting Lubricants, Vanishing Oils and Rust Inhibitors". The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide specific cost effectiveness information as it becomes available.

~~Since compliant materials are currently available and used in the industry, the cost effectiveness appears to be favorable. Cost data will be available upon completion of a District-sponsored study by Fall of 2006~~.

IMPLEMENTING AGENCY

The District has authority to regulate VOC emissions from industrial coating and solvent operations, under which industrial lubricants are categorized.

REFERENCES

EPA Proposal Submittal. "Alternatives to VOC Emitting Lubricants and Rust Inhibitors" 2004.

Institute for Research and Technical Assistance. "Assessment, Development and Demonstration of Alternatives to VOC-Emitting Lubricants, Vanishing Oils and Rust Inhibitors", August 2006.

CLEAN COATINGS CERTIFICATION PROGRAM [VOC]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	COATING MATERIALS		
CONTROL METHODS:	STEP I: DEVELOPMENT OF CERTIFICATION PROGRAM FOR COATINGS WITH LOW-, ULTRA LOW-, OR ZERO-VOC CONTENT STEP II: ALLOW FOR REDUCTION OF EMISSION FEES TO MANUFACTERERS OF COATINGS WITH LOW-VOC CONTENT		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	TBD	TBD	TBD
VOC REDUCTION		TBD	TBD
VOC REMAINING		TBD	TBD
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	TBD	TBD	TBD
VOC REDUCTION		TBD	TBD
VOC REMAINING		TBD	TBD
CONTROL COST:	TO BE DETERMINED		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

Background

Although industrial coatings have been subject to controls for many years, they remain a significant source of VOC emissions. This control measure would seek to implement a VOC content certification program for lower VOC coatings, similar to that for Clean Air Solvents, which would influence industrial and other consumers' purchase decisions toward products with lower emissions. Manufacturers would then be encouraged to lower their VOC content, thus possibly reducing emissions beyond what traditional control rules would mandate. VOC emissions can cause adverse health impacts, such as headaches, nausea, allergic reactions, and other health problems in humans if inhaled. They also contribute to the formation of ozone and PM2.5, which can affect pulmonary functions and limit visibility.

Regulatory History

Previously, under Rule 1171 – Solvent Cleaning Operations, Clean Air Solvent certificates were issued to manufacturers, distributors, or any person for materials that met the criteria for a Clean Air Solvent. Key to that certification is that, among other criteria, the solvent contains no more than 25 grams of VOC per liter of material and the certification is valid for five years.

PROPOSED METHOD OF CONTROL

First, a certification criteria would be established for distinguishing products that are considered supercompliant (i.e. low-, ultra low-, or zero-VOC content levels), from other compliant products. Secondly, a certification process would be established for those products meeting the "Clean Air Coating" criteria. Certified products would be allowed to use the District certification and promote the products as being "environmental friendly."

Should the District produce fee related programs for VOC products, consideration will be given to promote supper compliant products.

EMISSIONS REDUCTION

~~To Be Determined~~This voluntary certification program's objective is to positively influence industrial, commercial, and consumer behavior in selecting ultra-low volatile organic compound (VOC) coatings and foster the marketing of ultra-low polluting technologies in an overall effort to reduce VOC emissions. Any VOC reductions due to promoting the use of ultra-low VOC coatings will be quantified via future SIP revisions.

RULE COMPLIANCE

This control measure would seek to amend applicable rules in Regulations II and XI to incorporate a Clean Air Coating Certification Program, similar to that for clean air solvents, as well as be considered in any future regulatory development. The District will explore the feasibility of voluntary and mandatory programs through amendments to Regulation XI and other rules. Conceptually, mandatory versus voluntary participation in the certification program is directly related to the District requiring all architectural coating products to be certified in order to be sold and applied within the District.

Essentially, if the program is voluntary, those coatings that are certified could benefit by not being subject to emission fees whereas non-certified products would pay a fee. Conversely, if it were mandatory, every coating manufacturer would need to certify their products. The fees could be assessed on a sliding scale with super compliant products, requiring little or no emission fees. The method of control would also include public education, outreach, and various marketing elements to help incentivize manufacturers and create consumer awareness and demand.

TEST METHODS

~~To Be Determined~~EPA Method 24 and SCAMQD Method 304 are rigorous test methods that provide accurate and reliable results when measuring the volatile organic content (VOC) of

many coatings, but there is inherent variability when employing Method 24 to analyze the VOC content of low-VOC waterborne coatings. The District has been working with the EPA, ARB, ASTM as well as members of academia and industry to develop an improved test method for the analysis of low VOC coatings. ASTM Method D 6886 Speciation of the Volatile Organic Compounds (VOCs) in Low VOC Content Waterborne Air-Dry Coatings by Gas Chromatography yields far greater precision than EPA Method 24 for low VOC waterborne coatings.

COST EFFECTIVENESS

Cost-effectiveness has not been determined for this measure.

IMPLEMENTING AGENCY

Both the CARB and the District have the authority to regulate consumer products emissions.

CONSUMER PRODUCT CERTIFICATION~~LABELING~~ AND EMISSION REDUCTIONS FROM USE OF CONSUMER PRODUCTS AT INSTITUTIONAL AND COMMERCIAL FACILITIES [VOC]

CONTROL MEASURE SUMMARY

SOURCE CATEGORY: CONSUMER PRODUCTS

CONTROL METHODS:

STEP I: DEVELOPMENT OF CERTIFICATION~~LABELING~~ PROGRAM FOR CONSUMER PRODUCTS.

STEP II: PROMOTING~~LIMITATION OF~~ USE OF~~FOR~~ CONSUMER PRODUCTS~~, OTHER THAN~~ (ULTRA LOW- OR ZERO-VOC PRODUCTS~~,~~) AT HIGH VOLUME COMMERCIAL AND INSTITUTIONAL FACILITIES.

EMISSIONS (TONS/DAY):

ANNUAL AVERAGE	**2002**	**~~2010~~2014**	**~~2014~~2023**
VOC INVENTORY	~~24~~23.1	~~23~~21.0	~~24~~ 20.5
VOC REDUCTION		~~TBD~~2.1	~~TBD~~ 2.2
VOC REMAINING		~~TBD~~18.9	~~TBD~~18.3

CONTROL COST: ~~TO BE DETERMINED~~SEE COST EFFECTIVENESS SECTION

IMPLEMENTING AGENCY: ARB AND AQMD

DESCRIPTION OF SOURCE CATEGORY

Background

Consumer products are defined under the California Health and Safety Code (HSC) as chemically formulated products used by institutional and household consumers. They include products such as detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Paint products, and furniture or architectural coatings are not included. The California Air Resources Board (ARB) further defines institutional cleaning as the cleaning of building or facility components including, but not limited to, floors, ceilings, walls, windows, doors, stairs, bathrooms, furnishings, and exterior surfaces of office equipment. Many of these commonly used consumer products have high-VOC contents and are the focus of ARBs efforts in the reduction of smog in California. In the year 2005, the contribution of VOCs from Consumer Products used in California was estimated at 245 tons per day or about 110 tons per day for the South Coast Air Quality Management (District). The inventory claim for this measure is an estimate of emissions from those consumer products used at institutional and commercial facilities.

This control measure would seek to reduce VOCs from consumer products used at commercial and institutional facilities by and through the use of marketing strategies and regulatory mandates. VOC emissions can cause adverse health impacts, such as headaches, nausea, allergic reactions, and other health problems in humans if inhaled. They also contribute to the formation of ozone and PM10, which can affect pulmonary functions and limit visibility.

This control measure would seek to develop new rules or programs to establish a VOC certification~~labeling~~ program, and to incentivize~~establish usage limitations for~~ high volume users toward super compliant products resulting in overall reductions in VOCs. Staff research has shown that there are low-and zero-VOC commercial and institutional products available that are below current and proposed limits in ARBs Consumer Products Regulation. For example, a local supplier of environmentally friendly cleaning products, Natural Solutions, has over twenty products available for commercial and institutional use ranging from 0 to 4% by weight of VOCs prior to dilution. Similar products under the current and future limits of ARBs Consumer Product Regulation range from 1% to 4% as applied, implying typically higher VOC ranges prior to dilution creating an even larger comparative differential.

Regulatory History

The California Air Resources Board (ARB) has the authority to regulate consumer products under Section 41712 of the California Health and Safety Code (HSC). Local Air Pollution Control Districts may restrict the use of consumer products at stationary and area sources of emissions, to limit the overall contribution of VOCs attributable to the formation of smog, may regulate consumer products that are not already regulated by ARB, and potentially may limit the use of consumer products at institutional and commercial sources.

PROPOSED METHOD OF CONTROL

Commercial and institutional consumer products used at facilities conducting business within the District would be targeted under this control measure, which would be implemented in two steps through specific rule development.

First, a certification~~labeling~~ program would be established ~~designating the form of the label and labeling criteria. The labels would~~to distinguish products that are super compliant containing ultra low- or zero-VOC content levels, otherwise referred to as "green" products, from products with higher-VOC content. ~~The required labels would have an appearance that is distinctive, prominent, and "friendly" (as opposed to technical). One possibility would be an image of a blue ribbon or "medal" for products that meet "Low Air Polluting" criteria as defined under District regulations.~~

Second, following implementation of the certification~~labeling~~ program, a usage limitation (or a prohibition of use) or other control method would be adopted for consumer products to facilitate the use of~~other than~~ ultra low- or zero-VOC products at high volume commercial and institutional facilities to the extent that the District is able to under State law, or the District will request ARB to adopt such a rule.

EMISSIONS REDUCTION

Emission reductions~~ cannot be quantified at this time, but are anticipated to be significant from greater use of super compliant low- and zero-VOC products~~ from commercially available consumer products are expected to be about 2.1 tpd by the year 2014 and 2.2 tpd by 2023. Reductions achieved through this measure will contribute to ARB's SIP commitment for this source category.

RULE COMPLIANCE

Step I: New labeling program for manufacturers or distributors with criteria developed under a public process.

Step II: Create a usage limitation or a prohibition of use, or the District will request ARB to adopt such a rule.

TEST METHODS

United States Environmental Protection Agency (USEPA) Reference Method 24 (Code of Federal Regulations, Title 40, Part 60, Appendix A). The exempt compounds' content shall be determined by the District Method 303 (Determination Exempt Compounds) contained in the District "Laboratory Methods of Analysis for Enforcement Samples" manual; or,

District Method 304 [Determination of Volatile Organic Compounds (VOC) in Various Materials] contained in the District "Laboratory Methods of Analysis for Enforcement Samples" manual.

COST EFFECTIVENESS

~~TBD~~ No increase in cost is expected from this control measure. The California Department of General Services' "Green Building Initiative" concludes that, "Environmentally preferred cleaners are generally competitively priced. This includes the purchase price of the product, the cost of meeting regulations for worker safety and environmental rules, and the costs of disposal for leftover product."

IMPLEMENTING AGENCY

Step I to be implemented by the District with Step II under ARB and/or District regulatory authority.

EMISSION REDUCTIONS FROM THE REDUCTION OF VOC CONTENT OF CONSUMER PRODUCTS NOT REGULATED BY THE STATE BOARD [VOC]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	CONSUMER PRODUCTS		
CONTROL METHODS:	LIMITATION OF VOC CONTENT FOR SELECTED CONSUMER PRODUCTS THAT ARE PRIMARILY USED BY INSTITUTIONAL AND INDUSTRIAL FACILITIES AND ARE CURRENTLY UNREGULATED BY THE CALIFORNIA AIR RESOURCES BOARD		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**2023**
VOC INVENTORY	6.3	7.3	7.6
VOC REDUCTION		5.8	6.0
VOC REMAINING		1.5	1.6
SUMMER PLANNING INVENTORY	**2002**	**2014**	**2023**
VOC INVENTORY	6.3	7.3	7.6
VOC REDUCTION		5.8	6.0
VOC REMAINING		1.5	1.6
CONTROL COST:	$3,000 TO 5,000 PER TON VOC REDUCED		
IMPLEMENTING AGENCY:	AQMD/CARB		

DESCRIPTION OF SOURCE CATEGORY

Background

The California Health and Safety Code (HSC) defines a "Consumer product" as a chemically formulated product used by household and institutional consumers. HSC 41712 (f) prohibits air quality districts from adopting regulations pertaining to a consumer product that is different from any regulation adopted by the state board. Several consumer product categories, including Lacquer Thinners and Paint Thinners, are unregulated by the California Air Resources Board (ARB). The two categories have significant emissions within the South Coast Air Basin. According to ARB, between 54% and 97% of the above mentioned product categories are used by institutional and industrial facilities.

This control measure would seek to reduce VOCs from lacquer thinners and paint thinners sold as consumer products by establishing a VOC content limit for each of those categories.

Regulatory History

ARB has the authority to regulate consumer products under Section 41712 of the HSC. Local Air Pollution Control Districts may restrict the use of consumer products at stationary and area

sources of emissions to limit the overall contribution of VOCs attributable to the formation of smog, regulate consumer products that are not already regulated by ARB, and potentially limit the use of consumer products at institutional, industrial and commercial sources.

Most lacquer thinners and paint thinners distributed and sold as consumer products are pure solvents with a very high VOC content. Rule 1171 – Solvent Cleaning Operations and associated technology assessments conducted to support the rule, revealed the viability of lower VOC products that are currently in use by many industrial and commercial operations. This low VOC product technology can easily be adapted to meet consumer application needs.

PROPOSED METHOD OF CONTROL

Products used at facilities conducting business within the district would be targeted under the control measure and would be implemented through specific rule development. Similar to Rule 1174 – Control of Volatile Organic Compound Emissions from the Ignition of Barbecue Charcoal, the rule would apply to suppliers, distributors and retailers of paint thinners and lacquer thinners. It would limit the VOC content of products sold to consumers, including institutional and industrial facilities.

EMISSION REDUCTION

The expected emission reduction would be based on the final VOC content limit allowed for paint thinners and lacquer thinners. The primary uses are thinning and cleaning of coatings and adhesives. Rule 1171 – Solvent Cleaning Operations, has a VOC content limit of 100 g/l for similar cleaning activities. If such a limit were adopted, the expected emission reduction would be 5.8 tons per day in 2014 and 6.0 tons per day by 2023. Any emission reductions resulting from the implementation of this control measure will be credited towards the District's SIP obligation provided ARB does not develop a similar regulation. Any remaining excess reductions will then contribute to fulfilling ARB's SIP commitment.

RULE COMPLIANCE

Create a VOC content limit for suppliers, distributors and retailers of paint thinners and lacquer thinners.

TEST METHODS

United States Environmental Protection Agency (USEPA) Reference Method 24 (Code of Federal Regulations, Title 40, Part 60, Appendix A). The exempt compounds content shall be determined by the District Method 303 (Determination Exempt Compounds) contained in the District "Laboratory Methods of Analysis for Enforcement Samples" manual; or

District Method 304 [Determination of Volatile Organic Compounds (VOC) in Various Material] contained in the District "Laboratory Methods of Analysis for Enforcement Samples" manual.

COST EFFECTIVENESS

The cost effectiveness of this control measure ranges between $3,000 per ton of VOC reduced to $5,000 based on the cost differential between existing solvent-based thinners and low-VOC thinners and clean-up solvents used to comply with other District regulations. The District staff will continue to analyze the potential cost impact associated with implementing this control measure and will provide specific cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has the authority to implement this measure.

GROUP 2

Petroleum Operations and Fugitive VOC Emissions

IMPROVED LEAK DETECTION AND REPAIR

[VOC]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	FUGITIVE EMISSION SOURCES
CONTROL METHODS:	PHASE I: PILOT PROGRAM – OPTICAL GAS IMAGING (SMART LDAR) PHASE II: FULL IMPLEMENTATION OF SMART LDAR PROGRAMS
EMISSIONS (TONS/DAY)	NOT DETERMINED
CONTROL COST:	UP TO $100,000 PER UNIT
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

Control Measure #FUG-01 is a new control measure that targets a variety of fugitive emissions sources including, but not limited to, oil and gas production facilities, petroleum and chemical products processing, storage and transfer facilities, marine terminals, and other sources contributing to fugitive emissions. Most of these facilities are required under District and federal rules to maintain a leak detection and repair (LDAR) program that involves individual screening of all of their piping components.

The scope of Control Measure FUG–01 is to enhance the effectiveness of existing LDAR programs by identifying and repairing leaks sooner and in a manner that is less time consuming and labor intensive and expand the applicability of LDAR programs to areas currently not covered by existing rules such as harbor vessels. For this purpose, the new control measure uses recently developed technology, called optical gas imaging, to detect leaks (Smart LDAR). There are two types of optical gas imaging instruments: active and passive. The active type uses a laser beam that is reflected by the background; and the attenuation of the beam traversing through a hydrocarbon cloud provides the optical image. The passive type uses the ambient illumination to detect the difference in heat radiance of the hydrocarbon cloud. For either type, the instrument displays an image of the hydrocarbon plume.

Background

Fugitive VOC leaks have been the subject of control measures in previous AQMPs since they are ozone precursors and contribute to formation of smog. Several District rules that affect petroleum and chemical-related industries, such as oil refineries, oil and gas production fields, natural gas processing plants, pipeline transfer stations and chemical plants have some kind of requirement involving the periodic inspection of piping components and the detection and repair of leaks.

Fugitive leaks are detected with an organic vapor analyzer (OVA) that measures the leak rate for each component, using U.S. EPA Reference Method 21. In the early 1970s, U.S. EPA initiated the Petroleum Refinery Assessment Study, which developed average emission factors for each type of piping component (valve, flange, pump, etc) and concluded that mass emission rates are dependent of the phase of the process stream (gas/vapor, light liquid and heavy liquid) and the relative volatility of the liquid stream.

Mass emissions from fugitive leaks can be calculated based on correlation equations developed by the U.S. EPA based on data from the 1994 Refinery Equipment Leak Report. Mass emissions are calculated by inserting the measured leak rates into the correlation equations specific for each type of component, such as valve, flange, pump, compressor, etc.

The current LDAR program has been successful in significantly reducing fugitive VOC emissions from a variety of sources. However, the latest technology provides opportunities for further improvements in the efficiency of the conventional LDAR program and for further reductions.

Regulatory History

Fugitive emissions are currently regulated under various District rules that require a LDAR program: Rules 462 – Organic Liquid Loading, 463 – Storage of Organic Liquids, 1142 – Marine Vessel Tank Operations, 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum and Chemical Plants, 1176 – Sumps and Wastewater Separators, and 1178 - Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities.

PROPOSED METHOD OF CONTROL

This control measure will be implemented in two phases: Phase I will be a pilot LDAR program involving familiarization with the new technology and establishing implementation protocols, and will involve the identification of facilities/industries currently subject to LDAR programs as well as others that are not where the new technology can successfully be utilized. Based on the results of Phase I, fugitive VOC rules, if feasible, will be amended under a subsequent phase (Phase II) to enhance their applicability, effectiveness, and to further reduce emissions.

EMISSIONS REDUCTION

The emission reductions from this control measure have not been determined.

RULE COMPLIANCE

Rule compliance would be similar to compliance requirements under existing Rules 462, 463, 1142, 1173, 1176, and 1178. Recordkeeping and monitoring requirements would be similar to Rule 109.

TEST METHODS

Test methods include the following:

U.S. EPA Reference Method 21 - Determination of Volatile Organic Compounds Leaks.

Federal Register Vol. 71, No. 66 April 6, 2006 - Alternative Work Practice To Detect Leaks From Equipment.

COST EFFECTIVENESS

There are no claimed emission reductions associated with this control measure and therefore cost effectiveness is not calculated.

IMPLEMENTING AGENCY

The District has authority to regulate fugitive VOC emissions sources.

REFERENCES

U.S. EPA – Protocol for Equipment Leak Emission Estimates, November 1995.

Federal Register /Vol. 71, No. 66/April 6, 2006, Alternative Work Practice To Detect Leaks From Equipment.

EMISSION REDUCTIONS FROM GASOLINE TRANSFER AND DISPENSING [VOC]

CONTROL MEASURE SUMMARY

SOURCE CATEGORY: GASOLINE TRANSFER AND DISPENSING

CONTROL METHODS: IMPROVE THE IMPLEMENTATION OF THE ENHANCED VAPOR RECOVERY REGULATION

EMISSIONS (TONS/DAY):

ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	17.3	17.3	~~18.4~~19.0
VOC REDUCTION		3.7	~~3.9~~ 4.1
VOC REMAINING		13.6	~~14.5~~14.9
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	17.3	17.3	~~18.4~~19.0
VOC REDUCTION		3.7	~~3.9~~ 4.1
VOC REMAINING		13.6	~~14.5~~14.9

CONTROL COST: ~~TO BE DETERMINED~~$1,673 PER TON VOC REDUCED

IMPLEMENTING AGENCY: AQMD

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to reduce VOC and toxic emissions from gasoline dispensing facilities (GDFs) by improving implementation of the Enhanced Vapor Recovery (EVR) Regulation.

Background

GDFs represent the second largest emission source category under the District's regulatory authority, following architectural coatings. Emissions from GDFs are regulated by the Enhanced Vapor Recovery (EVR) regulation of the California Air Resources Board (CARB) and the District's Rule 461.

In March 2000, California Air Resources Board (CARB) amended the EVR to reduce VOC and toxic emissions from the transfer and dispensing of gasoline at GDFS (service stations). The EVR includes testing and certification procedures to improve the performance and specifications of both Phase I and Phase II vapor recovery systems.

The EVR for Phase I (one module) included the improvements of the spill containment and covers; rotatable product and vapor adaptors; overfill prevention device; and pressure vacuum vent gauges. Phase I module for both the balance and the vacuum assist systems was completely implemented on April 1, 2005.

The EVR for Phase II (five modules) includes, but is not limited to, the onboard refueling vapor recovery (ORVR), and the in-station diagnostic (ISD). The ORVR routes gasoline vapor displaced during vehicle fueling to the onboard canister on the vehicle. The ISD is designed to provide continuous real-time monitoring of vapor collection and containment efficiencies; alert the GDF operator when a failure mode is detected so that corrective action can be taken; shut down the dispensers, if repairs are ignored; and provide compliance records. Presently, the ISD is only certified and installed on the Healy VR 202 (Veeder-Root ISD) system. The ISD for the balance system and other vacuum assist systems are in the testing program phase (180 days) and the complete implementation of the ISD for both balance and vacuum assist systems is scheduled for 2009-2010.

There are approximately 3400 retail GDFs and 1500 non-retail GDFs in the Basin with a total approximate throughput of 7 billion gallons per year. Current regulatory structure seeks to reduce the uncontrolled emissions inventory estimated at 197 tpd by 95 percent. However, because of poor compliance rates, the reduction target remains elusive. Through successive amendments to EVR regulation and Rule 461, CARB and the District attempted to address this chronic problem.

Regulatory History

In an effort to significantly improve the compliance rates from this industry by monitoring emissions, the District in 2000 amended Rule 461 and significantly enhanced the monitoring of source testing requirements of this rule as well as its enforcement presence. The emission reduction from the 2000 amendment was estimated to be 27.3 tpd. While the compliance rates improved significantly, they are far from being satisfactory. Based on the current compliance status (75 percent), the remaining VOC emissions from GDF operations are estimated to be 17.3 tpd.

Presently, Rule 461 requires 95 percent control efficiency for both Phase I and Phase II vapor recovery systems. On April 2005, CARB requested the installation of EVR Phase I and Phase II on all GDFs. EVR is projected to increase the control efficiency of the vapor recovery systems from 95 percent to 98 percent.

Effective September 2005, CARB required all GDFs dispensing units to be compatible with the integral ORVR vapor recovery systems installed on late model motor vehicle.

PROPOSED METHOD OF CONTROL

The proposed control measure includes the following potential actions:

1. Improve the functions of the ISD to ~~include a yellow alert~~ provide an earlier warning signal at a lower degradation rate which would indicate the potential for the failure thereby allowing preventative repairs prior to system failure. Currently, the warning alert starts after 25 percent degradation of performance of the vapor recovery system.~~Presently, the ISD alert is restricted only to the failure of the vapor recovery systems (red alert) which will result in emissions loss, with the associated system failure.~~

2. Change~~Enhance~~ both the ISD warning and gross failure alerting ranges to approximate~~match~~ the CARB Executive Orders standards. For example, the Executive Order and the ISD ranges for the gross failure alert of the vapor/liquid (V/L) test are 0.95 – 1.15 and 0.24 – 2.01, respectively. Therefore, the ISD gross failure alerts starts~~s~~ after 75 percent degradation of performance ~~the vapor recovery system~~ of the vapor recovery system.

   The preliminary results of CARB ISD field study which dated November 14, 2006 indicated that the malfunction criteria for both the warning and the gross failure modes can be tightened and provide earlier warning and gross failure alerts at lower degradation of performance rates.

3. Disallow the use of the ISD reset button unless and until all the defective components are repaired and the vapor recovery system operates in full compliance. Currently, the ISD system is equipped with a reset button, which allows a failed vapor recovery system to be reset to dispense gasoline without repair of the system. Additionally, staff is exploring with ISD's manufacturer the feasibility of restricting the ISD shut down function to the defective fueling point(s) instead of the current shut down function which includes all the fueling points.

4. Seek implementation of the CARB certified ISD systems on all the balance and the vacuum assist systems.

5. Install a "shut down" sensor or mechanism on the fuel line of the dispenser to stop fueling if the fuel filters are blocked and the fueling flow rate drops below the system certification standards. After the implementation of the ORVR requirement, the fuel filters integrity is essential to maintain the appropriate liquid flow rate (as specified by the CARB Executive Order). Partially blocked fuel filters decrease the fuel flow rates which deactivate the pressure sensor in the nozzles and allow air ingestion and vapor growth in the underground tanks. This method of control provides a feasible technology to verfy compliance with the fuel flow rate standards of the Executive Order and assure the integrity of the vapor recovery system.

EMISSIONS REDUCTION

The estimated emission reductions are summarized in the control measure summary.

RULE COMPLIANCE

Compliance with this control measure would be similar to the compliance requirements under existing Rule 461.

TEST METHODS

The control measure will implement the EVR tests procedures: TP-201.3 (Leak Decay), TP-201.4 (Back Pressure), TP-201.5 (Vapor/liquid ratio A/L), and TP-201.6 (Liquid Removal).

COST EFFECTIVENESS

The cost effectiveness of this control measure is estimated at $1,673 per a ton of emission reduction~~has not yet been specifically determined. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide specific cost effectiveness information as it becomes available~~.

IMPLEMENTING AGENCY

The District has the authority to adopt and enforce rules and regulations (Health and Safety Code §40001).

REFERENCES

"Retail Gasoline Dispensing Facility Inspection, Rule 461 Compliance Audit in the South Coast AQMD," Second Quarter 1997, South Coast Air Quality Management District.

"Emissions Inventory Procedural Manual Volume III Methods for Assessing Area Source Emissions," Section 4.10 – Gasoline Dispensing Facilities, October 1997, Air Resources Board.

South Coast Air Quality Management District, "Final Staff Report For Proposed Amended Rule 461 - Gasoline Transfer and Dispensing," April 21, 2000.

"Enhanced Vapor Recovery Technology Review," Monitoring and Laboratory Staff Report, California Air Resources Board, April 2002.

"Enhanced Vapor Recovery Update," Sixth Annual California Unified Program Conference, February 5, 2004.

FURTHER EMISSION REDUCTIONS FROM CUTBACK ASPHALTS [VOC]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	ASPHALT PAVING		
CONTROL METHODS:	LIMITING USE OF CUTBACK ASPHALT		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	TBD	TBD	TBD
VOC REDUCTION		TBD	TBD
VOC REMAINING		TBD	TBD
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	TBD	TBD	TBD
VOC REDUCTION		TBD	TBD
VOC REMAINING		TBD	TBD
CONTROL COST:	TO BE DETERMINED		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to reduce emissions from asphalt paving applications by limiting the use of cutback asphalt and/or replacing it with emulsified asphalt.

Background

Cutback and emulsified asphalts are used in nearly all paving applications. Cutback asphalt is prepared by blending (or "cutting back") asphalt cement with petroleum distillates such as gasoline, naphtha, kerosene, or slow volatile oils. Emulsified asphalt is made by blending asphalt cement with a majority of non-volatile emulsifying agent (e.g. water or soap) and some light petroleum distillates used as diluents. As a result, emulsifying asphalt has a lower emission potential than cutback asphalt. In 1977, EPA issued a Control Technology Guidelines (CTG) defining Reasonably Available Control Technology (RACT) for cutback asphalt and indicating that the use of emulsified asphalt in place of cutback asphalt would reduce almost all VOC emissions. EPA provided additional guidelines for cutback asphalts in its "Blue Book" 1) No CTG cutoff level; 2) seasonal exemptions (i.e. cutback asphalt is not recommended during ozone season) as opposed to limitation on temperature where paving is applied (e.g. less than 50 degree F); and 3) exemptions for use solely as penetrating prime coat and when stockpiled for extended period of time which is longer than 1 month.

Regulatory History

The District's Rule 1108 – Cutback Asphalt requires that no person shall sell, or offer for sale for use, or use medium or slow curing grade cutback asphalt containing more than 0.5% by volume organic compounds which evaporate at 260 degree C (or 500 degree F) or lower as measured by ASTM Method D402. The District's Rule 1108.1 – Emulsified Asphalt requires

that no person shall sell, or offer for sale for use, or use emulsified asphalt containing more than 3% by volume organic compounds which evaporate at 260 degree C (or 500 degree F) or lower as measured by ASTM Method D244. These rules do not contain seasonal exemptions or usage limitation as in EPA's RACT.

Many states, such as Maine (Regulation, Chapter 131), Missouri (Rule 10 CSR 10-5.310), New York (Rule 211, §211.4), Pennsylvania (Rule 129, §129.64), Rhode Island (Rule 25), have already adopted regulations to implement EPA's RACT to prohibit the use of cutback asphalt during ozone season (May to September). These states provide exemptions for cutback asphalts used as penetrating prime coat, long-life stockpiles, filling potholes, road patching, and dust palliative. In addition, Maine and Rhode Island also require that cutback asphalts contain less than 5% organic compounds which evaporate at 500 degree F, and New York requires that cutback asphalts must be applied only at low ambient temperatures, during other months of the year.

In California, Sacramento (Rule 453) and Placer County (Rule 217) limit the use of cutback asphalts throughout the entire year. Placer County allows the use of cutback asphalts solely during the months of the year when the National Weather Service forecasts that atmospheric temperatures for the 24-hour period following the application will not exceed 10 degree C (50 degree F), and Sacramento allows the use of cutback asphalts solely as prime coat.

As required by federal rule 40 CFR 51.912, the District developed and submitted to U.S. EPA a report to demonstrate that the current District rules and regulations fulfill the 8-hour ozone RACT. During this review, the EPA Region 9 noted that Rule 1108 does not contain RACT for asphalt paving (i.e. seasonal and usage exemptions), and therefore recommended staff to consider this option in the 2007 AQMP. In their RACT submittal to U.S. EPA, the District committed to evaluate the potential of limiting the use of cutback asphalt. This control measure is intended to fulfill this commitment.

PROPOSED METHOD OF CONTROL

The most effective way to control emissions from asphalt paving is to reduce the VOC content in cutback as well as emulsified asphalts. Another strategy is to prohibit the use of high VOC containing asphalts by using seasonal restrictions, or limit its use to certain applications. The District will continue further evaluation to determine the possibility of implementing these control options, as well as evaluating further controls.

EMISSIONS REDUCTION

The 2014 and ~~2020~~2023 baseline emissions estimated for asphalt paving are about 0.90 tons per day and 1.40 tons per day, respectively. At this time, it is not possible to quantify precise emission reductions from implementation of this control measure. However, prohibiting the use of cutback asphalt and replacing it with emulsified asphalt could potentially reduce 40% (or 0.5 tpd) of the VOC emissions from this category. Further analysis is needed to quantify accurate emission reductions from this control measure.

RULE COMPLIANCE

Compliance with this control measure would depend on the type of controls implemented, but would be similar to the compliance requirements under existing Rules 1108 and 1108.1.

TEST METHODS

The percent by volume organic compounds which evaporate at 500 degree F or lower) is determined based on ASTM Method D403 (AASHTO T78) for cutback asphalt, and ASTM Method D244 (AASHTO T59) for emulsified asphalt as specified in the District's Rule 1108 and 1108.1.

COST EFFECTIVENESS

The cost effectiveness of this control measure has not yet been specifically determined. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide specific cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has the authority to adopt and enforce rules and regulations to achieve and maintain the state and federal ambient air quality standards in all areas affected by emission sources under its jurisdiction (Health and Safety Code §40001).

REFERENCES

EPA, Control Technology Guidelines - Control of Volatile Organic Compounds from Use of Cutback Asphalt, EPA-450/2-77-037, December 1977.

EPA, EPA "Blue Book" - Issues Relating to VOC Regulations Cutpoints, Deficiencies, and Deviations – Cutback or Emulsified Asphalt, May 25, 1988

EPA, Comment letter from Andrew Steckel (EPA Region 9) to Joe Cassmassi (AQMD), 8-Hour Ozone Reasonably Available Control Technology – State Implementation Plan (RACT SIP) Analysis, June 28, 2006.

LADCO-Midwest RPO, Interim Paper – Midwest Regional Planning Organization (RPO) Candidate of Control Measures – Asphalt Paving, March 10, 2006.

New York State, Department of Environmental Conservation, Rules and Regulations, Part 211 – General Prohibitions, §211.4 – Volatile Organic Compounds Prohibited, 1983.

Maine, Department of Environmental Protection, Rules and Regulations, Chapter 131 – Cutback Asphalt and Emulsified Asphalt, 1993.

Missouri, Code of Regulation, 10 CSR 10-5.310, Liquefied Cutback Asphalt Restricted, 1988.

OTC, Summary of Ozone Transport Commission Candidate Control Measures – Asphalt Paving, March 27, 2006.

Pennsylvania, Code of Regulations, §129.64, Cutback Asphalt Paving, Amended 1983.

Placer County Air Pollution Control District, California, Rule 217 – Cutback and Emulsified Asphalt Paving Materials, Amended September 25, 1990.

Rhode Islands, Air Pollution Control Regulation, No. 25, Control of Volatile Organic Compound Emissions from Cutback and Emulsified Asphalt, February 2001.

Sacramento Metropolitan AQMD, California, Rule 453 - Cutback and Emulsified Asphalt Paving Materials, Amended August 31, 1982.

District, Rule 1108 – Cutback Asphalt, Amended February 1, 1985.

District, Rule 1108.1 – Emulsified Asphalt, Amended November 4, 1983.

District, Staff Report – AQMD 8-Hour Ozone Reasonably Available Control Technology (RACT) State Implementation Plan (SIP) Demonstration, June 2006.

FURTHER EMISSION REDUCTIONS FROM PIPELINE AND STORAGE TANK DEGASSING [VOC]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	PIPELINE AND STORAGE TANK DEGASSING		
CONTROL METHODS:	ENHANCED CONTROL TECHNOLOGY; INCREASED CONTROL EFFICIENCY; ESTABLISH CONCENTRATION LIMITS; EXPAND CURRENT RULE TO INCLUDE PIPELINES, OTHER SOURCE CATEGORIES, SMALLER TANKS SIZES AND OTHER DEGASSING OPERATIONS		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	~~TBD~~1.2 to 1.8	~~TBD~~1.2 to 1.8	~~TBD~~1.2 to 1.8
VOC REDUCTION		~~TBD~~0.7 to 1.6	~~TBD~~0.7 to 1.6
VOC REMAINING		~~TBD~~0.2 to 0.5	~~TBD~~0.2 to 0.5
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	~~TBD~~1.2 to 1.8	~~TBD~~1.2 to 1.8	~~TBD~~1.2 to 1.8
VOC REDUCTION		~~TBD~~0.7 to 1.6	~~TBD~~0.7 to 1.6
VOC REMAINING		~~TBD~~0.2 to 0.5	~~TBD~~0.2 to 0.5
CONTROL COST:	$2,500 TO $22,900 PER TON OF VOC REDUCED		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to reduce emissions from pipeline and storage tank degassing by requiring enhanced control technology, increased control efficiency, establishing concentration limits, and expanding the source categories, operations and the capacity (size) of affected equipment.

Background

There are approximately 640 floating roof tanks and 750 fixed roof tanks storing petroleum products in refineries, bulk loading, and storage facilities, as well as 11,000 gasoline storage tanks at service stations throughout the Basin, all of which are subject to Rule 1149 – Storage Tank Cleaning and Degassing. Storage tanks must be degassed prior to cleaning, removal, and maintenance. These tanks and their associated piping require periodic cleaning to prevent contamination of the product. Ultimately, the tanks are replaced as they wear out. In addition, some tanks are taken out of service each year so that land can be put to alterative use. This control measure would impact the refineries, chemical plants, gasoline stations, and an unknown number of new facilities in the paint, solvent, adhesive, and ink manufacturing industries.

Regulatory History

Rule 1149 – Storage Tank Cleaning and Degassing was adopted on December 4, 1987, and amended on April 1, 1988 and July 14, 1995. Rule 1149 requires control of VOC emissions during the degassing process. Degassing is the process of removing organic gases from a tank for cleaning purposes. Subject to this rule are the following:

- Above-ground tanks having a capacity of more than 39,630 gallons storing organic liquid with a vapor pressure of more than 2.6 psi or between 19815 and 39,630 gallons having a vapor pressure of more than 3.9 psi.

- Underground tanks having a capacity of more than 500 gallons storing organic liquid with a vapor pressure of more than 3.9 psi.

This rule requires that specific volume(s) of displaced organic gas be vented to control devices that are at least 90 percent efficient for all affected facilities and the submittal of a compliance plan.

PROPOSED METHOD OF CONTROL

This control measure seeks to further reduce emissions from storage tank degassing by requiring enhanced control technology, increased control efficiency, establishing concentration limits for gases vented to the atmosphere. In addition, Rule 1149 could also be amended to regulate smaller tanks; other source categories, such as pipelines; other industries that manufacture or store paint, ink, adhesive, and solvent; and other degassing operations, such as those for repair or product switching, and not just those operations performed as part of tank cleaning.

EMISSIONS REDUCTION

The emissions inventory is estimated between 1.2 and 1.8 tons of VOC per day based on notification data and operational records. ~~and e~~Emissions reductions are estimated to range between 0.7 and 1.6 tons of VOC per day depending on the concentration limit established and the vapor pressure of liquids applicable. ~~have not been determined at this time.~~ Further analysis is needed to quantify accurate emission reductions from this control measure.

RULE COMPLIANCE

Compliance with this control measure would depend on the type of controls implemented, but would be similar to the compliance requirements under existing Rule 1149.

TEST METHODS

U.S. EPA Method 25 – Determination of Total Gaseous Non-methane Organic Emissions as Carbon;

U.S. EPA Method 25A - Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer; or

AQMD Test Method 25.1 - Determination of Total Gaseous Non-methane Organic Emissions as Carbon.

COST EFFECTIVENESS

The cost effectiveness of this control measure ranges between $2,500 per ton of VOC reduced to $22,900 depending on the concentration limit established and the vapor pressure of liquids applicable.~~has not yet been specifically determined~~. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide specific cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has the authority to adopt and enforce rules and regulations to achieve and maintain the state and federal ambient air quality standards in all areas affected by emission sources under its jurisdiction (Health and Safety Code §40001).

REFERENCES

Bay Area Air Quality Management District Regulation 8, Rule 5 – Storage of Organic Liquids (November 27, 2002).

San Jaoquin United Valley Air Pollution Control District Rule 4623 - Storage of Organic Liquids (May 19, 2005).

Ventura County Air Pollution Control District Rule 74.26 – Crude Oil Storage Tank Degassing Operations (November 8, 1994).

Ventura County Air Pollution Control District Rule 74.27 – Gasoline and ROC Liquid Storage Tank Degassing Operations (November 8, 1994).

South Coast Air Quality Management District Rule 1149 - Storage Tank Cleaning and Degassing (July 14, 1995).

GROUP 3

Combustion Sources

NO_X REDUCTIONS FROM NON-RECLAIM OVENS, DRYERS AND FURNACES [NO_X]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	FACILITIES WITH OVENS, DRYERS & FURNACES		
CONTROL METHODS:	ALL AVAILABLE CONTROL METHODS		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
NOX INVENTORY	~~5.4~~4.9	~~6.6~~6.2	~~7.1~~6.8
NOX REDUCTION		~~3.7~~3.5	~~4.0~~3.8
NOX REMAINING		~~2.9~~2.7	~~3.1~~3.0
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
NOX INVENTORY	~~5.8~~5.3	~~7.1~~6.6	~~7.6~~7.3
NOX REDUCTION		~~4.0~~3.7	~~4.3~~4.1
NOX REMAINING		~~3.1~~2.9	~~3.3~~3.2
CONTROL COST:	$4,000 TO 13,000 PER TON NO_X REDUCED		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

Background

Boilers, process heaters, internal combustion engines and turbines are regulated by the District under source specific NOx rules. However, there is a wide variety of combustion equipment for which the District does not have source specific NOx rules. The equipment includes but is not limited to ovens, dryers, furnaces, kilns, afterburners and incinerators. The equipment is used in many industrial and commercial operations to dry, bake, cure, melt, burn off and form materials, or as VOC control devices.

Ovens, dryers and furnaces at non-RECLAIM facilities have NOx emission limits based on BACT/LAER requirements at the time the equipment was permitted. In addition, equipment exempt from permit requirements are not subject to NOx controls. However, technology is available to lower emissions from these units through retrofit of burners and controls or replacement with new equipment.

Regulatory History

In the 1994 and 1997 AQMP, control measure CMB-02 included reductions from a variety of non-RECLAIM combustion sources. Of the six components of the control measure, two have been implemented as District rules (CMB-02B – Small Boilers and Process Heaters and CMB-02F – IC Engines). The other components of CMB-02 proposed reductions from curing and drying ovens, metal melting furnaces, afterburners, and other miscellaneous combustion sources. In the 2003 AQMP these components of the control measure were delayed due to administrative

and technical issues. These categories are being reconsidered because technology has advanced and is more cost effective.

PROPOSED METHOD OF CONTROL

NOx emissions from these types of equipment can be reduced using low NOx burners. Many different types of burners have been developed to reduce NOx emissions from combustion sources. The principle technique involves premixing of fuel and air before combustion takes place. This results in a lower peak and more uniform flame temperature. A lower flame temperature reduces formation of NOx. Some premix burners also use staged combustion with a fuel rich zone to start combustion and stabilize the flame and a fuel lean zone to complete combustion and reduce the peak flame temperature.

Burners can also be designed to spread flames over a larger area to reduce hot spots and lower NOx emissions. Radiant premix burners with ceramic, sintered metal or metal fiber flame surfaces spread the flame, lower NOx emissions and produce more radiant heat. When a burner produces more radiant heat, it can also result in less heat escaping the equipment through exhaust gasses and an increase in efficiency.

Low NOx burners can significantly reduce emissions. Uncontrolled gas-fired ovens and dryers typically have NOx emissions on the order of 120 ppm. Ovens and dryers subject to BACT/LAER can have emission limits ranging from 60 ppm to less than 20 ppm. Uncontrolled high temperature furnaces and ovens can have NOx emissions greater than 150 ppm. High temperature furnaces that meet BACT/LAER can achieve NOx emissions as low as 60 ppm.

During the rulemaking process it may be assessed that reducing NOx emissions from this category is better suited by applying today's BACT as described in the 2007 AQMP control measure MCS-01 Facility Modernization.

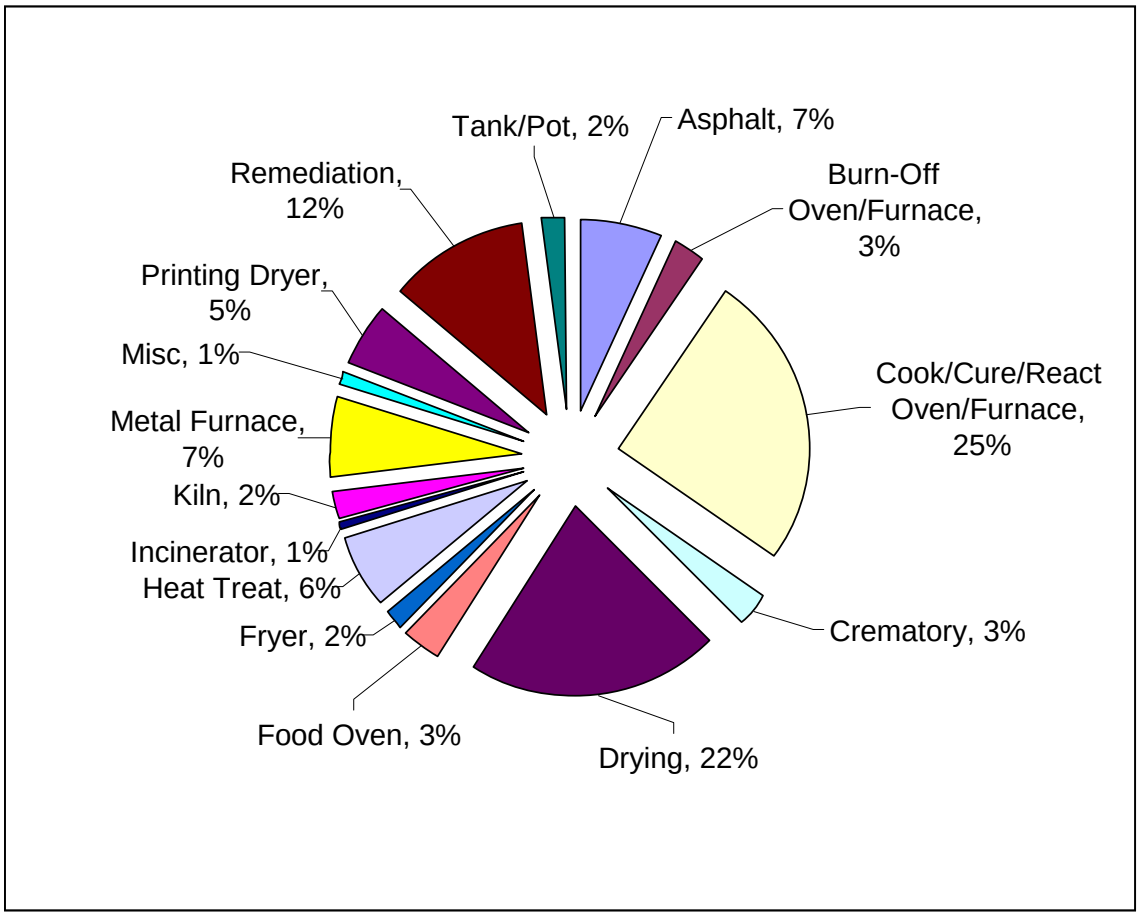
EMISSIONS REDUCTION

The current inventory for permitted equipment in these categories is estimated to be approximately 4.9~~TBD~~ tons of NOx per day. Approximately 25 to 35% of this equipment is estimated to be permitted at current BACT. An estimate of the percent emissions associated with major categories of this type equipment is presented in Figure 1 based on District permit database. Reductions of 50 to 75% are achievable for the equipment which has not been subject to BACT. The estimated NOx emission reduction from requiring current BACT is therefore about 50 percent. It is anticipated that ~~3.7~~3.5 tons per day of NOx emission reductions could be achieved by 2014 and ~~4.0~~3.8 tons per day by ~~2020~~2023.

Additional reductions can be achieved by adopting emission limits for new ovens, dryers and furnaces that do not require a permit. These reductions can be achieved by requiring new equipment to be certified at lower emission levels as is required for small boilers and heaters subject to the District's Rule 1146.2.

FIGURE 1

NOx Emission Contribution of NOx Non-RECLAIM Equipment Categories



RULE COMPLIANCE AND TEST METHODS

Compliance with the provisions of this control measure would be based on source testing, permit requirements, monitoring, recordkeeping, and reporting requirements similar to those in other District rules regulating combustion sources. In addition, compliance would be verified through inspections.

COST EFFECTIVENESS

The cost effectiveness of retrofitting this type of equipment to meet best available retrofit control technology (BARCT) was analyzed for the January 2005 amendment to the NOx RECLAIM program. The cost effectiveness in that analysis varied from about $4,000 per ton of NOx reduced to $13,000 per ton. The typical cost effectiveness was around $10,000 per ton NOx reduced. This cost effectiveness is also within the range of cost effectiveness in the January 2005 amendment for RECLAIM boilers and process heaters to meet BARCT. It is also in the range of cost effectiveness for small boilers and heaters to meet 20 ppm (Rule 1146.2).

The cost effectiveness for this equipment to meet BARCT would be similar to these costs. In addition, in many cases, BACT and BARCT are the same.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from stationary sources.

REFERENCES

1994 AQMP Appendix IV-A

1997 AQMP Appendix IV-A

2003 AQMP Appendix IV-A

AQMD, Staff Report for Proposed Amended Rule 1121, December 1999.

AQMD, Staff Report for Proposed Amendments to Regulation XX - Regional Clean Air Incentives Market (RECLAIM), January 2005

AQMD, Staff Report for Proposed Amended Rule 1146.2, May 2006.

FURTHER SO_X REDUCTIONS FOR RECLAIM [SO_X]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	SO_X RECLAIM FACILITIES		
CONTROL METHODS:	ALL AVAILABLE CONTROL METHODS		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
SO_X INVENTORY	~~11.66~~11.7	11.7~~3~~	11.8~~76~~
SO_X REDUCTION		2.9 ~~3.0~~	2.9 ~~3.0~~
SO_X REMAINING		8.8 ~~73~~	8.9 ~~76~~
CONTROL COST:	BETWEEN $10,100 AND $16,000 PER TON SO_X REDUCED~~TO BE DETERMINED~~		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

As of the end of the 2004 compliance year, there were approximately 33 SOx facilities in the Regional Clean Air Incentives Market (RECLAIM) Program. The RECLAIM program includes facilities with SOx emissions greater than or equal to four tons per year in 1990 or any subsequent year. SOx facilities in the RECLAIM program have a wide range of equipment such as Fluidized Catalytic Cracking Units (FCCU), furnaces, internal combustion engines, boilers, incinerators, dryers, kilns, afterburners, heaters, and gas turbines.

This control measure identifies a series of control approaches that would be implemented as part of Best Available Retrofit Control Technology (BARCT) for the SOx RECLAIM program. Depending on the control strategy implemented, this control measure may affect all SOx RECLAIM facilities or a portion of the facilities based on their annual emissions or the type of equipment at the facility.

Background

Under the RECLAIM program, facilities are issued SOx (and NOx) allocations. SOx allocations decline annually until 2003, and remain constant thereafter. To meet their annual allocation, facilities have the option of installing pollution control equipment, changing operations, or purchasing RECLAIM Trading Credits (RTCs).

Additional emission reductions from RECLAIM may be needed to meet the federal "as expeditiously as practicable" and the state "all feasible measures" requirements. When the RECLAIM program was adopted, it was designed to achieve a Best Available Retrofit Control Technology (BARCT) level of emission reductions. As BARCT is updated to reflect improvements in pollution control equipment, additional reductions from the RECLAIM program may be possible.

Regulatory History

On October 15, 1993, the District's Governing Board adopted the RECLAIM program. Regulation XX – RECLAIM includes 11 rules that specify the applicability, allocations, definitions, requirements, and monitoring, reporting, and recordkeeping requirements. When the RECLAIM program was adopted, it originally included 41 SOx and 392 NOx commercial and industrial facilities. Since the adoption of RECLAIM, there have been a number of amendments to the RECLAIM rules.

The California Clean Air Act (CCAA) requires districts to achieve and maintain state standards by the earliest practicable date and for extreme non-attainment areas, to include all feasible measures Health and Safety (H&S) Code (H&S §§40913, 40914, and 40920.5). The term "feasible" is defined in the 14 California Code of Regulations, section 15364, as a measure "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." The required use of BARCT for existing stationary sources is one of the specified feasible measures. H&S Code §40440 (b)(1) requires the District to adopt rules requiring best available retrofit control technology for existing sources. H&S Code §40406 specifically defines BARCT as "…best available retrofit technology means an emission limitation that is based on the maximum degree of reduction achievable taking into account environmental, energy, and economic impacts by each class or category of source."

In RECLAIM, these emission limits are converted into mass emission limitations utilizing activity levels. BARCT for each category of equipment takes into account the range of types and size of equipment in each category.

Applicable RECLAIM Task Force recommendations would be incorporated during the rulemaking process.

PROPOSED METHOD OF CONTROL

<u>As of the end of the 2004 compliance year, there were approximately 36 SOx facilities in the Regional Clean Air Incentives Market (RECLAIM) Program. The RECLAIM program includes facilities with SOx emissions greater than or equal to four tons per year in 1990 or any subsequent year. SOx facilities in the RECLAIM program have a wide range of equipment such as FCCUs, asphalt blowing, boilers, heater and sour gas treating units.</u>

<u>Refinery gas fueled process heaters and external combustion boilers and fluidized catalytic cracking units (FCCUs) account for over half of SOx RECLAIM emissions and could potentially be sources for further reductions.</u>

<u>The primary purpose of reducing the SOx RECLAIM ending allocations is to meet the state law best available retrofit control technology (BARCT) equivalency requirements. Potential BARCT evaluation includes evaluating the maximum degree of reduction achievable with current control technologies in relation to environmental, energy, and economic impacts by each class or category of source. Advancements in control technologies require a re-evaluation of current BARCT. A re-evaluation of BARCT would require updated control technology</u>

assessments for permitted equipment at RECLAIM facilities. An example of this possible re-evaluation involves the reduction of sulfur in refinery gas to reduce SOx emissions from the combustion of the refinery gas.

Compounds have been developed that are added to the catalyst in the regenerator of fluidized catalytic cracking units that drive a series chemical reactions that create H2S from the sulfur released from the feed stock. The H2S can be removed from the process stream as elemental sulfur. This reduces the amount of sulfur available to create SOx pollutants. As fluidized catalytic cracking units are the largest source of SOx emissions in RECLAIM, the use of sulfur reducing compounds will result in a large reduction of SOx emissions. Furthermore, although SOx sources are required to burn 15 ppmv sulfur content diesel fuel via Rule 431.2, ending allocation has not been reduced to reflect such requirements.

During the rulemaking process, staff will also explore the feasibility to incorporate the control concept of Control Measure MCS-01 Facility Modernization to achieve reductions beyond 2014.

~~There are a variety of approaches that can be implemented to achieve additional emission reductions from the RECLAIM program. The following identifies four types of approaches that can be used individually or collectively. The type of approach selected and the extent that the approach is implemented will depend on a number of factors that include, but are not limited to:~~

- ~~Technical feasibility of control option(s);~~
- ~~Cost-effectiveness of the control option(s);~~
- ~~Growth demand to accommodate new sources;~~
- ~~Equity between sources; and~~
- ~~Implementation issues.~~

~~During the rulemaking process, it may be assessed that reducing SOx emissions from this category is better suited by applying today's BACT as described in the 2007 AQMP Control Measure MCS-01 Facility Modernization.~~

Reduce Existing Ending Allocations

Under the RECLAIM program, initial SOx allocations decline annually through the year 2003 and remain constant after 2003. This control option would seek further reductions in allocations from 2010 through 2014 and remain constant after 2014. Such reduction in allocations can be across-the-board shaving or source-specific. Similar to the existing RECLAIM program, facilities have the following options to meet their allocation: install pollution control equipment, process or other changes, or purchase RTCs.

EMISSIONS REDUCTION

Implementation of this measure is designed to achieve BARCT for sources subject to the following rules:

1) Rule 431.1 – Sulfur Content of Gaseous Fuels; and

2) Rule 1105 – Fluid Catalytic Cracking Units – Oxides of Sulfur.

In addition, this measure would implement BARCT not yet incorporated in the ending allocation (e.g., Rule 431.2).

Estimated SOx emissions reduction from reduction of sulfur concentration in refinery gas burned is approximately 1.56 tons per day.

Estimated SOx emissions reduction from FCCUs is approximately 1.28 tons per day.

Along with low sulfur diesel fuel applications, it is estimated at this time that approximately 2.9 tons per day of SOx reductions could be achieved from the RECLAIM program.

~~Implementation of this measure is designed to achieve reductions from the following sources:~~

~~1)Rule 431.2 – Sulfur Content of Liquid Fuels specifies the sulfur content in stationary diesel combustion to be 15 ppm beginning in 2004;~~

~~2)BACT achieved in the past due to Rule 2015 – Backstop Provisions; and~~

~~3)Any BARCT not yet incorporated in the ending allocation.~~

~~It is estimated at this time that 3 tons per day of SOx reductions by 2014 could be available with a linear declining balance between 2010 and 2014. Staff will continue to refine our estimates in the next several months.~~

RULE COMPLIANCE AND TEST METHODS

Compliance with the provisions of this control measure would be based on monitoring, recordkeeping, and reporting requirements that have been established in either the RECLAIM program or existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

Two major sources of RECLAIM SOx emissions that have been identified as possible areas of emission reductions are refinery gas fueled process heaters and external combustion boilers and FCCUs. Exact equipment and material costs are very difficult to obtain due to the uniqueness of the processes of each refinery subject to the RECLAIM program. Therefore, cost effectiveness numbers are difficult to calculate and are, by necessity, broad estimates. The estimated average cost effectiveness for SOx reductions achieved through reducing refinery gas sulfur content is approximately $10,100 per ton SOx reduced. The estimated average cost effectiveness for SOx reductions achieved through the use of FCCU catalyst additives is approximately $16,000 per ton SOx reduced.

~~The cost effectiveness of this control measure has not yet been determined~~

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from stationary sources.

FURTHER NOX REDUCTIONS FROM SPACE HEATERS [NO_X]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	NATURAL GAS FIRED FAN-TYPE FURNACES		
CONTROL METHODS:	LOW NOX BURNERS		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
NOX INVENTORY	9.7	10.5	~~11.0~~11.1
NOX REDUCTION		0.8~~1.0~~	~~3.2~~ 3.3
NOX REMAINING		9.7~~5~~	7.8
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
NOX INVENTORY	3.4	3.6	3.8
NOX REDUCTION		0.3	~~1.1~~1.2
NOX REMAINING		3.3	~~2.7~~2.6
CONTROL COST:	$10,000 PER TON NO_X REDUCED		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

Background

Natural gas fired fan-type central furnaces are used in residential and commercial buildings to provide comfort heating. Most single family homes and many multiunit residences in the South Coast Air Quality Management District (District) have this type of heating equipment. Many older homes, with below floor furnaces, have been retrofitted with this type of forced air heaters. Typically, residential units have burners rated between 50,000 and 175,000 British thermal units per hour (Btu/hr). Since 1984, this equipment has been regulated by the District Rule 1111 – NOx Emissions from Natural Gas-Fired, Fan type Central Furnaces.

Regulatory History

Rule 1111 was first adopted by the District Governing Board in December 1978 and amended in July 1983. The rule regulates natural gas fired fan-type central furnaces with an input rate of less than 175,000 Btu/hr. The NOx emission limit in the rule is 40 nanograms/joule (ng/J) of heat delivered to the heated space (heat output). As required by Rule 1111, the manufacturer must obtain certification of each furnace model based on source testing conducted in accordance with the test methods approved by the District.

PROPOSED METHOD OF CONTROL

NOx emissions from these types of equipment can be controlled with low NOx burners. Other combustion equipment with similarly sized burners can achieve NOx levels as low as 15 to 20 ppm (10 to 14 ng/J). The current Rule 1111 requires natural gas fired fan-type central furnaces to meet a NOx emission limit of 40 ng/J heat output. Also, this is the current NOx emission

limit under the District Rule 1146.2 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters) for boilers and water heaters rated up to 400,000 Btu/hr. The future limit for these small boilers in the year 2012 is 20 ppm or 14 ng/J heat output. The current limit for residential tank-type water heaters rated less than 75,000 Btu/hr per Rule 1121 (Control of Nitrogen Oxides from Residential Type, Natural Gas-Fired water Heaters) is 15 ppm or 10 ng/J heat output.

To achieve NOx emission levels of 30 ppm (20 ng/J) or less from the central furnaces may~~will likely~~ require the use of power premix burners in the higher heat input range, and atmospheric premix burners in the lower heat input range.

Another control strategy available for NOx reduction is the use of heat pumps for space heating which do not burn natural gas, and are often used in moderate climates. This technology may be promoted through an incentive program or by regulation.

EMISSIONS REDUCTION

Technology exists to achieve NOx emission levels of 15 to 30 ppm (10 to 20 ng/J) from burners in this size range. The current emission limit is 40 ng/J; emission reductions of 50% to 75% are possible from this source category. It is anticipated that this emission limit will be implemented by 2012~~1~~. Assuming a ~~65~~50% reduction (from 40 to ~~14~~20 ng/J), a reduction of at least ~~3.2~~3.3 tons/day NOx emissions could be achieved by the year ~~2020~~2023 from the baseline year 2002 annual average inventory of 9.7 tons/day. Additional reductions from 2010 through ~~2020~~2023 are possible through incentive programs for homeowners to purchase low NOx furnaces before the end of the useful life of their existing furnace.

Additional emission reductions will be achieved if residential type furnaces must meet proposed higher efficiency standards under consideration by the U.S. Department of Energy. The current proposed standard would result in a fuel savings of up to 2.5% for an individual unit and lower NOx emissions. The contribution to emission reductions of this proposed regulation will be evaluated as part of rule development.

RULE COMPLIANCE AND TEST METHODS

Manufacturers are responsible for ensuring that the equipment meets the emission limit. Compliance is determined by testing each appliance model using test methods and procedures approved by the District. Test results are reviewed for approval by the District.

COST EFFECTIVENESS

At the present time, there are no heating furnaces with NOx emissions significantly below the 40 ng/J standard in the District Rule 1111. A review of the emissions test data for Rule 1111 compliance indicates that typical emissions range from 30 to 40 ng/J. However, cost effectiveness analyses have been performed for similarly sized burners (less than 175,000 BTU/hr) in other equipment regulated by the District.

Based on the cost effectiveness of power premixed burners to reduce emissions from 40 ng/J to 20 ng/J in small boilers and water heaters (100,000 to 300,000 Btu/hr), subject to the District Rule 1146.2, the cost effectiveness of meeting 20 ng/J or 30 ppm for this control measure is estimated to be up to $12,500 per ton of NOx reduced. The cost effectiveness to meet 14 ng/J (20 ppm) for the same units was estimated to be up to $10,000 per ton of NOx reduced. In a similar analysis for the District Rule 1121, the cost effectiveness to reduce NOx emissions from 40 ng/J to 10 ng/J for premixed atmospheric radiant burners, in the size range of 30,000 to 50,000 Btu/hr used in residential tank-type water heaters, was estimated to be $16,000 per ton of NOx reduced.

The cost effectiveness for fan-type central furnaces should be lower than for small boilers and water heaters since the expected life of a central furnace is more than for tank-type water heaters and small boilers. More emission reductions would be achieved for the same cost. Most manufacturers provide a 20 year warranty on the heat exchanger of the furnace. In the cost effectiveness analyses for Rule 1146.2, the lifetime of small boilers was assumed to be 15 years. A tank type water heater has a shorter lifetime of 10 years.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from stationary sources.

REFERENCES

SCAQMD, Staff Report for Proposed Amended Rule 1121, December 1999.

SCAQMD, 2003 AQMP Appendix III, Base and Future Year Emissions Inventories, August 2003.

SCAQMD, Staff Report for Proposed Amended Rule 1146.2, May 2006.

CEC (California Energy Commission), California Statewide Residential Appliance Saturation Study, June 2004.

NATURAL GAS FUEL SPECIFICATIONS
[ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	NATURAL GAS FUEL COMBUSTION (STATIONARY SOURCES)
CONTROL METHODS:	FUEL SPECIFICATIONS
EMISSIONS (TONS/DAY):	NOT DETERMINED
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to minimize potential future emission increases from the combustion of natural gas in stationary applications.

Background

Natural gas is a combustible, gaseous mixture composed primarily of methane (CH4), with lesser amounts of ethane (C2H6), propane (C3H8), butane (C4H10) and pentane (C5H12), oxygen and inert compounds such as carbon dioxide and nitrogen. The table below compares the natural gas characteristics of the current system average for Southern California Gas Company (SoCalGas), California-produced natural gas, and current LNGs supplies that may be imported in the future.

	System Average*	California Production*	Potential LNG Imports
Higher Heating Value, (Btu./scf)	1020	1007-1150	1063-1166
Wobbe Index, (Btu/scf)	1332	1283-1431	1373-1446
Carbon Dioxide, (% by Volume)	1.25%	0.09-3.00%	Trace
Air (N2, O2), (% by Volume)	0.7%	0.12-3.15%	Trace
Total Inerts, (% by Volume)	1.95%	0.34-4.00%	Trace
Methane, (% by Volume)	95.4%	84-99%	83.2-91.2%
Ethane, (% by Volume)	2.1%	0.13-10%	4.3-13.2%
Propane, (% by Volume)	0.5%	0.02-7.1%	2.2-5.0%
Hexane, (% by Volume)	Trace	Trace -.48%	Trace

~~* Acceptable under Rule 30 to be injected into SoCalGas distribution system~~

* The majority of SoCalGas gas supply is from out of State. Small amounts of natural gas produced in the San Joaquin Valley and locally in the Basin is introduced into SoCalGas distribution system under Rule 30.

The natural gas currently supplied to the District and San Diego County is close to the System Average in the chart, with a typical 95% methane, 1020 Btu/scf higher heating value (HHV) and 1332 Btu/scf Wobbe Index (WI). Data from SoCalGas for the five year period from 2000-2004

show that the WI in the District is less than 1360 Btu/scf. In counties north of the District, where local gas production is significant, the average gas has a higher HHV and WI than in the District. In Santa Barbara and Kern Counties, the WI ranged as high as 1407 to 1429 Btu/scf. ~~SoCalGas Rule 30 would allow the mixing of local gases with a HHV up to 1150 Btu/scf and a WI up to 1431 Btu/scf into their distribution system.~~

The increasing demand for natural gas indicates that there is a need for importation of Liquefied Natural Gas (LNG) from foreign countries. One LNG terminal is under construction in Baja California, and several more are proposed, that will bring LNG to Southern California. Introducing LNG which contains higher concentrations of heavier hydrocarbon components into the distribution system will result in a different mixture of gas quality than traditional supplies. The change in gas quality will directly affect air quality and performance of the machinery and end-user appliances. The effect would depend on the type of burner and how the device was tuned to its previous gas supply. Studies have shown that some combustion devices are relatively insensitive to changes in gas quality, while others can have increased NOx, CO and soot emissions. Sensitive devices include appliances with closed combustion chambers (i.e. ovens), low-NOx boilers with lean premix burners, microturbines, lean-burn natural gas engines, and large gas turbines with dry low-NOx combustors. Sensitive devices can have NOx emission increases from 20 to over 100% with hot gas. Appropriate tuning may reduce the emissions increase.

The Natural Gas Council's Interchangeability Work Group's white paper provides a good discussion of natural gas interchangeability, and identifies the needed research to address the unknowns with gas quality, particularly with industrial combustion equipment where little testing has been done. It found that WI was an effective screening tool for interchangeability, but alone is not sufficient to adequately predict all combustion phenomena. As an interim approach, it recommends that new gas supplies should not exceed the local historical average WI by more than ±4.0% and a maximum WI of 1400 Btu/scf, maximum HHV of 1100 Btu/scf, and maximum gas composition limits of 1.5% butane+ and 4% total inerts.

Regulatory History

California Public Utilities Commission (PUC) General Order 58-has standards for the hydrogen sulfide and total sulfide content of gas (0.25 grain/100 scf and 5 grains/100 scf, respectively) but does not contain standards for HHV or WI

SoCalGas's Tariff Rule 30 applies only to "customer-owned gas" and has qas quality specifications for HHV, WI, moisture content, hydrogen sulphide, mercaptan sulfur, total sulfur, carbon dioxide, oxygen, inerts, and hydrocarbons and other properties. It allows a wide range of HHV (970-1150 Btu/scf) and a wide range of WI (±10%).

Since 2004, under the order of the Federal Energy Regulatory Commission (FERC), the PUC has initiated a Rulemaking 04-01-025 to address the sufficiency of natural gas supplies and infrastructure in California. In a Phase 2 proceeding of Rulemaking 04-01-025, SoCalGas proposed to limit the WI to a range of 1290 to 1400 Btu/scf, and the District recommended a maximum WI for new large gas supplies of 1332 ~~±~~+2%, or 1360 Btu/scf in order to reduce

emission impacts. The PUC issued a proposed decision and an alternate proposed decision, and adopted the alternate proposed decision in September 2006. In general, the PUC directs SoCalGas to file a revised Rule 30 tariffs that contain the following specification: minimum WI of 1279 Btu/scf, maximum WI of 1385 Btu/scf, minimum HHV of 990 Btu/scf, maximum HHV of 1150 Btu/scf, maximum carbon dioxide content of 2%, and maximum oxygen content of 0.1%. Because there are existing suppliers in California that do not meet these specifications, PUC is allowing a deviation process to grandfather in these existing supplies. The PUC also directs SoCalGas to post real-time information on the WI of gas at identified points in the pipeline system on an electronic bulletin board.

District Rule 431.1 - Sulfur Content of Gaseous Fuels, limits the sulfur compound content of natural gas (calculated as hydrogen sulfide) to a maximum of 16 parts per million by volume. The District does not currently regulate the other properties of natural gas. The District has rules that regulate the emissions from combustion of natural gas from various types of equipment such as RECLAIM, Rule 1146, 1146.1, 1146.2, 1110.2, 1121 etc.

PROPOSED METHOD OF CONTROL

The control measure proposes to establish a maximum WI of 1360 Btu/scf for natural gas supplied to sources within the District's jurisdiction from outside the area in order to maintain current gas quality. Natural gas~~LNG~~ suppliers could achieve the objective of this control strategy by 1) Importing a high-methane LNG, such as the 99+% methane gas proposed by BHP Billiton; 2) Removing the more complex hydrocarbons by condensing processes; ~~or~~ 3) Adding inert gases like nitrogen, and/or 4) Blending natural gas from different sources so that the end users' supply meets a WI of 1360 Btu/scf in the South Coast AQMD.

EMISSIONS REDUCTION

Projected emission reductions are uncertain at this time, and require further analysis. The control measure may only reduce future emission increases rather than provide emission reductions.

SoCalGas estimated that importing 1.0 bcf/day of CNG could increase NOx emissions in the District by 1.2 tons per day. There are not adequate data to support this estimate. The increase could be higher because 1) studies underway and sponsored by the California Energy Commission at the Gas Technology Institute may find that there are emission imports from natural gas used by industrial burners; 2) imported LNG could potentially replace all of the current low-WI interstate gas; 3) only a small number of units were tested in each equipment category by the SoCalGas test program; 4) the SoCalGas analysis assumed all industrial equipment would be readjusted to hotter gas and ignored the effects of frequent changes in gas quality.

RULE COMPLIANCE

Compliance with this control measure would depend on the type of controls implemented.

TEST METHODS

The appropriate testing methods are uncertain at this time and would require further analysis.

COST EFFECTIVENESS

Not Determined

IMPLEMENTING AGENCY

The District has the authority to adopt and enforce rules and regulations to achieve and maintain the state and federal ambient air quality standards in all areas affected by emission sources under its jurisdiction (Health and Safety Code §40001), and may need to seek additional legislation to implement this control measure.

REFERENCES

California Public Utilities Commission, General Order 58-A: Standards for Gas Service in the State of California, April 1989.

California Public Utilities Commission, Phase 2 of Rule 04-01-025, Proposed Decision of Administrative Law Judges' Ruling on Rule 04-01-025 Phase 2 Order Addressing Infrastructure Adequacy & Slack Capacity, Interconnection & Operational Balancing Agreements, An Infrastructure Working Group, Natural Gas Supply and Infrastructure Adequacy For Electric Generators, Natural Gas Quality and Other Matters, August 8, 2006.

Natural Gas Council Interchangeability Work Group, "White Paper on Natural Gas Interchangeability and Non-Combustion End Use", February 28, 2005

SCAQMD, "Effects of Hot Gas on Stationary Source Emissions," Presentation to CAPCOA Mobile Source and Fuels Subcommittee, January 2003.

Southern California Gas Company, "Final Report – Gas Quality and Liquefied Natural Gas Research Study", April 2005

Southern California Gas Company, CPUC Rule 30, Transportation of Customer-Owned Gas, 1998-2003.

Responsive Testimony of South Coast Air Quality Management District to Testimony and Proposal of San Diego Gas and Electric Company and Southern California Gas Company, Barry Wallerstein, CPUC Case R.04-01-025, September 23, 2005.

Opening Brief of South Coast Air Quality Management District, CPUC Case R.04-01-025, January 18, 2006.

Proposed Rebuttal Testimony of Joseph Hower, San Diego Gas & Electric Company and Southern California Gas Company, CPUC Case R.04-01-025, November 30, 2005.

GROUP 4

PM Sources

PM CONTROL DEVICES (BAGHOUSES, WET SCRUBBERS, ELECTROSTATIC PRECIPITATORS, AND OTHER DEVICES) [PM]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	PM CONTROL DEVICES
CONTROL METHODS:	FABRIC OR OTHER FILTRATION DEVICES
EMISSIONS (TONS/DAY):	NOT DETERMINED
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

Baghouses are air pollution control devices that filter out small particles on the surface of fabric bags in a contained unit. This measure would strengthen existing regulatory requirements for baghouses to improve overall control efficiency by establishing stricter emission standards, automatic monitoring systems to ensure proper operation, and standard operating and maintenance procedures. Where applicable, other control devices designed to control PM emission, including wet scrubbers and electric precipitators could be implemented

Background

District rules establish particulate matter emissions limits and visible opacity standards that may be achieved with baghouse control equipment. Baghouses are considered by the District as the Best Available Control Technology (BACT) to effectively reduce particulate emissions. Currently two District rules require baghouses to be equipped with automatic leak detection systems; Rule 1156 - PM10 Emission Reductions from Cement Manufacturing Facilities, and Rule 1407 – Control of Emissions of Arsenic, Cadmium, and Nickel and Non-ferrous Metal Melting Operations. This measure would expand the requirement for Bag Leak Detection Systems to new and amended rules that rely on baghouses as particulate matter control devices. Electric precipitators or wet scrubbers might also be employed to reduce PM emissions from various operations.

Regulatory History

Historically, for almost 20 years (1988), baghouses have been designated BACT for controlling PM. Retrofit technology has advanced making high control efficiency possible. These improved retrofit requirements have begun to be implemented in District rules. For example, in the rule development process for Rule 1156, District staff received several comments from the public and baghouse vendors regarding the monitoring requirements for baghouses. Baghouse manufacturers strongly recommended that the District include a requirement for Bag Leak Detection Systems that would benefit the industry by allowing equipment operators to predict and detect bag failure before it occurs. Specifically, recommendations were made to include operation and maintenance procedures for baghouses to ensure that the performance of the baghouse is verified when the equipment is tested and maintained continuously. These procedures contain technical requirements required by the U.S. EPA's Maximum Achievable

Control Technology (MACT) for National Emission Standards for Hazardous Air Pollutants (NESHAPS) for the Portland Cement Manufacturing Industry (40 CFR Part 63, Subpart LLL, §63.1350). The NESHAPs implement the federal Clean Air Act by requiring all major sources to meet emission standards for hazardous air pollutants reflecting application of the MACT. Rule 1156 also has required O&M procedures and incentivizes the use of EPA verified filtration products by less frequent source testing and record keeping requirements.

PROPOSED METHOD OF CONTROL

Description of Control Opportunities

- Specify opacity standards for PM control devices (e.g., 20%)
- Specify PM emission standards for PM control devices based on outlet concentrations (e.g., 0.01 gr/dscf PM for existing control equipment and 0.005 gr/dscf for new control equipment).
- Require enclosure of process equipment (i.e., aggregate processing) and conveyors.
- Require use of EPA-approved high-efficiency baghouse filters.
- Specify performance standards for ventilation and hood systems
- Require operators of PM control devices to monitor, record and report (MRR) pertinent operating parameters of the air pollution control device to ensure continuous compliance with the emission standards, and install and operate Continuous Opacity Monitor System (COMS) or Bag Leak Detection System (BLDS) for top process emitters
- Require operators of PM control devices to establish operating and maintenance procedures, coupled with regular source testing to ensure proper equipment operation.

EMISSIONS REDUCTION

An additional 30 to 50 percent emission reductions are feasible for existing equipment/processes equipped with PM control devices using the above noted control techniques and operating practice standards. Properly operated and maintained baghouses are extremely efficient air pollution control devices, but they may be very ineffective if dust cake is allowed to accumulate on the surface of the bags or the fabric is torn. This measure seeks to improve the operation and maintenance of baghouses by requiring an automated alarm system (COMS or BLDS) to be installed to minimize the release of excess particulate matter during upset conditions that follow equipment malfunction or failure. In the event the alarm is triggered, corrective action procedures could include a shutdown of the process producing the particulate emissions or a specific section of the baghouse itself, depending on its size. Corrective actions may be more stringent for baghouses controlling toxic particulate matter emissions. This is the benefit of requiring established operating and maintenance procedures.

RULE COMPLIANCE

Develop a new rule with a schedule of compliance based on size rating. Require retrofitting for existing PM sources (BARCT) and control new equipment based on outlet concentrations. Compliance with this measure would be based on monitoring, recordkeeping and reporting requirements established in other District rules (e.g., Rule 1156) and would take into account a schedule of compliance based on size rating and outlet concentration, etc.

TEST METHODS

BLDS or COMS would be required as indicators of fabric filter performance. The equipment operator should follow EPA's Fabric Filter Bag Leak Detection Guidance, and Industrial Ventilation Handbook, for proper set up procedures, system operation principles, and quality assurance. In addition, EPA has verified filtration products that have demonstrated high performance under specific operational conditions.

COST EFFECTIVENESS

The cost of a typically BLDS ranges from about $5,000 to $9,000. The system cost will approach $6,000 to $12,000 if it is equipped with a data logger. COMS will range from $20,000 to $25,000 per monitor. Manufactures indicate the initial costs may be quickly recovered within a year or two because the system reduces employee-related costs associated with equipment monitoring, and the fact that overall equipment performance is improved which may double the life of fabric bags.

- High efficiency filter bags can cost upwards of twice that of conventional bags.
- The cost of source tests can vary, but typically cost $3,000 to $5,000, but can cost more depending on the complexity of the equipment or process.
- Covered or enclosed conveyors can cost from $100 to $1,000 per foot.

IMPLEMENTING AGENCY

The District has the authority to implement this measure.

REFERENCES

South Coast Air Quality Management District Rule 1156 - PM10 Emission Reductions from Cement Manufacturing Facilities, final staff report November 2005.

PM EMISSION HOT SPOTS – LOCALIZED CONTROL PROGRAMS [PM]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	PM HOT SPOTS
CONTROL METHODS:	ALL PM REDUCTION METHODS FEASIBLE
EMISSIONS (TONS/DAY):	NOT DETERMINED
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

The Basin covers a large geographic territory. The natural consequence of its size is that not all areas of the Basin are at the same stage of economic development. Locations with economic development as a result of increased construction activity may be prone to significantly higher levels of particulate matter as compared to the broader surrounding area. For example, the highest levels of PM10 concentrations are measured at the District's monitoring station in Rubidoux and nearby Mira Loma, which ~~is~~ are currently undergoing a significant redevelopment effort.

Background

The District has not attained the annual average federal PM10 and PM2.5 standards. U.S. EPA revoked the annual federal PM10 standard on September 21, 2006. However, to ensure progress toward PM2.5 standards (a subset of PM10) and to address community PM exposure, this measure will continue to be pursued. While the District has made great progress in reducing PM concentrations Basinwide, certain areas have been proven to be more challenging than others in achieving the necessary reductions of PM concentrations that are deemed as PM "Hot Spots". One such area is ~~Rubidoux in~~ western Riverside County which ~~is~~was the only area out of attainment for the federal PM10 standard. Primary contributors to those high levels, which currently exceed federally established threshold levels, are sources of crustal material (better known as entrained fugitive dust). ~~In and around t~~The area of the Rubidoux monitoring station ~~are~~is a rural area with unstabilized vacant lots, many roads have unimproved road shoulders and are thereby not subject to street sweeping, and some roads and residential parking areas are unpaved. In addition, Mira Loma has had a large industrial build-up in recent years with a sizeable increase in heavy-duty truck traffic. Trucks are known to be parked on unpaved surfaces when not in use. This control measure would establish a localized program to supplement the regional approach to address PM hot spots through a cooperative effort with local agencies to reduce emissions from direct sources of PM. Sources of funding will be sought to aid in achieving the reductions, particularly for residents and private property owners. Any success and lessons learned in addressing the high PM10 emissions in the Rubidoux area will be used in addressing any PM~~10~~ hot spots in other areas of the Basin.

Regulatory History

The District has enacted a number of rules to address the issue of PM emissions for the past 30 years. In addition to developing and implementing programs to reduce fugitive dust from a variety of different sources, recently, measures have been taken to address the PM emissions associated with diesel emissions. Overall, the difficulty in attaining the PM standards may be attributed to the geographical nature of the Basin with PM emissions coming not just from combustion sources and other anthropogenic activities but also the ocean spray and desert environment that are part of Southern California and can be complicated by the fact that certain areas undergoing significant economic development are subject to higher particulate emissions due to the increased construction activity. The District has examined and implemented localized programs, such as the Ports initiatives and railroad rules to address localized PM "Hot Spots".

PROPOSED METHOD OF CONTROL

In the case of fugitive dust, control opportunities could include one or more of the following:

- Require fencing to inhibit dumping, and require mowing for weed abatement, pursuant to Rule 403 to create stabilized surfaces that minimize wind-blown dust;
- Clean-out existing curbs and ~~implement~~mandate street-sweeping; and
- Encourage residents with dirt driveways to cover them with gravel or otherwise stabilize the surface.

Implementation of these measures could be executed through cooperative efforts, wherein the District and local governments would work together each under their own authority to maximize dust control efforts. In addition, this measure would enhance the District's enforcement presence to ensure compliance with air quality requirements and support Off-highway Vehicle (OHV) ordnance enforcement. Also, the District would work with economic development agencies to expedite construction activities directly affecting fugitive dust sources, including paving of roads and parking areas, curb/gutter and sidewalk installation where needed, and where not feasible for sidewalks, install landscaping.

Areas where combustion sources are the major contributors might reduce emissions through implementation of the Control Measure for PM Control Devices (Baghouses/wet scrubbers/electrostatic precipitators). The Goods Movement in Port Plan is an example of addressing a PM Hots Spots through the implementation of a variety of coordinated efforts.

EMISSIONS REDUCTION

Not Determined.

RULE COMPLIANCE

To Be Determined

COST EFFECTIVENESS

The cost-effectiveness of this control measure has not yet been determined. The District will continue to analyze the potential cost impacts associated with implementing this control measure and will provide specific cost-effectiveness as it becomes available.

IMPLEMENTING AGENCY

The District has authority to implement this measure.

EMISSION REDUCTIONS FROM WOOD BURNING FIREPLACES AND WOOD STOVES [PM]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	RESIDENTIAL WOOD COMBUSTION		
CONTROL METHODS:	LOW EMISSION STANDARDS, INCENTIVE PROGRAMS, SMOKE MANAGEMENT PLAN (VOLUNTARY CURTAILMENT), AND PUBLIC OUTREACH		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
PM INVENTORY	6.0	6.7	~~7.1~~7.3
PM REDUCTION		0.7	0.7
PM REMAINING		6.0	~~6.4~~6.6
CONTROL COST:	TO BE DETERMINED		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to seek emission reductions from wood burning fireplaces and wood stoves.

Background

The types of devices used to burn wood in a typical residence are fireplaces and wood heaters which include fireplace inserts and free-standing wood stoves. Since fireplaces are very inefficient heat sources, they are used primarily for aesthetic effects. Fireplace inserts and wood stoves are much more efficient and in some residences are used as the primary source of heating.

Equipment Description

(The following discussion of wood burning devices is taken directly from U.S. EPA AP-42, Sections 1.9 and 1.10, October 1996.)

Fireplaces can be divided into two broad categories: (1) masonry (generally brick and/or stone, assembled on site, and integral to a structure) and (2) prefabricated (usually metal, installed on site as a package with appropriate duct work). Some prefabricated fireplaces can be inserted into existing masonry fireplace openings, and thus are called “inserts”.

Wood stoves are enclosed wood heaters that control burning or burn time by restricting the amount of air that can be used for combustion. They are used both as the primary source of residential heat and to supplement conventional heating systems. Based on known variations in construction, combustion, and emission characteristics, there are five different categories of

residential wood heating devices: (1) the conventional wood stove; (2) the non-catalytic wood stove; (3) the catalytic wood stove; (4) the pellet stove; and (5) the masonry heater.

Emissions

Emissions from residential wood burning devices, caused primarily by incomplete combustion, include PM, CO, NOx, SOx, and VOC, although particulate emissions have been the focus of other air district control programs. Studies indicate that the majority of particulate emissions from residential wood burning are in the fine fraction (2.5 micrometers or less). Additionally, incomplete combustion of wood produces polycyclic organic matter, a group of compounds classified as hazardous air pollutants under Title III of the federal Clean Air Act.

The emissions inventory from residential wood burning in the District is presented in the control measure summary. The emissions inventory was developed based on the estimated number of wood-burning households and the amount of wood burned per household by county, and U.S. EPA's AP-42 emission factors. District staff, in cooperation with CARB and other stakeholders, has been reevaluating the emissions inventory in conjunction with current rule development efforts.

Regulatory History

Prior to the 2003 AQMP, the District had not developed a control measure for residential wood burning for rule development. The U.S. EPA and CARB regulations of this source are discussed below.

In 1988, the U.S. EPA promulgated New Source Performance Standards for new wood heaters (i.e., wood stoves and fireplace inserts) to reduce PM emissions. Since then, the U.S. EPA has regulated the manufacture and sale of new wood heaters in the U.S. with standards becoming effective in 1990. Phase I of the regulation required that after July 1, 1990, catalytic wood heaters must be certified to meet 5.5 grams per hour particulate matter emission standard and non-catalytic wood heaters must meet a 8.5 grams per hour standard. Phase II requires that new wood heaters sold after July 1, 1992 must meet more stringent standards of 4.1 grams per hour for catalytic heaters and 7.5 grams per hour for non-catalytic heaters.

There are no federal certification requirements for fireplaces. They are exempt from U.S. EPA certification because their air-to-fuel ratios are in excess of the 35:1. Only the states of Washington (WAC 150-31-200) and Colorado (Regulation 4) and the Northern Sonoma County Air Pollution Control District (APCD), San Luis Obispo County APCD, Shasta County Air Quality Management District and Great Basin Unified APCD (Regulation IV, Rule 504, Rule 3:23, and Rule 431, respectively) have fireplace standards. The California APCDs referenced above require all new wood burning devices (including fireplaces) installed in new or existing units to meet, at minimum, U.S. EPA Phase II emission standards. In effect, these regulations limit new residential wood burning devices to wood burning stoves, fireplace inserts, pellet-fueled wood heaters, or dedicated gas-fired fireplaces.

In 1989, the CARB adopted a suggested control measure (SCM) for emissions from residential wood heaters. CARB's SCM for the Control of Emissions from Residential Wood Combustion includes a list of specific control strategies for new and existing residential wood heaters (i.e., fireplace inserts and wood stoves – not fireplaces). CARB's SCM includes the following:

Public awareness programs: Retailers of wood heaters will be required to have available to customers, public information that includes pamphlets or other information discussing the proper operation and maintenance of wood heaters and health effects of wood smoke.

Replacement of existing wood heaters: Upon the sale of real property that contains a wood heater, the heater must be an EPA-certified, Oregon-certified, or pellet-fueled wood heater.

EPA Phase II requirements: This strategy will accelerate the implementation date by a year and a half, new wood heaters meeting EPA's Phase II requirements by January 1, 1991.

Sale of Used wood heaters: After January 1, 1991, used wood heaters that are offered for sale must be EPA-certified, Oregon-certified, or be pellet-fueled.

Moisture content of seasoned wood: Firewood that is offered for sale as "seasoned wood" must have a moisture content of 20 percent by weight or less.

Prohibited fuel types: Garbage, treated wood, plastic, rubber, waste petroleum products, paints and paint solvents, and coal having a sulfur content exceeding more than one percent by weight are prohibited from being burned in a residential wood-burning appliance.

Voluntary curtailment program: This program involves the voluntary curtailment of the use of wood heaters and fireplaces during poor air quality conditions.

As discussed above, a number of California air pollution control districts have adopted rules that regulate emissions from residential wood combustion. The requirements of these rules vary from voluntary programs to curtail burning on days with poor air quality to voluntary or mandatory installation of lower-emitting wood stoves to limiting or banning the installation of wood burning devices in new buildings. A sample of pertinent requirements from some of these air districts' rules is presented below.

- All solid fuel appliances (including fireplaces) must meet EPA Phase II certification. (Great Basin APCD)
- Mandatory wood burning curtailment when an Air Quality Index (AQI) over 150 is forecast. (San Joaquin Valley Unified APCD)
- Prior to the completion of the sale or transfer of any real property, all existing non-certified solid fuel appliances must be replaced, removed, or rendered permanently inoperable. (San Joaquin Valley Unified APCD)

- Installation of wood burning fireplaces is prohibited in new residential subdivisions with a density of greater than two dwelling units per acre. (San Joaquin Valley Unified APCD)

PROPOSED METHOD OF CONTROL

Fireplace and wood stove emissions are highly variable and are a function of wood characteristics and operating practices. In general, conditions which promote a fast burn rate and higher flame intensity enhance secondary combustion and thereby lower emissions. Studies performed by U.S. EPA have shown that new combustion device technology and non-conventional fuels (e.g., natural gas~~, manufactured logs, etc~~.) can considerably increase combustion efficiency and thereby significantly reduce emissions. Consequently, a technologically effective control strategy would ensure that all new wood combustion devices (i.e., including fireplaces) meet U.S. EPA certification standards (or other equivalent or more stringent standards1) and would also accelerate the turnover of existing non-certified combustion units.

Based on a re-evaluation of the emissions inventory for wood burning devices as well as the feasibility analysis of potential control strategies, a number of control strategies could be pursued including, but not limited to, those adopted by other air districts and those suggested by CARB. Sacramento Metropolitan Air Quality Management District (SMAQMD), for example, adopted a rule in October of 2006~~is currently in the rulemaking process~~ to reduce emissions from wood burning appliances. The ~~proposed~~ SMAQMD regulation includes ~~would consider~~ the following ~~potential~~ strategies:

- Prohibit the installation of a new, permanently installed, indoor or outdoor, uncontrolled fireplace in new developments or existing homes;
- Prohibit the sale, installation, or transfer of any non-U.S. EPA Phase II certified wood burning appliance;
- Require proper operation of U.S. EPA Phase II certified wood burning appliances;
- Require distribution of wood burning educational information at the point of sale of wood burning appliances;
- Require wood advertised as seasoned or dry to contain 20% moisture or less;
- Prohibit burning of garbage or other items not intended for use as fuel (Sacramento Metropolitan AQMD, 2006); and

[1] More stringent standards may include thermal efficiency standards. Increased thermal efficiency likely reduces emissions since less fuel is consumed to produce the same amount of heat. There has been little incentive for manufacturers to increase thermal efficiency since efficiency testing is not required in the U.S. EPA New Source Performance Standard certification process.

EMISSIONS REDUCTION

The District staff is currently in rulemaking process for this source category and it considers various elements implemented by other air districts, including a voluntary curtailment of using woodburning fireplace and stones during high pollution days. Emission reductions associated with this control measure would depend on amendments to the existing emissions inventory and the control strategy pursued. For reference, the recently adopted~~proposed~~ wood smoke control program for the Sacramento area estimated a five percent reduction in residential wood burning PM emissions (Sacramento Metropolitan AQMD, 2006). A 20 percent reduction of PM emissions was estimated for the adopted San Joaquin Valley wood smoke control program with the majority of emission reductions resulting from mandatory wood burning curtailment during periods of poor air quality (SJVUAPCD, 2003). It should also be noted that while controlling emission from residential wood burning is primarily intended to reduce particulate emissions, an added benefit would also be reduced emissions of CO, VOC, NOx, SOx, and hazardous air pollutants. This control measure is estimated to achieve approximately ~~seeks a minimum~~ 10% reduction by 2014 based on all feasible measures as demonstrated by the regulatory requirements in Sacramento Metropolitan AQMD and San Joaquin Valley Unified APCD.

RULE COMPLIANCE

Compliance requirements for this control measure would depend on the control strategy implemented.

TEST METHODS

The appropriate test methods for this control measure would depend on the control strategy implemented.

COST EFFECTIVENESS

The cost effectiveness of this control measure has not yet been determined. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide cost effectiveness information as it becomes available. Incremental costs to install a US EPA-certified Phase II wood burning appliance, a dedicated natural gas fireplace insert and an electric fireplace insert have been estimated at $2,500, $500, and $400, respectively (Sacramento Metropolitan AQMD, 2006).

IMPLEMENTING AGENCY

The District has the authority to adopt and enforce rules and regulations to achieve and maintain the state and federal ambient air quality standards in all areas affected by emission sources under its jurisdiction (Health and Safety Code §40001). Specifically, the District has the authority to reduce or mitigate emissions from area sources such as residential wood burning devices (Health and Safety Code §40716).

REFERENCES

CARB, Section 7.1, Residential Wood Combustion, July, 1997.

CARB, Proposed Clean Air Plan (Rescinded), March 2002.

CARB, Agenda, Public Meeting to Consider Approval of a Suggested Control Measure for the Control of Emissions from Residential Wood Combustion, November 1989.

Great Basin Unified APCD, Rule 431 – Particulate Emissions – Town of Mammoth Lakes

Northern Sonoma APCD, Regulation IV - Control Measure for Wood Fired Appliance Emissions.

Sacramento Metropolitan AQMD, Draft Staff Report, Rule 417, Wood Burning Appliances, July 12, 2006.

San Joaquin Valley Unified APCD, Final Draft Staff Report, Amendments to Rule 4901 (Wood Burning Fireplaces and Wood Heaters), June 19, 2003.

U.S. EPA, AP-42, Section 1.9, Residential Fireplaces, October 1996.

U.S. EPA, AP-42, Section 1.10, Residential Wood Stoves, October 1996.

U.S. EPA, Residential Wood Combustion Technology Review - Volume 1. Technical Report, EPA-600/R-98-174a, December 1998.

ADDITIONAL PM EMISSION REDUCTIONS FROM RULE 444 – OPEN BURNING [PM]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	OPEN BURNING		
CONTROL METHODS:	~~PROHIBITION OF~~ BURN~~S~~ RESTRICTIONS		
EMISSIONS (TONS/DAY):	~~SEE EMISSIONS REDUCTIONS~~		
ANNUAL AVERAGE	**2002**	**2014**	**2020**
PM10 INVENTORY			
PM10 REDUCTION		SEE EMISSIONS REDUCTION SECTION	
PM10 REMAINING			
CONTROL COST:	TO BE DETERMINED		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

Rule 444 outlines the criteria and guidelines for agricultural and prescribed burning, as well as training burns to minimize PM emissions and smoke in a manner that is consistent with state and federal laws. Agricultural burning is open burning of vegetative materials produced from the growing and harvesting of crops, as well as fields preparation in agricultural operations. Prescribed burning is a planned open burning of vegetative materials, usually conducted by a fire protection agency and/or department of forestry, to promote a healthier habitat for plants and animals, and to prevent plant disease and pest, as well as fire episodes and destruction. Training burns are hands-on trainings conducted by fire protection agencies on methods of preventing and/or suppressing fire.

Background

Currently, Rule 444 allows open burning on permissive burn days, provided that permit and event authorization are obtained, and that such burning events are not prohibited by a fire protection agency. A permissive burn day is declared by the District when certain meteorological conditions are met and the 1-hour ozone level does not exceed the state standard of 0.09 ppm. Rule 444 also includes general requirements (i.e., burning time window and ignition device) for open burning, as well as particular requirements, such as moisture level and firing methods for agricultural burning, and a Smoke Management Plan for prescribed burning. In addition, Rule 444 sets District-wide maximum daily burn acreage for agricultural and prescribed burning, but is lenient toward training burns if the duration is less than 30 minutes and clean fuel is utilized.

This control measure calls for potential administration and compliance streamlining of the burn program, as well as additional and/or alternative controls to further reduce PM emissions and

smoke from open burning. Alternatives to open burning are also required by state law for the San Joaquin Valley where agricultural burning will be phased out by the year 2010.

Regulatory History

Rule 444 – Open Burning, (previously Open Fires) was adopted October 1976. It has been amended three times, first in 1981. The rule was amended in 1987 to incorporate provisions of California Code of Regulations, Title 17 addressing wildland vegetative management burns. The rule was amended in 2001 to incorporate the Smoke Management Guideline requirement of the amended Title 17 and implement 1999 AQMP Control Measure WST-03.

PROPOSED METHOD OF CONTROL

Description of Control Opportunities

Further PM emission reductions can be achieved through the following:

- Consideration of alternatives (i.e, chipping/grinding and/or composting) to agricultural burning, especially if the burn project is located within a close proximity to a sensitive receptor. Potentially seek authority to p~~P~~hase-out of agricultural burning, potentially by 2015, as all feasible measures pursuant to San Joaquin Valley APCD requirements.
- Establishment of a fee schedule and/or regulatory incentive program to limit agricultural burning and promote alternatives.
- Establishment of criteria (fuel types, burning areas) for prioritizing training burns and agricultural burning requests.
- Establishment of "no burn days" based on a PM2.5 daily forecast. A threshold similar to the current federal 24-hour standard of 65 $\mu g/m^3$ or the future 35 $\mu g/m^3$ may be used. No-burn day may be established based on 8-hour ozone predictions.
- Prohibition and/or restriction of burning hours in case of unexpected changes in meteorology conditions.
- Requirement of a Smoke Management Plan (where specific plans to curtail PM emissions and smoke are included) and the utilization of clean fuel for all prescribed and training burns.
- Restriction of total burn time and/or number of structures to be used for training burns, as well as limit multiple training events by single agency.

EMISSIONS REDUCTION

PM emissions from open burning are estimated at 0.6~~2~~3 ton per day. ~~The portion attributed to agricultural burning is 0.03 ton per day (annual average day).~~ The proposed measure would eliminate 0.63 tons per day of PM2.5 on days when open burning is prohibited. However, since such burning would be shifted to other days, the total annual emissions would remain the same, thus the emission reductions. ~~Reductions are not determined.~~

RULE COMPLIANCE

This control measure would be implemented using existing resources. Requirements would be effective upon rule adoption. ~~Agricultural burning would be phased-out by 2015.~~

COST EFFECTIVENESS

~~To Be Determined~~The rule amendment will focus on better program management and data collection, with no real emission reductions. Therefore, no additional costs are anticipated.

IMPLEMENTING AGENCY

The District has the authority to implement this measure.

REFERENCES

Rule 444 – Open Burning California Code of Regulations, Title 17 – Agricultural Burning Guidelines

PM EMISSION REDUCTIONS FROM UNDER-FIRED CHARBROILERS [PM]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	UNDER-FIRED CHARBROILERS		
CONTROL METHODS:	PHASE I: CONDUCT FEASIBILITY STUDY BY 2010 PHASE II: IF FEASIBLE AND COST-EFFECTIVE CONTROLS ARE IDENTIFIED, RULE AMENDMENT AND FULL IMPLEMENTATION BY 2020		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**2020**
PM INVENTORY	TBD	TBD	TBD
PM REDUCTION		TBD	TBD
PM REMAINING		TBD	TBD
CONTROL COST:	TO BE DETERMINED		
IMPLEMENTING AGENCY:	AQMD/LOCAL GOVERNMENTS		

DESCRIPTION OF SOURCE CATEGORY

Restaurant operations emit PM and VOCs. Both of these pollutants can cause adverse health impacts, as well as causing a potential nuisance to the local community.

Background

The 1997 AQMP contained Control Measure PRC-03 - Emission Reductions from Restaurant Operations. Rule 1138, adopted in November 1997, implemented Phase I of this control measure, reducing 0.5 ton/day of PM10 emissions from chain-driven charbroilers. Under-fired charbroilers are the largest contributor to the PM inventory contributing approximately eighty-three percent. Restaurant operations include charbroilers, griddles, deep fat fryers, ovens, and other equipment. The total PM10 inventory is approximately 11.4 tons/day (11.3 of which is PM2.5) and 1.6 tons/day VOC. Under-fired charbroilers are responsible for the majority of emissions from this source category (84 percent [9.6 tpd] of PM emissions, and 71 percent [1.2 tpd] of VOC emissions). Griddles account for approximately five percent of the total PM restaurant emissions inventory and four percent of the total VOC emissions. Oven emissions appear to be negligible. Based on the contribution of emissions from under-fired charbroilers, they were chosen as the next logical piece of basic equipment for which to seek cost-effective controls.

Regulatory History

The 1999 Amendment to the 1997 Ozone State Implementation Plan for the South Coast Air Basin listed PRC-03 – Emission Reductions from Restaurant Operations – Phase II, with reductions of 0.9 tons/day VOC and 7.0 tons/day of PM10.

The Board received a report on emerging control technologies for under-fired charbroilers in May 1999. This report pointed out that a continuing effort to find cost-effective and technologically feasible controls for the restaurant industry has been ongoing since 1991. The earlier phases of this effort included the investment of significant resources in improving test methods and developing emission factors.

In August 2000, staff reported that cost-effective controls were limited and recommended substituting the remaining 0.9 tons/day of VOC emissions assigned to this source category with another control measure achieving excess VOC emission.

However, because of the significant contribution of the restaurant operations to the PM emissions inventory, the 2003 AQMP included Control measure PRC-03 – Emission Reductions from Restaurant Operation to reduce PM10 emissions by 1 ton per day by 2010. This limited emission reduction projection from a baseline of approximately 10 tpd was based on the fact that cost-effective controls for the majority of under-fired charbroilers had not been developed. A report to the Board was made December 2004 recommending findings of infeasibility be made, and substitute emission reductions from other adopted rules, as required by the 2003 AQMP. Staff also recommended funding for demonstration projects.

The Board authorized up to $200,000 from mitigation fees collected pursuant to Rule 1309.1 – Priority Reserve, to fund six to eight new or retrofit demonstration sites on large restaurants. However, no applications have been received to date for this project.

PROPOSED METHOD OF CONTROL

Restaurant operations continue to be significant contributors in the PM10 and PM2.5 emission inventory. The District intends to continue its efforts in the research and development of control technologies that would cost-effectively reduce particulates from restaurant operations and intend to amend its rules should those technologies become available. This control measure would be implemented in two phases. Phase I would examine the feasibility of charbroiler controls with a study completion no later than 2010. If feasible and cost-effective controls are identified, adoption and full implementation would be targeted by 2020.

In conjunction with this effort, staff will also evaluate potential PM10 credit generation opportunities for use by other sources.

EMISSIONS REDUCTION

The emission reduction for this measure has not yet been determined.

TEST METHODS

In conjunction with the rule development process for Rule 1138 and associated source testing, the document “Protocol – Determination of Particulate and Volatile Organic Compound Emissions from Restaurant Operations” was published November 14, 1997. These test methods are currently being used for testing of charbroilers and potential control devices. The test

methods are used by qualified labs to certify the emissions level of specific control systems but are not employed to test emissions at individual restaurants.

COST EFFECTIVENESS

The cost-effectiveness of this control measure has not been determined. The District will continue to analyze the potential cost impacts associated with implementing Phase I of this control measure including costs associated with generating emission reduction or credits, and will provide cost effectiveness as it becomes available.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from restaurant operations.

REFERENCES

Report to the Governing Board December 2004 - Staff Recommendations Regarding Controlling Emissions from Restaurant Operations.

GROUP 5

Multiple Component Sources

FACILITY MODERNIZATION
[NOx, VOC, PM2.5]

CONTROL MEASURE SUMMARY

SOURCE CATEGORY: ALL FACILITIES

CONTROL METHODS: ALL AVAILABLE CONTROL MEHODS RELATED TO TODAY'S BACT AND SUPERCOMPLIANT COMPOUNDS

EMISSIONS (TONS/DAY):

ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
NO_X INVENTORY	~~19.1~~22.6	~~12.4~~12.1	~~11.7~~9.8
NO_X REDUCTION		~~3.0~~1.6	~~6.2~~2.0
NO_X REMAINING		~~9.4~~10.5	~~5.6~~7.8
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
NO_X INVENTORY	~~20.9~~24.6	~~13.7~~13.2	~~13.0~~10.8
NO_X REDUCTION		~~3.3~~1.8	~~6.8~~2.2
NO_X REMAINING		~~10.4~~11.4	~~6.2~~8.6
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	~~37.1~~13.6	~~32.8~~14.2	~~34.9~~ 16.3
VOC REDUCTION		2.0	~~10.6~~ 8.0
VOC REMAINING		~~30.8~~12.2	~~24.3~~ 8.3
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	~~43.0~~15.8	~~37.9~~16.3	~~40.4~~ 18.7
VOC REDUCTION		2.3	~~12.4~~ 9.2
VOC REMAINING		~~35.6~~14.0	~~28.0~~ 9.5
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
PM2.5 INVENTORY	~~8.2~~3.3	~~8.1~~3.9	~~8.5~~ 4.3
PM2.5 REDUCTION		~~0.7~~ 0.4	~~2.2~~ 1.7
PM2.5 REMAINING		~~7.4~~ 3.5	~~6.2~~ 2.6

CONTROL COST: $10,600 TO $17,000 PER TON NOX REDUCED;
$10,000 PER TON VOC REDUCED;
$19,000 PER TON PM2.5 REDUCED~~TO BE DETERMINED~~

IMPLEMENTING AGENCY: AQMD

DESCRIPTION OF SOURCE CATEGORY

This control measure would obtain further emission reductions of NOx, VOC, and PM2.5 by requiring that facilities modernize permitted equipment and processes and use supercompliant materials based on a set of pre-specified equipment useful life.

For NOx emission reductions, e~~E~~xisting equipment at facilities not participating in the NOx RECLAIM program would need to be retrofit or replaced with ~~today's~~ BACT at the end of a pre-determined life span. For facilities participating in the NOx RECLAIM program, further NOx reductions will be obtained through periodic BARCT evaluation and other program review.

For VOC emission reductions, s~~S~~upercompliant VOC materials would ~~also~~ be required for surface coating applications, where feasible, beginning with 10 tpy or greater VOC facilities. Facilities subject to Rule 1132 are excluded from this measure, because they are already subject to a 65% facility-wide reduction in VOC emissions.

PM2.5 emissions reductions would be obtained from both RECLAIM and non-RECLAIM facilities through this control measure.

This comprehensive control strategy is comprised of five facility emission components:

- Combustion Sources – NOx
- Fugitive VOC Emissions
- Industrial Coating and Solvents Operations - VOC
- PM2.5 Emissions from Facility Operations
- Fugitive PM2.5

Background

BACT

The District's New Source Review (NSR) programs[2] establish pre-construction permit review requirements for equipment or processes subject to permit requirements. Under NSR, applicants are required to incorporate BACT when new equipment is installed, existing stationary permitted equipment is relocated, or existing permitted equipment is modified such that there is an emissions increase. BACT means the most stringent emission limitation or control technique which:

- Has been achieved in practice for such category or class of source; or
- Is contained in any state implementation plan approved by EPA for such category or class of source (unless demonstrated to the satisfaction of the Executive Officer or designee to be not presently achievable); or

[2] The NSR programs include Regulation XIII – *New Source Review* and Rule 2005 – *New Source Review for RECLAIM.*

- Is any other emission limitation or control technique, found by the Executive Officer or designee to be technologically feasible for such class or category of sources or for a specific source, and cost-effective as compared to measures listed in the AQMP or rules adopted by the District Governing Board.

~~The process for determining BACT is significantly different between major and non-major polluting facilities. Major polluting facilities that are subject to NSR are required by the Clean Air Act to have the Lowest Available Emission Rate (LAER). LAER is determined at the time the permit is issued, with little regard for cost, and consistent with USEPA's LAER policy as to what is achieved in practice. For non-major polluting facilities, BACT is based on state law at the time an application is deemed complete. In most cases, this BACT is consistent with that specified in Part D of the District's BACT Guidelines. For this control measure, Part D of the District's BACT for non-major polluting facilities will be applied to all subject facilities~~

Existing Equipment

Although control measures are routinely applied to existing sources, it is generally more difficult and costly to retrofit existing equipment with BACT than it is to apply BACT to a new source. The equipment being retrofit may not be compatible with current BACT if a specific process or method is needed. There may also be space restrictions that prevent installation of some add-on control technology.

Consequently, control measures targeting existing combustion sources typically do not reduce emissions to the same levels that would be obtained from the application of BACT. And, although NSR requires BACT for new, relocated, or modified equipment with an emissions increase, older equipment is allowed to remain in operation for many years, provided that the equipment complies with applicable rules for existing equipment. As a result, emission reductions to the level of BACT are not achieved for older equipment, and there is currently no mechanism that limits the continued use of such equipment.

This control measure ensures that as equipment ages and reaches the end of useful life, the equipment is either upgraded or replaced to meet ~~today's~~ BACT.~~for non-major polluting facilities~~. ~~Today's BACT is likely to be less stringent than the future BACT that would ordinarily be applied for equipment replacement at a future date. However, there is no assurance when the equipment will be replaced to take advantage of today's clean technology.~~ This measure would provide the certainty for implementation of the cleanest~~today's best~~ available technology within the time frame of the attainment dates.

Regulatory History

This control measure would affect a wide variety of permitted equipment and processes. Consequently, the rules and regulations impacting the affected sources are extensive and are summarized briefly.

Regulation IV - Contains more than 35 rules that place prohibitions on equipment or operations. Several of these rules place restrictions on the exhaust concentrations of different combustion

contaminants. For instance, Rule 474 (Fuel Burning Equipment - Oxides of Nitrogen) limits the NOx emissions from fuel burning equipment. For recently permitted equipment, many of these rules are superceded by more stringent BACT limits.

Regulation IX is derived from federal law and specifies standards of performance for new stationary sources. The regulation consists of more than 70 subparts. Most of the standards in this regulation have been adopted by the District without change and are enforced by delegation from the USEPA. As an example, Subpart Eb provides standards of performance and emission guidelines for municipal waste combustors.

Regulation X is also derived from federal law and specifies standards for handling hazardous materials. The regulation consists of at least 15 subparts. The federal standards have been adopted by the District without change and are enforced under EPA authority.

Regulation XI contains source-specific standards and is composed of more than 85 rules. As an example, Rule 1110.2 (Emissions from Gaseous- and Liquid-Fueled Engines) places NOx, CO, and VOC limits on engines. For engines that have been permitted for many years and have not been recently subject to BACT, this rule may be the most restrictive in terms of limiting engine emissions. Another example is Rule 1118 (Emissions from Refinery Flares). Regulation XI rules are tailored to specific types of air pollution sources.

Regulation XIII (New Source Review) sets forth the requirements that proposed new or modified stationary sources must meet before construction can take place. These requirements are in addition to those specified by other rules and include use of Best Available Control Technology, offset of emission increases, and a demonstration that air quality will not be diminished as the result of the construction or modification.

Regulation XIV (Toxics) consists of more than 15 rules that address toxic air contaminants. Rule 1401 pertains to the New Source Review of toxic air contaminants, and Rule 1402 controls toxic air contaminants from existing sources.

Regulation XX (RECLAIM) specifies requirements for facilities participating in the market incentive program, which is designed to allow facilities flexibility in achieving emission reduction requirements for NOx and SOx. Rule 2005 provides New Source Review requirements for RECLAIM facilities.

Regulation XXX (Title V Permits) defines permit application and issuance procedures and also compliance requirements associated with the federal Operating Permit Program. This regulation is mandated by Title V of the federal Clean Air Act.

PROPOSED METHOD OF CONTROL

The concept of this control measure is to ensure timely upgrade~~replacement~~ of existing technology~~equipment~~ to the cleanest technology available. The District, as part of rulemaking will develop a list of useful equipment life by equipment category. The equipment operators are expected to achieve BACT or equivalent emission limits at the end of useful life through equipment replacement or retrofit technology. For VOC solvent/coating facilities, this measure

would begin with 10~~20~~ tpy or greater facilities to design a program to encourage application of supercompliant materials or process change to achieve emission reductions.

During the rulemaking process for this control measure, a more detailed analysis will be performed to establish appropriate useful lives for various equipment categories and size ranges. Special consideration will be given to past retrofit requirements and investments made, to ensure that reasonable useful lives for various equipment types are obtained. ~~SOx and NOx equipment will be considered as part of CM #2007CMB-02 and CM #2007LTM-03, respectively.~~

As part of its efforts to implement this control measure and to promote facility modernization, the District will forge partnerships with local businesses, trade organizations, environmental groups, and other stakeholders, and pursue state and federal tax incentives. The District will follow a two-step public hearing procedure which will provide a pre-hearing to receive public comments on the basic program design prior to the adoption hearing before the District's Governing Board. Early replacement of equipment significantly prior to specified useful life may qualify for the tax incentives. ~~or~~ P~~p~~otential credit generation will also be explored during rule development.

EMISSIONS REDUCTION

The emission reductions for NOx, VOC and PM2.5 are shown in the summary table. There may~~will~~ also be concurrent emission reductions in SOx, and CO. For purposes of emission reduction calculations, the refinery sector is excluded because reductions are included in FLX-02.

RULE COMPLIANCE AND TEST METHODS

Compliance with the provisions of this control measure would be based on monitoring, recordkeeping, and reporting requirements that have been established in either the RECLAIM program or existing source-specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

The estimated c~~C~~ost effectiveness for NOx reductions through this control measure ranges from $10,600 to $17,000 per ton reduced, based on a variety of combustion equipment. ~~It is anticipated that the cost-effectiveness will be similar to that for non-major source BACT.~~ NOx reductions may also be obtained from additional equipment, depending on results from further analyses during the rulemaking process. ~~has not yet been determined for this control measure. Consideration would be given for evaluating the cost for the loss of equipment useful life from early equipment replacement or retrofit~~.

A cost-effectiveness of $10,000 per ton was estimated for sources of VOC. This value corresponds to a reasonably conservative cost-effectiveness for facilities subject to the January 2001 amendment to Rule 1132 Further Control of VOC Emissions from High-Emitting Spray Booth Facilities. This value was deemed appropriate because of the similarity between this

control measure and Rule 1132. That is, both reduce VOC on a facility-wide basis by lowering the VOC content of coatings or through the application of add-on controls.

A cost-effectiveness of $19,000 per ton was estimated for sources of PM2.5. This value was based on the $4,500 per ton of PM10 cost-effectiveness for facilities subject to the minor source BACT, if one assumes a four to five PM10 to PM2.5 ratio, by weight.

A comprehensive evaluation of costs and impacts on businesses will be conducted during the rulemaking process. Any potential tax incentives that may be made available would improve the cost effectiveness beyond the figures provided.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from the targeted sources.

REFERENCE

South Coast Air Quality Management District. Best Available Control Technology Guidelines. July 14, 2006.

URBAN HEAT ISLAND
[ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	ROOFING, PAVING, AND BUILDING MATERIALS AND TREE PLANTING PROJECTS
CONTROL METHODS:	USE OF MORE REFLECTIVE AND LIGHTER COLOR SURFACES ON EXTERIOR SURFACES LOCATED IN URBAN AREAS
EMISSIONS:	IMPLEMENTATION OF THIS CONTROL MEASURE IS EXPECTED TO LOWER AMBIENT TEMPERATURES IN URBAN AREAS. LOWER AMBIENT TEMPERATURES WOULD DECREASE THE FORMATION OF OZONE, WHICH IN TURN IS EXPECTED TO RESULT IN IMPROVED AIR QUALITY.
CONTROL COST:	NOT DETERMINED.
IMPLEMENTING AGENCY:	AQMD, CEC, LOCAL GOVERNMENT

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to encourage activities that would lower ambient temperatures in urban areas. This control measure focuses on encouraging activities such as using lighter, more reflective surface materials and increased tree planting.

Background

Over the past four decades, summer temperatures in urban cities throughout the nation have increased by 2 to 4°F. Since 1940, it is estimated that peak temperatures in Los Angeles have increased approximately 5 to 6°F (Akbari, et al, 1990; EPA, 1990). The increased temperatures are primarily occurring in urban areas. Moreover, studies have shown that summer temperatures in urban areas are typically 2°F to 8°F higher than in their rural surroundings. (EPA, 1992).

The difference between urban and rural temperatures is referred to as the "urban heat island effect." The replacement of natural vegetation such as trees, grass, and soil with concrete and asphalt reduces the landscape's ability to lower daytime temperatures and loses the benefits of shade. In addition, the use of dark colored materials and surfaces that absorb, rather than reflect incoming solar energy adds to the effect, thus increasing temperatures in cities and urban areas.

The urban heat island effect has adverse impacts on air quality and energy demands. The increased solar gain absorbed by the city can increase energy demands for cooling and accelerate ozone formation. Studies indicate that in large metropolitan cities such as Los Angeles, utility peak loads will increase 1.5 to 2 percent for every 1°F increase in temperature. In Los Angeles, energy loads for both Los Angeles Department of Water and Power (LADWP) and Southern California Edison (SCE) increase by about 2 percent per °F with respect to the base load (Taha, et al, 1992).

The ability of a surface to reflect is referred to as albedo and is measured from zero to one, with one representing the most reflective and zero representing the most absorbent. Most buildings and cities have albedos between .20 and .35 (Akbari, et al, 1990). To reduce urban temperatures, albedos can be increased by using lighter, more reflective materials on surfaces of roofs and pavement (roads and parking lots). In addition to providing shade to buildings and surfaces, trees cool the air directly by evapotranspiration and block solar radiation and prevent these structures and surfaces from heating up beyond the ambient temperature (LADWP, 1992). Moreover through evapotranspiration, the natural releasing of water vapor from leaves and trees cools the environment, thus bringing down the temperature of the entire area.

A preliminary air quality modeling analysis indicates cooler surfaces and tree planting can improve the ozone air quality in Los Angeles. Initial results indicate that through cooler surfaces for homes, office-building roofs, and paved surfaces, and planting 11 million trees in Los Angeles, that the heat island effect can be reduced between 3 - 7°F (Rosenfeld, et al, 1996).

In May 2002, the District co-funded a project with the City of L.A., L.A. Department of Water and Power, Lawerence Berkeley Laboratories and the California Energy Commission to assess the effects of using lighter colored roofing materials to improve energy efficiency and to lessen the urban heat island effect. A field study was conducted to measure the changes in surface temperatures in light colored roofing and paving materials installed in and around the L.A. Zoo. This and other studies will provide better data on the effectiveness of lighter colored materials to lessen the urban heat island effect.

A study was conducted in 1998 to quantify the air quality benefits of the cool community concept by applying an appropriate air quality modeling approach (ENVIRON, 1998). Cool communities impacts on temperature and dispersion were mapped using the Urban Airshed Model (UAM) to evaluate the meteorological effects on ozone formation and transport within the Basin. Maximum ozone reductions were found to be about 8 parts per billion (ppb). A follow-up study was conducted to explore ways in which the air quality benefits that accrue from the implementation of urban heat island mitigation strategies can be converted into quantifiable emission reductions (ENVIRON, 2001). This study analyzed three options for regulatory approaches in generating emission reductions including: local governments modifying building codes to require the use of light colored materials, public or private groups providing cash or other incentives to building owners to install lighter colored materials, and the District requiring the use of lighter colored materials with the resulting emission reductions applied for SIP purposes.

Regulatory History

In January 1992, the EPA introduced a publication, Cooling Our Communities: A Guidebook on Tree Planting and Light-Colored Surfacing. This guidebook discussed the causes, magnitude and impacts of increased urban heat islands.

There are communities within the Basin which have tree planting programs and ordinances already in effect. In addition, some utilities provide educational guidance brochures regarding tree planting.

PROPOSED METHOD OF CONTROL

This control measure proposes to develop a program to promote the use of light colored roofing and pavement materials, solar roofing membranes, and increased tree planting. Programs to promote use of more reflective pavement and tree planting could be a required element for new sources, or could be included as recommendations through the District's California Environmental Quality Act (CEQA) Air Quality Handbook. Sources such as builders, utilities, cities and local government agencies, and private citizens, etc. that promote the use of lighter colored materials and increased tree planting could be eligible for an emission credit. Emission credits could be issued based on types of surface materials used or numbers of trees per unit or area that meet or exceed a specified benchmark.

There are a variety of techniques that can be implemented to reduce urban temperatures and increase the albedo of roofs, pavements, and building surfaces. Most of these techniques can be implemented during the maintenance or modification of existing structures or during the building stages of new structures.

Roofing Materials

The reflectivity of roofs is measured in terms of roof temperature at noon on a clear summer day, with an air temperature of 90oF, averaged over the warranted life of the roof. A gray roof with a smooth or washable texture would have a roof temperature under the aforementioned conditions of approximately 160oF. A light green roof has a higher albedo, and accordingly a lower surface temperature of 135oF.

One method of achieving higher albedos is to coat existing surfaces or modify the makeup of new surfaces so that they incorporate lighter colored materials. Available techniques for roof whitening include, but are not limited to the following (Taha, et al, 1992):

- adding light-colored aggregate to the roofing material;
- light-colored rocks on flat or gently-sloped roofs;
- colored or painted roofs;
- coating with elastomeric coatings and single plies; and
- using light-colored concrete tiles on sloping roofs.

In addition to these techniques, the use of integrated roofing membranes using solar photovoltaic arrays can have a combined effect of lowering the thermal impacts on commercial and industrial building roofs while at the same time supplying the electricity needs of these buildings. Such products consist of an array of photovoltaic modules integrated into a flexible polyester-based roofing membrane. These roofing membranes have relatively high albedos (e.g., 0.8) and can be equipped with insulation thereby, reducing the thermal impacts on roofs. The photovoltaic modules convert much of the incoming sun's energy directly into electricity, substantially reducing the energy absorbed by a roof.

Pavement and Building Surface Materials

Within the city, there are a number of urban surfaces such as streets, sidewalks, parking lots, school yards, and other similar surfaces, that have dark surfaces. The following identifies techniques that can be implemented to lighten urban surfaces (Taha, et al, 1992, Pomerantz, 1996):

- using light-colored aggregates in the upper layer of the asphalt in new pavements;
- using a light-colored slurry or chip seal when resurfacing;
- using concrete rather than asphalt, with a light-colored aggregate and binder;
- whitetopping (light-colored concrete pavements);
- using artificial lighteners in preparing the mixtures of asphaltic concrete and slurry seals; and
- using paints of light colors that are designed specifically to resist weathering, wear and tear, and other environmental effects.

In addition to selecting materials with high albedos, other considerations are important to ensure that materials maintain their original albedos. Considerations that should be taken into account include, but are not limited to material wear resistance, effects of soiling, and surface texture. In addition, in selecting materials for roads, parking lots, and driveways, it is important that the light-colored surface has a non-skid finish.

Tree Planting

To help lower an entire city's temperatures through evapotranspiration, street trees need to be planted in public as well as private spaces such as parking lots, plazas, street meridians, sidewalks, residential yards, corporate lawns, parks, and shopping plazas (EPA, 1992). For homes and buildings, the most dramatic cooling takes place when trees directly shade windows, walls, roofs, and air-conditioning units (LADWP, 1992). For residences, most experts suggest planting three or more trees, placing them so they will shade the home and outdoor living areas during the summer months (SCE, 1991). The air conditioning savings are even greater when the tree shades an office building with large windows and long air conditioning hours.

A general rule of thumb is to plant at least five to ten feet from a structure; moreover, the shape and projected mature spread of the tree should be taken into account in this distance (LADWP, 1991). To maximize the evaportranspiration of tree planting programs, the placement of trees in cities is important. The following identifies tree planting strategies that should be considered to maximize the cooling benefits associated with increased tree planting:

- shade east- and west facing walls and windows of home or building to reduce air conditioning energy consumption,

- shade roofs to lower the temperature of interiors of homes and buildings, external surfaces, and surrounding environment,
- shade outdoor air conditioning units to increase its efficiency,
- shade nearby walls and flat surfaces such as walkways, driveways, alleys, and the streets, and
- plant trees to influence wind movement and circulation around and through residences and buildings.

In selecting shade trees for large-scale planting, they must be low biogenic emitters (Benjamin & Winer, 1994). Consideration should also be taken for their tolerance to air pollution, water requirements, effect (or lack of effect) on sidewalks, sewer lines and overhead electric lines, and insect and pest resistance (Corchnoy, et al, 1991). The shape, size, species, as well as fire hazards are important to consider in selecting shade trees. In selecting species, it is important that trees with the potential to produce biogenic hydrocarbon emissions be avoided. The District would work with interested parties to develop a list of species of trees that would be recommended for shading.

Currently there are programs such as the $3.5 million dollar effort by the California Urban Forests Urban Council. In addition to tree planting in the Los Angeles area, this project provides services in public education, management support to urban foresters, support to public agencies, government to develop urban forest initiatives and urban forest service and research.

EMISSIONS REDUCTION

Implementation of this control measure is expected to decrease ambient temperatures in the Basin, particularly during summer months. Improved air quality is expected as a result of lower urban temperatures.

RULE COMPLIANCE

Implementation of this measure could be based on the following:

- local government model ordinances;
- legislative strategies for incentives; and
- public outreach for consumer awareness.

In addition, the District may consider the development of an emissions credit mechanism to provide emission credits based on the number of units modified or installed that use materials and colors meeting or exceeding a specified benchmark.

TEST METHODS

ASTM Sub-Committee E06-21 has developed E1980-01 Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opague Surfaces to determine indexes and surface temperatures for surfaces with emissivity greater than 0.1.

COST EFFECTIVENESS

The cost effectiveness of this control measure has not yet been fully determined. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

Implementation of this measure is expected to require the partnership of the District, CEC, and local government.

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ENERGY EFFICIENCY AND CONSERVATION [ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	STATIONARY SOURCE FUEL COMBUSTION CATEGORIES
CONTROL METHODS:	INCENTIVES FOR HIGH FUEL EFFICIENCY EQUIPMENT
EMISSIONS (TONS/DAY):	NOT DETERMINED
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF PROGRAM

Background

Energy efficiency and conservation programs reduce emissions of all pollutants and tend to be cost effective. There is a renewed interest in efficiency and conservation programs at local, state, national and international levels. Industrial and commercial businesses and the public also share this interest.

In the 1991, 1994, 1997, and 2003 Air Quality Management Plans the District included energy efficiency and conservation components. The 1991 AQMP included control measures for residential, commercial and industrial sectors and local government conservation measures. That AQMP also included efficiency and conservation goals developed in cooperation with other agencies and affected businesses. The plan included electricity conservation goals of 5 to 15 percent for different sectors and natural gas conservation goals of 20 to 30% for commercial and residential sectors. In later AQMPs, energy efficiency and conservation were addressed within specific control measures.

The 1991 AQMP also addressed global warming and ozone depletion. The District committed to specific measures to reduce emissions of compounds that contributed to both ozone depletion and global warming. In addition, the District committed to working with other agencies to reduce global warming through energy efficiency and conservation.

Current Regulatory Programs

Promoting Clean Energy

Promoting cleaner sources of energy has always been a component of the AQMP. Clean energy produces less air pollution and includes sources such as solar, wind, hydro, bio-fuels and hydrogen. Solar energy can produce electricity using photovoltaic cells or thermal energy by heating water or a heat transfer fluid. Wind can be used to generate electricity using windmills in locations where winds are strong and constant. Examples of bio-fuels include ethanol and bio-diesel produced from plants. Hydrogen can be produced in a variety of ways and when used as a fuel the only byproduct of combustion is water. Electric and hybrid electric vehicles are also cleaner and result in fewer emissions of nitrogen oxides, hydrocarbons and particulate matter compared with conventional gasoline powered vehicles.

Renewable energy sources such as hydro, solar and wind, as well as alternative fuels and electric and hybrid electric vehicles are all components of the draft plan. The CARB and the District have emission reduction targets for mobile sources that include alternative fuels and hybrid and electric vehicles.

The CEC has established a goal for electric utilities of producing 33% of the state's electricity from renewable resources. Also, at the state level, California also has a solar initiative whose main focus is the installation of photovoltaic cells on residences and commercial buildings to help reduce peak electricity demand. The state will also promote clean energy sources as a means of reducing global warming gasses under a new state law. Greenhouse gasses must be reduced 25% by 2020.

Reducing Energy Demand

Currently there are a variety of programs at the federal, state and local level for reducing energy demand. At the federal and state level, the U.S. Department of Energy (DOE) and the California Energy Commission (CEC) develop minimum energy efficiency standards for residential, commercial and industrial equipment. The USEPA oversees the Energy Star program which promotes energy efficient appliances and equipment for residential, office and commercial use by identifying equipment that exceeds efficiency standards. Equipment which significantly exceeds standards can use the energy star label in advertising and are listed in the energy star database.

Public utilities in California promote conservation and efficiency through advertising rebate programs that offset the cost of energy efficient equipment and conservation programs. These programs are supported by the CEC and the California Public Utilities Commission (PUC).

Reducing energy demand in California through efficiency and conservation is the responsibility of the CEC and PUC. These two agencies in cooperation with utilities and local governments assure the state has an adequate energy supply as well as establish efficiency and conservation goals. Utilities and local governments provide incentives to help meet these goals.

State and Federal Initiatives and Programs

Currently there are a variety of energy efficiency and conservation programs at the federal, state and local level. At the federal and state level, the U.S. DOE and the CEC develop minimum energy efficiency standards for residential, commercial and industrial equipment. The USEPA Energy Star program promotes energy efficient appliances and equipment for residential, office and commercial use which significantly exceed standards.

The California Energy and Public Utilities Commissions require natural gas and electric utilities to include energy efficiency and conservation programs in their operations. Utilities have specific energy conservation goals and commit funds and other resources to provide incentives for property owners and businesses to purchase energy efficient equipment and initiate energy conservation and management programs. Currently, electric utilities have been set a long term goal of having 33% of their generation produced by renewable energy sources.

In addition, California has recently established a program to reduce emissions of greenhouse gasses – pollutants that contribute to global warming. The program has a goal of reducing emissions by 25% from current levels by 2020. This goal will be achieved in part through promotion of energy efficient technologies and energy conservation.

The state also has a solar initiative program whose emphasis is increasing the amount of energy produced through solar energy. A major focus of this program is to increase the number of photovoltaic systems on residential and commercial buildings to reduce the peak electricity demand on summer afternoons.

At the local level, counties and cities also have energy efficiency and conservation programs and promote conservation by providing incentives to building projects which meet LEED standards (Leadership in Energy and Environmental Standards). LEED is an energy and environmental standards certification program developed by the non-profit U.S. Green Building Council. Local governments can provide a variety of incentives to developers whose projects meet LEED standards such as a quicker review of permit applications.

The USEPA also provides guidance to local air pollution control agencies for including energy efficiency and conservation programs in their state implementation plans. Emission reductions must be quantifiable, enforceable and in excess of reductions from other programs and regulations.

Energy Demand Projections

Information developed by the CEC in the first half of 2006 indicated that the projected increase in demand for natural gas and electricity are expected to be in the range of 1 to 1½ percent per year for the years covered by the AQMP. A similar increase in demand is expected for transportations fuels (i.e., gasoline and diesel). The effect of the state program to reduce greenhouse gas emissions is not known at this time. However, energy conservation and use of more efficient technologies would be expected to mitigate the projected increases in demand for fossil fuels and electricity and would reduce emissions of greenhouse gasses.

Energy Conservation and Efficiency Program Assumed in the Plan

The energy demand forecasts provided by the gas and electric utilities include conservation and efficiency programs that have been established through the PUC and CEC. The energy projections provided to the District for the AQMP include these conservation goals. All required conservation measures have been included in the energy projections for the plan.

The utility programs include rebates for energy efficient equipment such as lights, motors, pumps, boilers, and water heaters. They also offer energy audit and monitoring services to help business become more efficient, save energy and reduce costs. These programs and public service advertising are the way each utility achieves the energy conservation goals set for it by the PUC.

PROPOSED METHOD OF CONTROL

The proposed method of control is to provide incentives for businesses or residents to use energy efficient equipment in the District and increase the effectiveness of existing energy conservation programs. The District is proposing to develop and implement specific energy efficiency and conservation programs above and beyond the state and federal mandated programs to achieve further emission reductions. It should be noted that the impact of existing federal and state programs are already reflected in the District's projected emissions forecast.

Under this measure, monetary incentives could be provided to accelerate the retirement existing of equipment (e.g., boilers, water heaters) subject to AQMP rules and replacement of these equipment with high fuel efficiency units. Such approach will not only have the benefit of achieving early NOx reductions due to early compliance with NOx emission limits, but it will also provide additional NOx benefits based on the use of more fuel efficient equipment. The District will work with utility companies to provide additional incentives for property owners and businesses to purchase more fuel or energy efficient equipment. Funding for these programs could come from a variety of sources including the District Priority Reserve (District's Rule 1309.1) or mitigation fees (e.g., from federal sources). The District will conduct an assessment of the cost and the cost-effectiveness of specific energy efficiency and conservation measures before launching this program. Close coordination with vendors supplying high efficiency equipment as well as with local governments to explore opportunities to increase program outreach would be critical for the success of this program.

EMISSIONS REDUCTION

The amount of emission reductions will be determined during implementation of this control measure. Emission reductions will be in excess of reductions achieved by current regulatory programs.

Energy and environmental impacts of the proposed energy efficiency measure will be evaluated during the CEQA process as a part of the Draft Final AQMP. Impacts on emissions of criteria air pollutants, electricity and fossil fuel demand and emissions of global warming gasses will be assessed in the CEQA document.

RULE COMPLIANCE AND TEST METHODS

Compliance with the provisions of this control measure would be based on monitoring, recordkeeping, and reporting requirements that have been established in existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

Emissions quantification protocols will establish the appropriate test methods that applicable source categories will be required to use when generating and using emission credits under this program.

COST EFFECTIVENESS

The cost effectiveness has not been determined. In general, energy efficiency and conservation measures tend to be cost effective.

IMPLEMENTING AGENCY

The implementing agencies would include the District and local governments.

REFERENCES

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EMISSIONS REDUCTION FROM GREENWASTE COMPOSTING [VOC, PM2.5 ~~AND NH_3~~]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	**GREENWASTE COMPOSTING**		
CONTROL METHODS:	**BEST MANAGEMENT PRACTICES AND/OR CONTROL TECHNOLOGIES**		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	TBD	TBD	TBD
VOC REDUCTION		TBD	TBD
VOC REMAINING		TBD	TBD
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	TBD	TBD	TBD
VOC REDUCTION		TBD	TBD
VOC REMAINING		TBD	TBD
~~ANNUAL AVERAGE~~	**~~2002~~**	**~~2014~~**	**~~2020~~**
~~NH3 INVENTORY~~	~~TBD~~	~~TBD~~	~~TBD~~
~~NH3 REDUCTION~~		~~TBD~~	~~TBD~~
~~NH3 REMAINING~~		~~TBD~~	~~TBD~~
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
PM2.5~~10~~ INVENTORY	TBD	TBD	TBD
PM2.5~~10~~ REDUCTION		TBD	TBD
PM2.5~~10~~ REMAINING		TBD	TBD
CONTROL COST:	TO BE DETERMINED		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

Greenwaste composting is a biological process where greenwaste (organic waste generated from gardening, agriculture, and/or landscaping activities) is decomposed under controlled environment to produce a soil-like product called compost. Greenwaste composting is an important component of the solid waste industry; it provides resource conservation through source reduction, recycling, and reuse. However, it produces air emissions that are currently uncontrolled. Greenwaste composting is a source of direct dust~~,~~ and VOC (4.4 tons/day)~~, and ammonia, a precursor of particulate matter (1 ton/day)~~. It also releases carbon dioxide, water vapor, and methane, which are greenhouse gases. In addition, greenwaste composting can generate odors, a common public nuisance, if not properly operated. Emissions and odors from greenwaste composting can be reduced by maintaining optimal aerobic conditions thru best management practices, or utilizing ag-bag, enclosure, as well as state-of-the art emissions control technologies, such as aeration static pile (ASP) and in-vessel equipped with a control device such as bio-filter.

Background

Control Measure (CM) WST-02 – Emission Reductions from Composting, included in the 1997 and 2003 AQMPs, as well as the 1999 Amendments to the 1997 Ozone State Implementation Plan (SIP) for the SCAB, called for the development of feasible control strategies to reduce VOC and ammonia emissions from composting activities. As such, Rule 1133.2 – Emission Reductions from Composting Operations and Related Operations, was adopted in January 2003. Rule 1133.2 partially implements CM WST-02 because it only focused on controlling the emissions from co-composting operations (bio-solids).

Although the 2002 District's and the California Integrated Waste Management Board's (CIWMB) source testing revealed that greenwaste composting was a significant source of VOC, at that time, staff only proposed minimal registration requirements for greenwaste composting, with the intention to track their operations and emissions. According to staff's affordability analysis conducted in 2002, control options (enclosure, ASP, in-vessel, and bio-filter) identified for co-composting may have adverse impacts on the greenwaste composting industry despite their cost-effectiveness.

During the Rule 1133.2 development process, staff identified approximately 16 greenwaste composting facilities in the District's jurisdiction. Most of these facilities compost their greenwaste in long piles called windrows. In order to maintain optimal aerobic conditions, which would in turn, reduce emissions and odors generated during the decomposition process, windrows must be turned frequently by front-end loaders.

Regulatory History

Currently, operators of greenwaste composting facilities located in the District's jurisdiction are required to comply with the District's Rule 203 – Permit to Operate (for equipment that require permits), Rule 401 – Visible Emissions, Rule 403 – Fugitive Dust, and Rule 1133 (for registration and annual update).

Depending on the throughput levels, greenwaste composting facilities are either required to comply with the Local Enforcement Agency (LEA) Notification requirements set forth in Title 14, California Code of Regulations, Division 7, Chapter 5.0, Article 3.0, or obtain a Compostable Materials Handling Facility Permit from the CIWMB pursuant to Title 27, California Code of Regulations, Division 2, Subdivision 1, Chapter 4.0, Subchapters 1 and 3, Articles 1, 2, 3, and 3.1. However, neither the District nor state regulations require specific emission controls from the greenwaste composting industry.

Assembly Bill (AB) 939 (California Integrated Waste Management Act):

In September 1989, AB 939 was passed into law and was incorporated into the California Public Resources Code, Division 30, §40000 et seq. (Division 30). Division 30 is implemented by CIWMB. It mandates cities and counties to achieve a total waste diversion of 25 percent by 1995, and a total waste diversion of 50 percent by 2000, based on the 1990 baseline. Division 30 also requires California to secure a long-term disposal capacity. ~~Since o~~Organic waste (foodwaste and greenwaste) only accounted for approximately ~~25~~30 percent of California's

waste stream in 1999.~~,~~ ~~r~~Recycling, reuse, and source reduction have been widely promoted to achieve the overall AB939 diversion such goals.

Work conducted by CIWMB:

CIWMB conducted several source tests on greenwaste chipping and grinding, as well as composting in conjunction with similar work performed by the District. Studies have been commissioned by CIWMB to ~~UC Davis and~~ San Diego State University to evaluate greenwaste composting processes, including characterization of emissions (e.g., VOC, PM~~,~~ and NH3~~, and green house gases~~) and to UC Davis to evaluate anaerobic digestion technologies. CIWMB also conducted testing and studies on BMPs (i.e., feedstock controls, aeration techniques) and on biogenic emissions from greenwaste.

A greenwaste composting facility is also required to obtain or renew its Conditional Use Permit from the city and/or county offices in the jurisdiction where the facility is located.

PROPOSED METHOD OF CONTROL

The proposed control method will be divided into two phases:

Phase I - Review recent studies on emission factors and BMPs to refine inventories and to assess reduction potential.

Phase II – Program development including potential rule development to incorporate technical feasible and cost-effective BMPs or controls. Any future regulatory actions (e.g., reducing greenhouse gases) that provide concurrent reductions will be SIP creditable. The District will convene a working group involving all stakeholders to develop cost-effective and workable solutions for this source category.

EMISSIONS REDUCTION

The emission reduction potential for this measure is not determined at this time.

RULE COMPLIANCE

A District regulation or other enforceable instrument will be considered to ensure emission reductions. The most effective regulating tool will be selected based on the BMP options. Implementation of this control measure will not conflict with efforts under AB939.

TEST METHODS

District staff will work with CIWMB to develop appropriate test methods, based on BMPs.

COST EFFECTIVENESS

Cost-effectiveness for BMPs will be determined during rule development process.

IMPLEMENTING AGENCY

AQMD with consultation of CIWMB.

REFERENCE

Technology Assessment for Proposed Rule 1133: Emission Reductions from Composting and Related Operations, AQMD, March 13, 2002.

EMISSION REDUCTIONS FROM ~~NON-DAIRY~~ LIVESTOCK WASTE [VOC~~, NH_3~~]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	LIVESTOCK WASTE ~~[POULTRY AND SWINE]~~		
CONTROL METHODS:	BEST MANAGEMENT PRACTICES, FEED VARIATIONS, CONTROL DEVICE INSTALLATION		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	~~TBD~~9.4	~~TBD~~3.7	~~TBD~~3.0
VOC REDUCTION		~~TBD~~0.8	~~TBD~~0.6
VOC REMAINING		~~TBD~~2.9	~~TBD~~2.4
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
VOC INVENTORY	~~TBD~~9.4	~~TBD~~3.7	~~TBD~~3.0
VOC REDUCTION		~~TBD~~0.8	~~TBD~~0.6
VOC REMAINING		~~TBD~~2.9	~~TBD~~2.4
~~NH_3 INVENTORY~~	~~TBD~~	~~TBD~~	~~TBD~~
~~NH_3 REDUCTION~~		~~TBD~~	~~TBD~~
~~NH_3 REMAINING~~		~~TBD~~	~~TBD~~
CONTROL COST:	TO BE DETERMINED		
IMPLEMENTING AGENCY:	AQMD WITH THE COOPERATION OF STATE AND LOCAL RESOURCE AGENCIES		

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to seek emission reductions from confined livestock ~~[poultry and swine]~~ facilities.

Background

Livestock waste emissions are precursors to both ozone and fine particulates (PM2.5). Although confined animal facilities have been relocating out of the District's jurisdictional boundaries for years the District, in 2002, still retained~~s~~ over nine million poultry (egg layers and broilers) and more than 15,000 hogs and pigs (swine), and an estimated 400,000 cows, of which approximately 250,000 are dairy cattle and approximately 150,000 are support cattle (dairy). Additional VOC and NH3 emission reductions could be achieved by requiring control actions above those required by Rule 223 (Emission Reduction Permits for Large Confined Animal Facilities) by applying similar requirements to facilities not large enough to be subject to ~~covered by~~ the rule. Further emission reductions could also be achieved from amendments to Rule 1127 (Livestock Waste) based on mitigation measures recently developed.

Source Description

The following information was obtained from a report prepared for the US EPA (US EPA, August, 2001). Laying hens or layers are sexually mature female chickens maintained for the production of eggs, primarily for human consumption. These eggs are known as table eggs and may be sold as shell eggs, or may be used in the production of liquid, frozen, or dehydrated eggs. Laying hens maintained for table egg production are almost exclusively confined in cages, which allow automation of feed distribution and egg production. Most confinement facilities for laying hens are mechanically ventilated to remove moisture and carbon dioxide produced by respiration. Exhaust fans draw air into the building through slots located along the perimeter of the roof under the eves. Manure is typically collected at commercial egg-production facilities in two types of laying hen houses. One is a manure belt house where manure is collected as frequently as daily but typically every three to four days and stored in open storage piles. The other type of laying hen house is referred to as a high-rise where manure accumulates below the laying hen houses and is collected on an annual or semi-annual basis. At either facility manure is spread on the ground to allow the material to dry before it is sold or delivered as fertilizer.

Swine (hog) operations can be of several types. The most common is the farrow-to-finish operation that encompasses all three phases of swine production (farrowing, nursing, and finishing). The animals are typically housed in confinement buildings that are either totally enclosed or open-sided with curtains. Totally enclosed facilities are mechanically ventilated throughout the year. Open-sided buildings are naturally ventilated the majority of the year, but may be mechanically ventilated when the curtains are closed due to weather conditions. Manure may be flushed from the floor of the housing or fall through slats in the floor to a pit underneath the floor. Manure in the pit may be flushed or scraped (SJVUAPCD, 2006).

Most dairy facilities in the Basin are "dry lot corral" dairies. Dairy cows live in open corrals, with feed lanes usually along one side of the corral. Manure is generally cleared from the feed lane into the corral and then periodically removed from the corral to one-site stockpiles to off-site locations or spread on cropland at the dairy as a soil amendment. The high concentration of animals per acre of land results in a large volume of manure stored in corrals and stockpiles. Because most dairy operations are clustered in a relatively small area with a high density of dairy livestock herds, substantial amounts of manure are produced in a concentrated area (SCAQMD, 2004).

Data from the UC Cooperative Extension indicates that there are 34 active laying-hen poultry facilities within the jurisdictional boundaries of the District. All of these facilities are located in Riverside and San Bernardino County. In total, these facilities have approximately 8.4 million egg-producers, commonly referred to as layers. According to the UC Cooperative Extension, there are also seven confined pullet (also referred to as young hens, usually less than one year old) facilities (Kuney, 2005). The District's permitting data indicates that there are four egg production facilities that are defined as Large Confined Animal Facilities (LCAFs) but that there currently are no swine production facilities that have permits. According to 2002 data, there are approximately 300 dairies in the Basin, mostly located in the Chino/Ontario area (SCAQMD, 2004). The industry is expected to experience negative growth in the coming years as many dairy facilities have initiated two to five year escrows (Nathan DeBoom, 2006).

Emissions

Emission factors are a critical part of emission calculations and there is a fair amount of discrepancy relative to the emission factors by different jurisdictions for different type of operations. Due to ongoing research, these numbers may change as more detailed research data is made available. The interim emission factors currently used by District staff for calculating emissions from layer hens and swine operations are provided. It should be pointed out that for certain chicken farm operations the applicable emission factors from ammonia can be ten times as high as the emission factors shown in the Table below that could potentially increase the emissions inventory for ammonia from these operations by an order of magnitude.

Emission Factors

	Ammonia (lb/hd/year)	~~PM10 (lb/hd/year)~~	VOC (lb/hd/year)
Layer Hens[3]	0.096	~~0.0308~~	0.02565
Swine	20.3	~~N/A~~	4.6[4]

To improve the current emission factors, further studies are currently being conducted at different locations. It is anticipated that improved emission rate data will be available prior to implementation of this control measure.

Regulatory History

Agricultural operations represent a significant source of air pollution throughout the state. SB 700, which was enacted into law as of January 1, 2004, eliminated the exemption from the permit system of local air pollution control districts for agricultural operations in the farming of crops or raising of fowl or animals. The bill amended air pollution control requirements in the California Health & Safety Code to include requirements for agricultural sources of air pollution.

Rule 223 was adopted in June of 2006 to satisfy the SB 700 requirement that all Large Confined Animal Facilities (LCAF) have permits that seek to minimize their emissions. Rule 223 requires that all LCAFs apply for and obtain a permit that includes a mitigation plan that the LCAF will implement to reduce emissions. Rule 223 requires compliance with Best Available Retrofit Control Technology (BARCT) when developing mitigation plans but does not mandate any specific measure.[5] To serve as interim BARCT guidelines, Appendix A of Rule 223 contains a list of the Emission Mitigation Measures for use by applicants when developing a mitigation plan. This list was developed in consultation with and general agreement of stakeholders, including Western United Dairymen, Milk Producers Council, Inland Empire Poultrymen, Inc. and Pacific Egg and Poultry Association. The Rule 223 Appendix A list of measures includes both Class One Mitigation Measures and Class Two (more stringent) Measures.

[3] Rule 223 Draft Final Staff Report, South Coast Air Quality Management District, June 2006.
[4] Rule 4570 Draft Final Staff Report, San Joaquin Valley Unified Air Pollution Control District, May 2006.
[5] BARCT is defined as an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.

Rule 1127 was adopted in August of 2004 to reduce emissions from dairy farms and the disposal of manure by requiring on-dairy best management practices (BMPs) and removal of surplus manure from corrals and stockpiles 4 times per year. The rule exempts small dairies or related farms with fewer than 50 animals on-site and does not establish performance standards (e.g. higher frequency of manure removal.)

PROPOSED METHOD OF CONTROL

Depending on the ultimate size of the emissions inventory, this control measure would aim to mandate the Class Two Mitigation Measures of Rule 223, with a higher level of overall control efficiency for the larger facilities and seek reductions from the smaller facilities not subject to Rule 223, possibly through requirements to implement Rule 223 Class One Mitigation Measures. Examples of Rule 223 Class Two Mitigation Measures for poultry facilities include:

- ~~Vent housing to a VOC control device with an overall capture and control efficiency of at least 80%~~
- Use of a belt litter removal/drier system, or use a tunnel ventilated houses, or litter drying systems
- Store manure in an enclosure vented to a control device

Additional research has quantified emission reductions potential from manure management practices. For example, in poultry buildings (cages) removing manure twice a week using belts or weekly with drying manure on belts has been estimated to reduce NH3 emissions from battery cage houses by 60 percent or more. Removing NH3 from vented air using filters or scrubbers (water and acid) is feasible where barns are mechanically ventilated. In poultry buildings, exhaust air can be cleaned using bioscrubbers, biofilters, or chemical scrubbers, however, the practical applications of these devices may be limited by cost and technical feasibility due to dust in poultry and swine houses (Arogo, J., et al). Chemical additions can also be applied to manure during collection to reduce ammonia emissions by lowering the pH. For example, field tests indicate that alum can reduce ammonia emissions by 75-97 percent when added to poultry litter; however, alum also increases nitrogen content of litter, potentially increasing ammonia loss during field application (Moore et al, 2000).

Currently, Rule 223 does not have any Class One or Two Measures for swine production; however, similar measures (e.g., manure management) could be developed.

For dairies, this control measure would also aim to strengthen and expand mitigation methods listed in Rule 223 for dairy farm manure and on BMPs listed in Rule 1127. Recent scientific research indicates that additional VOC reductions are feasible through manure management practices, including mitigation measures such as acid application to dry lot dairies, lowering the pH of wastewater lagoons, and feed modification. The control measure would also aim to apply performance standards to both large and small dairy facilities.

EMISSIONS REDUCTION

Emission reductions associated with this control measure would depend on the control strategy pursued and will be quantified in conjunction with an evaluation of the existing emission factors for this source category.

A 20 percent reduction is anticipated for poultry and swine operations due to improved manure management practices. A minimum 20 percent level of control for dairy manure management practices is also expected. Emission reductions from dairies are considered to have a longer term emission reduction benefit, whereas reductions for swine and poultry are more of a short term nature.

RULE COMPLIANCE

Compliance with this control measure can be monitored through recordkeeping and inspections.

TEST METHODS

The appropriate test methods for this control measure would depend on the control strategy implemented.

COST EFFECTIVENESS

The cost effectiveness of this control measure has not yet been determined. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide cost-effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has the authority to adopt and enforce rules and regulations to achieve and maintain the state and federal ambient air quality standards in all areas affected by emission sources under its jurisdiction (Health and Safety Code §40001).

REFERENCES

Arogo, J., et al, Ammonia Emissions from Animal Feeding Operations, White Paper prepared for the National Center for Manure and Animal Waste Management, North Carolina State University, Raleigh, N.C.

Kuney, Doug, UC Cooperative Extension, personal communication with Mike Laybourn, February 2005.

Moore, P and J Meisinger, 2003, Air Quality Issues: Poultry. Working paper in J. Hatfield (ed.), Air Quality Primer, Draft Report.

Nathan DeBoom, Milk Producers Council, Personal Communication with District staff.

SCAQMD, Final Draft Staff Report for Proposed Rule 1127 – Emission Reductions from Livestock Waste, August 6, 2004.

SJVUAPCD (San Joaquin Valley Unified Air Pollution Control District), Final Draft Staff Report for Proposed Rule 4570 – Confined Animal Facilities, May 18, 2006.

US EPA, Emissions from Animal Feeding Operations, Contract No. 68-D6-0011, Draft, August 2001.

IMPROVED START-UP, SHUTDOWN AND TURNAROUND PROCEDURES [ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	ALL SOURCES CATEGORIES
CONTROL METHODS:	OPERATIONAL PROCEDURES
EMISSIONS (TONS/DAY):	NOT DETERMINED (SEE EMISSIONS REDUCTION SECTION)
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

Background

Equipment start-up, shutdown and turnaround are typically associated with significantly higher emission rates compared to the emission rates observed from the same equipment operating under steady state or normal operating conditions. The higher emission rates observed during start-up, shutdown and turnaround are in part due to the higher loads equipment are subjected to during these transient operating conditions compared to the normal operating conditions as well as the lead times necessary for the conditioning of certain control technologies. The emission rates observed during start-up, shutdown and turnaround, in addition to the equipment design, are influenced by the speed by which a particular equipment is fired to reach normal operating conditions or taken out of service. Start-up, shutdown or turnaround, often adversely impact the emission rates from equipment that are interconnected, either upstream or downstream to equipment undergoing start-up/shutdown. This is a phenomenon commonly observed in refinery operations and chemical plants that rely on interconnected equipment and processes. Refinery operations predominantly rely on flares to minimize the emissions impact resulting from start-up, shutdown and turnarounds. However, there are adverse environmental impacts associated with the use of flares as well.

On November 4, 2005 the District's Governing Board adopted an amendment to Rule 1118 - Control of Emissions from Refinery Flares. In an effort to minimize flaring and associated emissions, the amendment established declining emission targets over time that each refinery operation had to meet. The amendment eliminated the flaring of vent gases except for those resulting from emergencies, shutdowns and startups, turnarounds and essential operational needs. The amendment also established operational requirements of diagnostic practices to minimize flaring.

Reducing flaring and associated emissions continued to be an area of intense interest by the community, regulators as well as industry. The Rule 1118 staff report listed several possible alternatives of minimizing flare emissions that could be incorporated further explored:

- Optimization of turnaround schedules
  Coordination of turnaround schedules for different units can result in minimizing emissions associated with these periodic maintenance activities.

- Developing startup and shutdown procedures that do not increase emissions
  For certain units, it is possible to develop procedures that avoid flaring during shutdown and startup, such as using reduced loads, recycling feeds, better decontamination procedures, etc. Sometimes more time is necessary for a startup or shutdown, or physical modifications to achieve this purpose.

Several of these approaches are also applicable to other types of industries in minimizing these types of operations. For example, the installation of redundant equipment to increase reliability and the promotion of operator training for environmental awareness could help a particular facility in minimizing the number of start-ups and shutdowns within a given operational cycle.

PROPOSED METHOD OF CONTROL

Conduct analysis to identify improved operating procedures, that minimize or eliminate the emissions impacts in either start-up, shutdown or turnaround and develop rule amendments that could seek implementation of best management practices and/or additional hardware.

EMISSIONS REDUCTION

Implementation of the control measure is expected to result in emission reductions. The magnitude of these reductions cannot be readily quantified at this time.

RULE COMPLIANCE AND TEST METHODS

Compliance would be based on monitoring, recordkeeping, and reporting requirements that have been established in existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

Not Determined.

IMPLEMENTING AGENCY

The District has authority to establish procedures for the purpose of minimizing or eliminating emissions during equipment start-up, shutdown and turnaround.

REFERENCES

Final Staff Report, Proposed Amended Rule 1118 – Control of Emissions from Refinery Flares, October 2005.

APPLICATION OF ALL FEASIBLE MEASURES [ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	ALL SOURCE CATEGORIES
CONTROL METHODS:	ALL AVAILABLE CONTROL METHODS
EMISSIONS (TONS/DAY):	NOT DETERMINED (SEE EMISSIONS REDUCTION SECTION)
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

Background

This control measure addresses the attainment of further emission reductions through the amendment of existing rules and regulations. In particular, existing regulations on VOC coatings and solvents would be targeted for further emission reductions as well as rules and regulations for other pollutants such as NOx and SOx.

Regulatory History

The California Clean Air Act (CCAA) requires districts to achieve and maintain state standards by the earliest practicable date and for extreme non-attainment areas, to include all feasible measures Health and Safety (H&S) Code (H&S §§40913, 40914, and 40920.5). The term "feasible" is defined in the 14 California Code of Regulations, section 15364, as a measure "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." The required use of best available retrofit control technology (BARCT) for existing stationary sources is one of the specified feasible measures. H&S Code §40440 (b)(1) requires the District to adopt rules requiring best available retrofit control technology for existing sources. H&S Code §40406 specifically defines BARCT as "…best available retrofit technology means an emission limitation that is based on the maximum degree of reduction achievable taking into account environmental, energy, and economic impacts by each class or category of source."

The BARCT assessment for RECLAIM sources is made in conjunction with the approximate 3-year cycle of the AQMP. Any applicable BARCT identified during the AQMP would then be subject to the rulemaking process. In January 2005, the Board adopted further reductions to RECLAIM Allocations starting Compliance Year 2007 to implement BARCT. Reductions would proceed until the 2011 compliance year. The total NOx reduction from the RECLAIM facilities was determined to be 7.7 tons per day. As such, RECLAIM is designed to achieve the same level of emissions reductions as would have been achieved in aggregate by implementing the subsumed rules and command-and-control measures as well as complying with state law,

such as California Health and Safety Code §39616(e). The BARCT associated with the January 2005 amendment was identified in Control Measure CMB-10 in the 2003 AQMP.

Existing rules and regulations on VOC coatings and solvents as well as regulations for pollutants such as NOx, SOx and PM reflect current BARCT. However, BARCT is ever evolving as new BARCT becomes available that is feasible and cost-effective. Through this control measure, the District commits to the adoption and implementation of the new retrofit control technology standards.

CONTROL METHOD

The District will continue to review new emission limits introduced through federal, state or other local regulations to determine if District regulations remain equivalent or more stringent than other regions. If not, a rulemaking process will be initiated to perform BARCT analysis with potential rule amendments if deemed appropriate. In addition, the District will continue to monitor technology advances in order to implement new BARCT where applicable.

For RECLAIM it is anticipated that BARCT technology would evolve in the next 10 to 15 years. In addition, facilities in the RECLAIM program are required to install BACT if RECLAIM NSR is triggered. This phase of the control is to further reduce the RECLAIM allocations to reflect future BARCT and any BACT installations due to RECLAIM NSR requirements. In addition, during rule development for Control Measure #2007MCS-01, its applicability to the RECLAIM program will also be examined to ensure equity between RECLAIM and non-RECLAIM sources.

PROPOSED METHOD OF CONTROL

Adopt and implement new retrofit technology control standards that are feasible and cost-effective as new BARCT standards become available in the future.

EMISSIONS REDUCTION

Further emission reductions would be sought from the amendment of existing rules and regulations to reflect new BARCT standards, but may become available in the future. This control measure would act as an intermediary control measure between now and 2023~~2020~~ to achieve further emission reductions on a faster timeline than long-term control measures calling for further emission reductions from the amendment of existing rules and regulations starting in 2020.

Based on historical advancements in control technology and RECLAIM's fair share in the 2024 ozone attainment demonstration, it is anticipated that the reductions would range from 3 to 5 tons per day.

RULE COMPLIANCE AND TEST METHODS

Compliance with this measure would be based on monitoring, recordkeeping, and reporting requirements that have been established in existing source specific rules and regulations. In

addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

Cost-effectives for this control measure cannot be determined because "all feasible" measures are not known. However, the most cost-effective control strategy using the newest control technologies would be sought. The District will continue to analyze the potential cost impact associated with implementing this control measure, conduct research on the newest control technologies, and provide cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from stationary sources.

REFERENCES

40 CFR Part 51.858.

Health and Safety (H&S) Code: §§40913, 40914, 40920.5, §40406, and §40440 (b)(1)

14 California Code of Regulations, section 15364

EMISSION CHARGES OF $5,000 PER TON FOR STATIONARY SOURCES WITH POTENTIAL TO EMIT OVER 10 TONS PER YEAR [VOC AND NOx]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	STATIONARY SOURCES OF VOC AND NOX WITH POTENTIAL TO EMIT OVER 10 TONS PER YEAR
CONTROL METHODS:	EMISSION CHARGES
EMISSIONS (TONS/DAY):	NOT DETERMINED
CONTROL COST:	SEE COST EFFECTIVENESS SECTION
IMPLEMENTING AGENCY:	AQMD, POSSIBLY REQUIRING ADDITIONAL LEGISLATION

DESCRIPTION OF SOURCE CATEGORY

Regulatory History

This control measure was first introduced in the 1994 AQMP and then carried over to the 1997 AQMP and then the 2003 AQMP.

On December 22, 2006, the federal Court of Appeals in Washington, D.C., ruled that EPA did have the authority to revoke the one-hour ozone standard. Therefore, the 2007 AQMP does not need to demonstrate attainment of the one hour standard. However, the court also ruled that EPA must require areas that had not yet attained the one-hour standard to continue to implement control requirements at least as stringent as those in effect under the one-hour standard. In particular, one-hour ozone NSR and conformity provisions must continue to be implemented. In addition, if a serious or severe area fails to attain the one hour standard by the statutory date, the area must implement a measure requiring major stationary sources to either reduce their emissions to 80% of what they were in the attainment year, or pay an annual fee of $5,000 (adjusted for inflation) for each ton in excess of 80% of the baseline.

The $5,000 per ton fee applies to every "major stationary source" of VOC emissions, whether permitted or not. The definition of major stationary source is any source with a "potential to emit" of 10 tons per year, not just sources with actual emissions of ten tons per year. Therefore, the fee should be based on total actual emissions, not just permitted emissions. However, fugitive emissions are not included in d etermining potential to emit (PTE) unless the sources is one of the types of facilities listed in 40 CFR Part 70, section 70.2. If the facility is already a major source, then fugitive emissions would be included in its total emissions. If the facility has taken a synthetic minor permit limiting them to less than 10 tpy, then these facilities would not be subject to the fee.

It should also be noted, pursuant to section 182(f) of the federal Clean Air Act, the plan provisions required under this subpart, which includes the fee, which are applicable to major stationary sources of VOC are also applicable to major stationary sources of NOx. That is, unless EPA finds that additional reductions of NOx would not contribute to attainment. On this basis, it is assumed that the fee applies to major NOx sources as well.

PROPOSED METHOD OF CONTROL

The l990 federal Clean Air Act requires that the AQMP include all control measures, means or techniques, including economic incentives such as fees, as may be necessary to reach attainment. Further, the Act requires that all stationary sources of VOC emissions (with PTE greater than 10 tons per year) in an extreme nonattainment area that has failed to attain the ambient air quality standard for ozone pay a fee as a penalty for such failure (Title I, Section 185).

This control measure proposes that if the former federal 1-hour ozone ambient air standard is not met by the year 2010, the District shall impose an emissions fee of $5,000 per ton of VOC, emitted by each major source in excess of 80 percent of the sources 2010 emissions beginning in 2011. The fee rate will be adjusted annually to reflect increases in the consumer price index. The fee shall be paid for each calendar year after the year 2010 and until the area meets the 1-hour ozone standard. This fee will be in addition to the annual emission fee required by District Rule 301.

EMISSIONS REDUCTION

Implementation of this measure is expected to result in emission reductions as facilities seek to further reduce emissions to reduce the fees proposed by this measure. Projected emission reductions are uncertain at this time, and require further analysis.

TEST METHODS

The EPA and AQMD approved test methods for this measure include:

EPA METHOD 24 – DETERMINATION OF VOLATILE MATTER CONTENT,WATER CONTENT, DENSITY, VOLUME SOLIDS, AND WEIGHT SOLIDS OF SURFACE COATINGS

EPA METHOD 25 – DETERMINATION OF TOTAL GASEOUS NONMETHANE ORGANIC EMISSIONS AS CARBON

EPA METHOD 7E – DETERMINATION OF NITROGEN OXIDES EMISSIONS FROM STATIONARY SOURCES (INSTRUMENTAL ANALYZER PROCEDURE)

AQMD METHOD 25.1 – DETERMINATION OF TOTAL GASEOUS NON-METHANE ORGANIC EMISSIONS AS CARBON

AQMD METHOD 25.3 – DETERMINATION OF LOW CONCENTRATION NON-METHANE NON-ETHANE ORGANIC COMPOUND EMISSIONS FROM CLEAN FUELED COMBUSTION SOURCES

AQMD METHOD 100.1 – INSTRUMENTAL ANALYZER PROCEDURES FOR CONTINUOUS GASEOUS EMISSION SAMPLING

Additional or alternative test methods, protocols and guidelines may be used provided they are approved by EPA, ARB and AQMD.

COST EFFECTIVENESS

There would be an emission fee of $5,000 per ton of VOC and NOx emitted by each major source in excess of 80 percent of each source's baseline emissions.

IMPLEMENTING AGENCY

This measure will be implemented to give affected sources the option of reducing their emissions to 80% of baseline emissions or paying the fee on every ton above 80%. As such, the District has authority under H & S 40001 (rules to attain standards) to implement this measure.

REFERENCES

South Coast Air Quality Management District. Rule 301 - Permit Fees. Amended June 1993.

GROUP 6

Compliance Flexibility Programs

ECONOMIC INCENTIVE PROGRAMS
[ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	ALL SOURCE CATEGORIES
CONTROL METHODS:	ALL AVAILABLE CONTROL METHODS
EMISSIONS (TONDS/DAY):	NOT DETERMINED
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

This control measure is designed to enhance the District's existing regulatory programs to maximize compliance flexibility, minimize compliance costs, and to promote the commercialization of advanced pollution control technologies. In concept, this control measure proposes to expand the existing trading market to allow broader trading of mobile and stationary source emission credits, develop pilot credit trading rules between mobile and stationary sources including potential credits for new source review, develop clean air investment funds and other market incentive approaches.

Background

In April 1995 the District conducted the Intercredit Trading Study to assess the existing market-based regulatory programs and to identify potential enhancements for cost-effective air quality solutions. After a series of public workshops and public meetings the District staff presented a white paper titled, "Intercredit Trading Study - Proposed Recommendations and Action Plan" to its Governing Board in March 1996. This paper identified specific enhancements to the existing regulatory program that would provide additional compliance flexibility while promoting the commercialization of advanced pollution control technologies.

The 1997 AQMP included control measure FLX-01 formerly titled, "Intercredit Trading." The 1997 AQMP control measure was based on recommendations from the Intercredit Trading Study white paper and presented concepts for developing a universal trading market with stationary and mobile sources.

Over the past decade, the District has adopted a series of programs that incorporate a variety of different market incentive approaches such as emissions trading programs, mitigation fee programs, clean air investment programs, and averaging. Staff will continue to work collaboratively with EPA, ARB, industry and other interested parties to expand trading programs and address issues related to economic growth and compliance flexibility.

Emissions Trading Programs

Emissions trading programs include programs where emissions trading credits are generated by one source and used by another. Emission reduction credits are used in a variety of District

programs. Under Regulation XIII – New Source Review, emission reduction credits (ERCs) are used to offset emission increase from new and modified sources. Some Regulation XI – Source Specific Rules, Regulation XX – RECLAIM and Rule 2202 allow the use of mobile source emission reduction credits (MSERCs) as a compliance alternative. MSERCs must be generated pursuant to an approved emission reduction protocol.

Mitigation Fee Programs

The concept of the mitigation fee program is to allow sources to pay a specified dollar per pollutant fee in lieu of directly complying with an emission limit. The fee would be used to generate emission reductions. The use of a mitigation fee approach was introduced in Rule 1121 – Residential Gas-Fired Water Heaters. Under Rule 1121, water heater manufacturers can pay a mitigation fee of $2.70 per pound NOx emission reductions that can be used in lieu of directly complying with the NOx emission limits. The mitigation fee under Rule 1121 is temporary, and is allowed as an alternative to complying with an interim NOx emission limit. Similar approaches may be considered in future rulemaking to provide certain compliance flexibility and to facilitate the adoption of technology-forcing limits. The mitigation fee concept has also been incorporated into Rule 1118 – Control of Emissions from Refinery Flares and Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components of Petroleum Facilities and Chemical Plants, providing additional disincentives against releases from flares and pressure release devices at refineries and chemical plants.

Air Quality Investment Programs

The concept of the Air Quality Investment Program (AQIP) is based on sources paying a fee to the District that is used to fund emission reduction projects. The District is responsible for obtaining emission reductions.

The District has three types of air quality investment programs, under Rule 2202 - On-Road Motor Vehicle Mitigation Options and Rule 2020 – RECLAIM Reserve and Rule 1309.1. Under Rule 2202, facilities have the option to pay into an AQIP to purchase emission reductions to meet specified ridesharing requirements. The Rule 2202 AQIP has funded a variety of mobile source emission reduction control strategies from on-road vehicles, off-road vehicles, and marine vessels. To date, the Rule 2202 AQIP has generated 2,882 tons of NOx, 16,991 tons of CO, and 2,846 tons of VOC emission reductions.

In response to the energy crisis of 2001/2002, the District amended Rule 1309.1 – Priority Reserve to open up new source review emission reduction credits to electric generation facilities for expansion and growth. Operators of electric generation facilities were required to pay into a mitigation fee program which was then used to fund projects that mitigated the emission increases resulting from the expansion or growth.

The Rule 2020 AQIP was a temporary AQIP of NOx emission reductions for RECLAIM facilities that met specific participation requirements. Provided there were NOx emission reductions available, certain RECLAIM facilities could pay $7.50 per pound of NOx to meet their annual allocation requirements. The Rule 2020 AQIP relied on mobile source emission reduction protocols under the pilot credit generation programs of Regulation XVI.

Other Market Incentive Approaches

Other types of market incentive approaches include averaging and banking. The concept of emissions averaging is based on averaging emissions to meet an overall emission limit. Rule 1113 – Architectural Coatings includes a provision that allows manufacturers' to average emissions from different coatings to comply with an overall emission limit. The concept of banking is based on saving emission credits generated in one year for use in another year. EPA has included an averaging and banking approach as an alternative to complying with emission limits for marine vessel standards under 40 CFR Part 94. The averaging provision allows engine manufacturers to certify one or more engine families above the applicable emission standard provided the emissions increase is offset by one or more families certified below the emission standard. The banking provision allows engine manufacturers to generate emission credits to bank for their future compliance use or another manufacturers' use.

Regulatory History

In 2001, the District adopted six mobile and area source pilot credit generation rules: Rule 1612.1 – Mobile Source Credit Generation Pilot Program; Rule 1631 – Pilot Credit Generation Program for Marine Vessels; Rule 1632 – Pilot Credit Generation Program for Hotelling Operations; Rule 1633 – Pilot Credit Generation Program for Truck/Trailer Refrigeration Units; Rule 1634 – Pilot Credit Generation Program for Truck Stops; and Rule 2507 – Pilot Credit Generation Program for Agricultural Pumps. NOx emission reductions generated from these pilot credit generation rules could be used in the RECLAIM program either directly or through the RECLAIM Reserve for the Mitigation Fee Program for power producing facilities or the Rule 2020 AQIP for specific RECLAIM facilities. The six pilot credit generation rules, Rules 1612.1, 1631, 1632, 1633, 1634, and 2507 have been approved by CARB and EPA. However, because of sunset provisions in each rule, all pilot credit generation rules have now expired and can no longer be used to generate MSERCs.

Economic Incentive Guidelines

In January 2001, the EPA finalized their guidance document for "Improving Air Quality with Economic Incentive Programs" (EIP). The EIP is designed to encourage cost-effective innovative approaches to achieving air pollution goals. The guidance document outlines economic incentive programs that states and local areas may incorporate in their State Implementation Plans for meeting air quality standards.

The EIP outlines four main types of economic programs: emissions trading programs, financial mechanism programs, clean air investment funds, and public information. The EIP also outlines key principles that must be incorporated in an economic incentive program to receive EPA approval such as the integrity of emission reduction credits, protection of health and welfare from use of emission credits, and assurance of an environmental benefit.

Federal Clean Air Act

Since 1970, the federal Clean Air Act has required that states adopt regulations designed to attain ambient air quality standards. The Act generally has allowed the states to choose the appropriate type and mix of control strategies used to achieve attainment. In 1977 and 1990

Congress amended the Act to specify certain emission control requirements that each state regulatory program must impose. Nevertheless, the basic concept that states may choose the appropriate type and mix of control strategies has been retained as long as the specific control requirements of the Act are met (Sections 110, 172, and 182). Thus in general, the federal Clean Air Act does not prohibit the District from expanding or linking emissions trading programs.

EPA has promulgated rules for economic incentive programs (EIPs) which either may or must be adopted by States for certain ozone and carbon monoxide nonattainment areas upon the failure of States to submit an adequate showing that an applicable reasonable further progress (RFP) milestone has been met pursuant to CAA Section 182(g)(3) and (5). These rules require that EIPs be submitted to the EPA for approval as part of the SIP and that they contain provisions to ensure the following: (1) the program will not interfere with other CAA requirements; (2) emission reductions credited are quantifiable; (3) creditable emission reductions are consistent with SIP attainment and RFP demonstrations; (4) reductions are surplus to reductions required by, and credited to, other SIP provisions in order to avoid double-counting of reductions; (5) the program is enforceable by State and Federal authorities; and (6) all creditable emission reductions are permanent. (See 40 Code of Federal Regulation (CFR) Sections 51.490 to 51.494 and 59 Federal Regulation (FR) 16690 et seq., April 7, 1994).

One approach where the U.S. EPA allows emission reductions from voluntary mobile source retrofit program to claim SIP credits is with the Voluntary Mobile Source Emission Reduction Policy (VMEP). Under this policy, states are allowed to claim, in their SIPs, up to three percent of the reductions necessary to meet their air quality goals from voluntary mobile source emission reduction programs. Emission reductions from retrofit programs of highway vehicles can also be used in transportation conformity analysis if the reductions are not included in the SIP.

PROPOSED METHOD OF CONTROL

This control measure is a voluntary program to provide additional compliance flexibility to regulated sources in the Basin, provide incentives for the early installation and commercialization of advanced pollution control technologies, and lower overall compliance costs. All existing economic incentive programs discussed in the previous section may be used to further the clean air objectives. The District will continue to evaluate source categories and strategies for future pilot credit generation programs and the potential to expand the program to generate alternative short-term offsets or credits for NSR purposes. In conjunction with other measures, this measure may also use fees collected from other market incentive programs to create a ‘Moyer”-type stationary program to incentivize early implementation of control technologies. Furthermore, within the District’s programs (e.g., Regulation III) a fee schedule based on the VOC content or emission rate may be explored. The District is currently working on an architectural coating fee program to recover the costs regulating this industry. The proposed concept is under review.

EMISSIONS REDUCTION

Due to the voluntary nature of this control measure, potential emission reductions associated with the early introduction of advanced pollution control technologies cannot be quantified.

Implementation of compliance flexibility program would not necessarily result in direct emission reductions since emission reductions associated with credit generation activities would be offset by the use of the emission credits. However, emission fee programs may generate reductions that are otherwise not allowable through traditional regulation programs. Innovative offset program encourage new sources employing the best available control technologies that cleaner than retrofit technologies. These emission benefits can only be claimed retrospectively through SIP revisions.

RULE COMPLIANCE AND TEST METHODS

Compliance with the provisions of this control measure would be based on monitoring, recordkeeping, and reporting requirements that have been established in existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements. Recently, U.S. EPA provided some guidance on tracking and reporting reductions associated with voluntary programs. The District will work with U.S. EPA to incorporate necessary requirements for SIP crediting purposes.

Emissions quantification protocols will establish the appropriate test methods that applicable source categories will be required to use when generating and using emission credits under this program.

COST EFFECTIVENESS

The cost effectiveness of this control measure has not been determined. Since this measure is voluntary, implementation of this control measure is expected to reduce the overall cost of compliance with District rules and regulations. Implementation of this control measure is expected to maximize trading opportunities and provide sources with more cost-effective compliance methods. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has the authority to regulate stationary emissions sources such as refineries.

REFERENCES

South Coast Air Quality Management District. "Intercredit Trading Study. Proposed Recommendations and Action Plan." January 1996.

PETROLEUM REFINERY PILOT PROGRAM
[~~ALL POLLUTANTS~~VOC, PM2.5]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	EMISSION SOURCES IN THE SUBSUMED CONTROL MEASURES		
CONTROL METHODS:	ALL AVAILABLE CONTROL METHODS		
EMISSIONS (TONS/DAY):	~~NOT DETERMINED~~		
ANNUAL AVERAGE	**2002**	**2014**	**2023**
VOC INVENTORY	7.4	5.5	5.5
VOC REDUCTION		0.7	1.6
VOC REMAINING		4.8	3.9
SUMMER PLANNING INVENTORY	**2002**	**2014**	**2023**
VOC INVENTORY	7.4	5.5	5.5
VOC REDUCTION		0.7	1.6
VOC REMAINING		4.8	3.9
ANNUAL AVERAGE	**2002**	**2014**	**2023**
PM2.5 INVENTORY	2.4	2.2	2.2
PM2.5 REDUCTION		0.4	0.4
PM2.5 REMAINING		1.8	1.8
CONTROL COST:	$12,800 PER TON VOC AND PM2.5 REDUCED		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

Background

In the 2003 AQMP there was a recommendation to provide more flexibility to existing stationary source rules by allowing sources to achieve their reduction obligations by reducing emissions from on-site or off-site projects. A three-step process was proposed to implement this strategy. Step one would identify specific source categories and facilities or sources that would be subject to additional controls under any portion of this AQMP. Step two would include an identification of superior and more cost-effective strategies for one or more existing sources whose emissions occur within or otherwise impact the Basin. The final step would be to craft regulations which would offer facilities the flexibility to select from a menu of control options to comply with their emission reduction obligations as identified in the AQMP. The purpose of this program is to achieve emission reductions and environmental improvement in a less costly and more efficient manner and, through compliance flexibility, to minimize the economic and job-related impacts of the Plan and potentially to reduce the size of the black box.

The District initiated a collaborative multi-stakeholder process to consider whether to implement this approach as a pilot program for the refineries in the Basin. This process has been on-going since the initial July 2005 Working Group meeting. Based on the results of this process, the District would consider adoption of a pilot program. An appropriate environmental review would be performed prior to adoption of any pilot program. If such a program is adopted, then upon achieving at least the equivalent reductions, the pilot program would subsume ~~the short and intermediate term~~ control measures and reduction obligations proposed in the 2007 AQMP for the refinery sector. Subsumed control measures include FUG-01: Improved Leak Detection and Repair, FUG-04: Emission Reductions from Pipeline and Storage Tank Degassing; BCM-01: PM Control Devices; MCS-01: Facility Modernization; MCS-06: Shutdown and Turnaround Procedures; and MCS-07: Application of All Feasible Control Measures.

The implementation of this pilot program does not preclude future adjustments to the overall reduction targets established for this source category if warranted by changes in refinery emission inventories, applicable air quality standards, or attainment demonstrations ~~or industry changes~~ in future SIP revisions.

Regulatory History

Currently, the District has a number of source specific rules to reduce emissions from refinery operations. Refineries are also subject to Reg XIII when triggered. Further reductions are necessary from this industry to meet the PM2.5 and ozone air quality standards. This measure seeks an alternative means to achieve reduction obligations, including long-term reductions.

PROPOSED METHOD OF CONTROL

This control measure is a voluntary program to provide additional compliance flexibility to regulated sources in the Basin. Refineries that choose to participate in the program ~~Refineries~~ may seek reduction opportunities either from on-site or off-site VOC sources. In addition to the VOC emission reduction obligation refineries would also implement an on-site or at related port facilities diesel reduction strategy surplus to other regulatory requirements to address community concerns regarding potentially foregone toxic reduction inherent in on-site VOC control strategy. Potential candidates for emission reductions could include sources within and adjacent to refinery properties, such as ports, rail yards, container operations, heavy duty truck and cargo marshalling areas, warehouses and truck stops, as well as other mobile or stationary sources within the SCAB. Non-participating facilities would remain subject to the otherwise-applicable AQMP control measures. The district would develop facility-specific rule to incorporate enforceable commitment by participating refineries. ~~.~~ Reductions need to be real, quantifiable, surplus, enforceable, and permanent. Reduction quantification and monitoring, recordkeeping, and reporting protocols need to be approved by the District, CARB and EPA.

The District would also develop backstop rules should participating refineries elect to exit the pilot program to ensure the SIP obligation continues to be met In addition, the petroleum refinery stakeholders requested consideration for a mitigation fee option.

EMISSIONS REDUCTION

~~Not Determined~~The overall emission reduction is 1.6 tpd of VOC by 2023. The PM2.5 reduction is estimated to be 0.44 tpd of PM2.5 by 2014. The pilot program may begin reductions in the 2008 to 2010 timeframe.

RULE COMPLIANCE AND TEST METHODS

Compliance with the provisions of this control measure would be based on monitoring, recordkeeping, and reporting requirements that have been established in existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

~~The cost effectiveness of this control measure has not yet been determined.~~ As described in the Proposed Method of Control Section, the refineries could implement control at sources within and adjacent to refinery properties. For purposes of this control strategy, a cost effectiveness of $12,000 per ton of VOC and PM2.5 reduced was calculated based on reductions from (1) retrofit of marine engines for ocean going vessels (2) replacement or retrofit of 2-stroke pleasure craft engines, and (3) installation of diesel particulate filters on heavy-heavy-duty trucks.

Since this measure is voluntary, implementation of this control measure is expected to reduce the overall cost of compliance with District rules and regulations. Implementation of this control measure is expected to provide sources with more cost-effective compliance methods. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has authority to regulate fugitive VOC and PM2.5 emissions sources. The pilot program is subject to CARB and EPA's approval as part of the SIP that defines the SCAB's attainment strategy to meet the federal ozone and PM2.5 standards.

REFERENCES

2003 AQMP, Chapter 4 AQMP Control Strategy, pp. 4-46 to 4-47 "Add Flexibility to Current Programs".

GROUP 7

Emission Growth Management

EMISSION REDUCTIONS FROM NEW OR REDEVELOPMENT PROJECTS [NO_X, VOC, AND PM2.5]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	NEW OR REDEVELOPMENT PROJECTS		
CONTROL METHODS:	~~APPROACHES UNDER REVIEW: SJVUAPCD; NEW DEVELOPMENT PROJECT THRESHOLDS;~~ ENHANCED CEQA AIR QUALITY REVIEW AND MITIGATION THROUGH DISTRICT REGULATION		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**2023~~20~~**
NO_X INVENTORY	~~115.9~~N/A	~~56.5~~13.4	~~28.4~~12.0
NO_X REDUCTION		0.0	~~1.0~~0.8
NO_X REMAINING		~~56.5~~13.4	~~27.4~~11.2
SUMMER PLANNING INVENTORY	**2002**	**2014**	**2023~~20~~**
NO_X INVENTORY	~~114.2~~N/A	~~55.4~~13.3	~~27.6~~11.9
NO_X REDUCTION		0.0	~~1.0~~0.8
NO_X REMAINING		~~55.4~~13.3	~~26.6~~11.1
ANNUAL AVERAGE	**2002**	**2014**	**2023~~20~~**
VOC INVENTORY	~~64.8~~N/A	~~30.9~~27.5	~~30.4~~39.8
VOC REDUCTION		0.0	~~0.5~~0.5
VOC REMAINING		~~30.9~~27.5	~~29.9~~39.3
SUMMER PLANNING INVENTORY	**2002**	**2014**	**2023~~20~~**
VOC INVENTORY	~~72.9~~N/A	~~34.7~~32.4	~~34.6~~47.0
VOC REDUCTION		0.0	0.6
VOC REMAINING		~~34.7~~32.4	~~34.0~~46.4
ANNUAL AVERAGE	**2002**	**2014**	**2023~~20~~**
PM2.5 INVENTORY	~~10.5~~N/A	~~8.7~~5.7	~~7.8~~8.8
PM2.5 REDUCTION		0.0	0.5
PM2.5 REMAINING		~~8.7~~5.7	~~7.3~~8.3
CONTROL COST:	TO BE DETERMINED		
IMPLEMENTING AGENCY:	~~AQMD~~DISTRICT/~~,~~ LOCAL OR REGIONAL AGENCIES		

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to mitigate emission growth from new development and redevelopment projects. This initiative is designed to reduce emissions related to new residential, commercial, industrial and institutional development, including redevelopment, required to meet the needs of the Basin's future residents and economy. Lead agencies for projects subject to California Environmental Quality Act (CEQA) currently prepare air quality analysis as part of their environmental documents, including emissions during construction and operations. Typical emissions during construction phase include, but are not limited to: fugitive dust emissions, combustion emissions from off-road mobile sources (construction equipment) and on-road mobile sources, and coating and asphalt evaporative emissions. Operational emissions include, but are not limited to: area sources (e.g., water heater emissions), on-road mobile source emissions (worker commute trips, delivery truck trips, etc.), consumer products and other emissions sources depending on the specific type of land use. The purpose of this proposed measure is two-fold: (1) compliance with the "all feasible measures" requirement of the state law, and (2) capturing emission reduction opportunities during project development phase. In regards to "all feasible measures", the California Clean Air Act requires districts to achieve and maintain state standards by the earliest practicable date and for extreme non-attainment areas, to include all feasible measures (Health and Safety Codes 40913, 40914 40920.5). The term "feasible" is defined in the 14 California Code of Regulations, section 15364, as a measure "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

Background

New development projects produce new sources of air pollution from new vehicle trips, use of consumer products, landscape maintenance, new stationary source processes such as fuel combustion, as well as emissions generated during construction activities. Each day millions of vehicles travel the roads in the South Coast Air Basin and the length of vehicle trips is expected to increase as outlying areas continue to be developed. In addition, older residential, commercial and industrial areas may undergo major redevelopment involving construction activities, with emissions comparable to new development projects. Redevelopment projects may also generate additional vehicular traffic compared to the projects they replace because redevelopment projects often involve increasing population density compared to the previous use. Redevelopment includes demolishing existing buildings, increasing overall floor area or building additional capacity on an existing property. For example, the conversion of an industrial warehouse to an office building could create as much emissions as constructing a new building because it would be a complete remodel.

Regulatory History

California Health and Safety Code Section 40716 states that "a district may adopt and implement regulations to reduce or mitigate emissions from indirect and areawide sources of air pollution". Furthermore, a 1993 California Attorney General opinion states that "a district's regulations may require the developer of an indirect source to submit the plans to the district for

review and comment prior to the issuance of a permit for construction by a city or county. A district may also require the owner of an indirect source to adopt reasonable post-construction measures to mitigate particular indirect effects of the facility's operation. Such regulations could be enforced through an action for civil penalties…" H & S Code 40716 also states that the authority of a district to "reduce or mitigate emissions from indirect and areawide sources of air pollution (does not) … constitute an infringement on the existing authority of counties and cities to plan or control land use."

Health and Safety Code 42311(g) allows districts to adopt a schedule of fees on areawide or indirect sources which are regulated, but for which permits are not issued, to cover the costs of District programs related to this source.

San Joaquin Valley Unified Air Pollution Control District's (SJVUAPCD) Rule 9510 – Indirect Source Review, recently adopted on December 15, 2005, requires new development projects to submit an Air Impact Assessment application to the District prior to obtaining discretionary approval for a building permit. Developers are required to implement mitigation measures to reduce PM10 and NOx emissions or, as an alternative, may pay into a mitigation fund for SJVUAPCD sponsored emission reducing off-site projects. The rule applies to certain specified industrial, commercial, and residential projects based upon the amount of build-out upon project completion. Specifically, the rule applies to projects which include any of the following: 50 residential units; 2,000 square feet (sq. ft.) of commercial space; 25,000 sq. ft. of light industrial space; 100,000 sq. ft. of heavy industrial space; 20,000 sq. ft. of medical office space; 39,000 sq. ft. of general office space; 9,000 sq. ft. of educational space; 10,000 sq. ft. of government space; 20,000 sq. ft. of recreational space; and 9,000 sq. ft. of space not identified. It also includes transportation projects whose construction exhaust emissions will result in a total of two tons per year of NOx or and PM10 combined. The rule is designed to reduce the impact of development projects to the extent needed to allow SJVUAPCD to reach attainment of ozone and PM10 standards.

Many California air districts have adopted and implemented indirect source rules, policies, and/or the collection of mitigation fees. Examples of other air district's rules or policies are briefly summarized below:

Mendocino County Air Quality Management District (MCAQMD) requires an Authority to Construct prior to starting construction, modification, operation or use of any stationary, portable, or indirect source. It further defines in Rule 1-130 an indirect source as

-"a facility, building, structure or installation, or combination thereof, that indirectly results in, or is projected to result in unmitigated emissions in excess of the following: ROG – 180 lbs/day, NOx – 42 lbs/day, CO – 690 lbs/day, PM10 – 80 lbs/day." Furthermore, projects with an annual combined stationary source release of 25 tons or more of any air contaminant are subject to emissions assessment fees.

Great Basin Unified Air Pollution Control District's (APCD) New Source Review Requirements For Determining Impact On Air Quality Secondary Sources define indirect sources as a secondary source, which is any structure, building, facility, equipment, installation, operation, or aggregation thereof. General provisions include, "A person shall not initiate, modify, construct or operate any secondary source which will cause the emission of any manmade air pollutant for which there is a state or national ambient air quality standard without first obtaining a permit from the Air Pollution Control Officer."~~.~~ The District, through Rule 301, imposes fees on secondary sources. The fees are based on the size of the commercial unit and the number of parking spaces, or the number of residential dwelling units.

Colusa County APCD Rule 4.8 – Indirect Source Review Fee: defines indirect source as any facility, building, structure, installation, real property, road or highway which may cause mobile source emissions. The fee is based on commercial or industrial square footage or by the number of residential units.

Placer County APCD Policy Regarding Land Use Air Quality Mitigation Funds assesses emissions estimated to occur during the ozone season of May-October from a particular project; and if sufficient permanent on-site mitigation measures cannot be implemented to adequately reduce emissions, the APCD will apply a cost effectiveness factor to calculate funds required to attain offsite emission reductions.

Shasta County AQMD Rule 3:16 – Fugitive, Indirect, Or Non-Traditional Sources authorizes the AQMD to place conditions upon indirect sources to mitigate emissions to a level which will not constitute a violation of Health and Safety Code Sections 41700 and /or 41701. Resolution No. 84-2, Resolution Of The Shasta County Air Pollution Control Board Amending The Rules Of The Shasta County Air Pollution Control District, authorizes an in-lieu buy out schedule for road paving, per parcel below 1,000 feet in elevation.

Proposed Method of Control

The ~~AQMD~~ District is obligated by law to consider all feasible control measures which would include a measure that is considered at least equivalent to the ~~SJVUAPCD's Rule 9510~~programs implemented by other air districts. ~~Several different approaches are currently under consideration for this control measure. The~~ District ~~will~~ staff convened a working group ~~involving~~made up of stakeholders from ~~the~~ industry, local governments, and ~~the~~ community representatives to ~~further~~ explore ~~these~~ approaches ~~or others~~ to ~~achieve reduction targets.~~ reduce emissions from indirect sources.

As part of the program development process, consideration will also be given so that the program requirements would not interfere with potential third party funding opportunities.

~~SJVUAPCD Approach: SJVUAPCD's Rule 9510 will be evaluated through the working group process to determine if a similar program can be developed to meet the local need or other equivalent approach to meet the state law requirements.~~

~~New Development Project Threshold Approach: Under this concept, the~~ Three working group meetings were held and, based on the input received, the proposed control measure would require ~~AQMD~~ the District ~~would~~ to develop a rule to establish applicability criteria for emissions ~~thresholds (~~or other equivalent parameters~~)~~ for new development and redevelopment projects. ~~Projects exceeding these thresholds would be required to implement a series of mitigation measures. The quantity and the source of emission will be taken into consideration in developing the thresholds and mitigation measures to be implemented.~~ All discretionary permit applications filed with local jurisdictions pursuant to CEQA would be required to submit an Air Quality Analysis application per District methodology along with their CEQA documents prior to issuance of a building permit if the projects meet the applicability criteria. Projects meeting the established criteria would also be required to reduce their emissions by selecting a series of mitigation measures from a menu of options provided in the rule. However, consideration will be given to any additional equivalent mitigation measures submitted by the project proponent. Mitigation measure requirements will be technically feasible and cost effective. Compliance with the rule will be achievable through the selection and implementation of mitigation measures chosen from a menu of options and without unduly restricting local or regional jurisdictions' prerogatives respecting land use approvals. During rule development, special consideration will be given to the need to assure that any rule adopted will integrate with and enhance the CEQA process nor retard project approvals in light of CEQA timelines. The District will conduct outreach and field audits to ensure rule compliance.

During the rule development process, a number of issues will be examined further, such as but not limited to:

- Rule applicability
- Menu of mitigation options
- Projects within SCAG's 2% Compass Plan
- Regional Transportation Plan Projects
- Incentives for developers to incorporate air quality mitigation measures beyond rule requirements into their projects, such as District recognition of exemplary projects~~.~~
- Timely review of project application

~~Fee options in lieu of mitigation measures would be explored or could be required to offset the residual emissions above the thresholds. The collected fees will fund emission reduction projects within the impacted community, to the extent feasible~~ –

As part of the District's streamlining of the process, the rule will include a local delegation component in which a local or regional jurisdiction may elect to implement a program comparable to the District's for reviewing applications or by adopting an ordinance equal to or more stringent than the rule. Coachella Valley Association of Government's PM10 mitigation measures in Rule 403 – Fugitive Dust are good examples of how local ordinances can be incorporated in a District rule. This delegation will include technical training and field auditing to be conducted by the District.

~~CEQA Approach: The CEQA approach contains three components.~~

~~Improved Documentation of CEQA Mitigation Measures – AQMD will expand, organize, and further document its CEQA mitigation measures for residential, commercial, and industrial~~

~~development projects. The documentation is intended to provide sufficient records regarding the feasibility of such measures. The most feasible control methods are those that have been achieved in practice and found to have quantifiable emissions, such as construction dust control measures, alternative fuel or low-emitting engines for construction equipment, diesel PM filters, and energy conservation measures. These mitigation measures will serve as a useful technical resource for developers and lead agencies to evaluate and incorporate adequate reduction strategies to mitigate significant impacts under CEQA~~

~~Enhanced CEQA Review – The AQMD will enhance its review of CEQA documents prepared by other public agencies, which is referred to as intergovernmental review (IGR). The AQMD's IGR responsibilities specifically involve reviewing the air quality analysis in a CEQA document prepared by other public agencies (referred to as lead agencies) to ensure that the analysis methodologies, emission factors, analysis assumptions, etc., are consistent with the methodologies identified in the AQMD's CEQA Air Quality Handbook and on the AQMD's CEQA web pages. Staff will review the documents to ensure that the most recently approved models such as EMFAC2002 (EMFAC2007 once released), URBEMIS2002, etc., are used appropriately to estimate air quality impacts. The AQMD also reviews CEQA documents to determine if all feasible mitigation measures identified by the District are incorporated into the proposed project to reduce significant air quality impacts below the significance thresholds or to the maximum extent feasible. Staff will submit a comment letter based on the finding to the lead agency to recommend additional mitigation measures if necessary. Lead agencies namely, the cities and counties making ultimate land use approval decisions under CEQA would apply the updated and expanded guidance and mitigation recommendations to individual projects; determine the reasonably feasible emission reduction mitigation requirements and, thus, the conditions of approval; and monitor and enforce implementation of the mitigation measures.~~

~~CEQA Mitigation Fee Program – AQMD may establish a CEQA mitigation fee program in which mitigation fees may be paid for residual emissions above the significance thresholds after mitigation. All feasible mitigation measures required under CEQA have to be incorporated before the developers or local agencies can participate in the mitigation fee program. Participation in this program will be voluntary. AQMD will invest the mitigation funds on emission reduction projects within the impacted community, to the extent feasible, to minimize the impacts.~~

District staff will continue the EGM-01 ~~AQMD would form and coordinate a~~ working group ~~of~~ for rule development, including stakeholders from ~~lead agencies,~~ local governments, building industry, developers, realtors, other business representatives, environmental/community members and other stakeholder~~s~~ representatives to carry out this initiative, resolve issues, prepare guidance, and identify solutions to~~overcome~~ implementation barriers. ~~AQMD would issue updated guidance to lead agencies and project sponsors on the full range of mitigation measures and best available control technologies available to new development in its CEQA Air Quality Handbook.~~Written comments from stakeholders and the working group on the proposed control measure will be taken into consideration during the rulemaking process. The District will follow a two step public hearing procedure which will provide a pre-hearing to receive public comments on the basic program design prior to the adoption hearing before the District Governing Board.

EMISSIONS REDUCTION

The precise emissions inventory for future new or development projects within the Basin cannot be determined at this time. ~~However,~~For the purpose of illustrating the potential inventory, Table 2 shows the emission sources that could be affected by this measure. These emissions would be further refined during rulemaking. ~~b~~Based on the emission growth projected for this region, a reduction target of ~~0.5 tpd of VOC,~~ 1.0 tpd of NOx, 0.5 tpd of VOC, and 0.5 tpd of PM2.5 is established for 2020. Due to continued fleet turnover, by 2023 the emission reduction targets for NOx will be 0.8 tpd, while the VOC and PM2.5 targets will remain at 0.5 tpd. Although the commitment appears small, this target takes into account emission reductions credited to other AQMP control measures. The reduction estimates will be ~~further refined~~ re-evaluated during the rule development process~~through future AQMP updates~~. Any emission reductions achieved beyond the SIP commitment stated here will contribute to the "black-box" reduction commitment. Table 2 shows the emissions from growth in 2014 and 2023 that may be targeted.

TABLE 2

Projected Emission Inventory from New & Redevelopment Projects (1) (2)
(tons/day)

	2014				2023		
	VOC	NOx	PM2.5		VOC	NOx	PM2.5
Manufacturing & Industrial *(fuel combustion)*	0.14	0.29	0.13		0.16	0.39	0.14
Service & Commercial *(fuel combustion)*	0.08	0.24	0.04		0.11	0.09	0.01
Residential* *(fuel combustion)*	0.38	1.34	0.77		0.61	1.91	1.39
Asphalt Paving* *(solvent evap.)*	0.29	nil	nil		0.47	nil	0.01
Consumer Products* *(solvent evap.)*	11.33	nil	nil		17.41	nil	nil
Architectural Coatings* *(solvent evap)*	2.97	nil	nil		5.33	nil	nil
Cooking*	0.30	nil	2.15		0.49	nil	3.47
Lawn & Garden Equipment*	4.79	0.97	0.10		7.73	1.27	0.13
Construction Equipment*	0.59	2.71	0.55		0.51	2.31	0.07
Construction & Demolition	nil	nil	0.94		nil	nil	1.50
Paved Road Dust	nil	nil	0.58		nil	nil	0.98
Light Duty Auto *(on-road motor)*	1.31	0.91	0.13		1.28	0.48	0.23
Light Duty and Light Heavy Duty Trucks *(on-road motor)*	3.19	4.09	0.13		3.73	3.72	0.59
Medium Duty & Medium Heavy Duty Trucks *(on-road motor)*	1.84	2.21	0.19		1.81	1.48	0.30
Heavy Heavy Duty Trucks *(on-road motor)*	0.25	0.63	nil		0.15	0.38	0.01
TOTAL	**27.46**	**13.39**	**5.71**		**39.79**	**12.03**	**8.83**

(1) Emission inventory incorporates proposed short-term measures in the 2007 plan to avoid double counting.
(2) Assumes 50% of emission growth attributable to new and redevelopment projects except categories noted with an asterisk (*), where 100% is assumed.

RULE COMPLIANCE

~~Depending on the approach taken, AQMD~~ The District will adopt a rule~~, program or policy~~ to implement this measure~~.~~ and Rule compliance will be verified via field inspection.

TEST METHODS

Approved emission quantification protocols by federal, state or local agencies will be used to track and report emission reductions for SIP purposes.

COST EFFECTIVENESS

Cost-effectiveness will be developed during the rulemaking process based on the mitigation measures included in the menu of options.~~The cost effectiveness of this control measure would vary depending on the mitigation measures selected by the developers or lead agencies. If a mitigation fee program is to be established, the fee schedule to be established for the mitigation program will be based on the control options available at the time of program development.~~

IMPLEMENTING AGENCY

The District has the authority to implement this measure under its indirect source authority in conjunction with local lead agencies.

EMISSION BUDGET AND MITIGATION FOR GENERAL CONFORMITY PROJECTS [ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	ALL SOURCES CATEGORIES
CONTROL METHODS:	ALL AVAILABLE CONTROL METHODS
EMISSIONS (TONS/DAY):	NOT DETERMINED (SEE EMISSIONS REDUCTION SECTION)
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

Background

A General Conformity determination is required by the federal Clean Air Act (CAA) for federal actions. These actions include airport expansion like those proposed for LAX and major projects that receive federal funding. In addition, approval of federally funded transportation plans, programs, and projects are covered by the Transportation Conformity requirements of the Clean Air Act.)

The requirements for General Conformity are contained in section 176(c)(1) of the CAA and in the General Conformity regulations promulgated by EPA in 1993 (40 CFR Part 51, Subpart W, and 40 CFR Part 93). In general, federal actions must support the goals of the State Implementation Plan (SIP) and be shown to not:

- Cause or contribute to new violations of any standard;
- Increase the frequency or severity of any existing violations;
- Interfere with the timely attainment or maintenance of any standard
- Delay emission reduction milestones; or
- Contradict SIP requirements.

The General Conformity regulations apply to nonattainment areas where the estimated emissions from the action meet or exceed specified emission rates for each NAAQ.

One of the criteria for determining conformity for ozone nonattainment areas (40 CFR Part 51.858) is for the District to make a determination that the total of the direct and indirect emissions from the General Conformity project does not exceed the emission budget in the SIP.

In each of the past several years, the District has been asked to review one to several projects relative to General Conformity. These are generally very large projects and it is not always possible for the emissions to be offset. In this case, District staff must make a General Conformity determination that involves examining each emission category for each of the pollutants that are above the specific applicable thresholds in the General Conformity regulations. This control measure will reduce the potential uncertainty in determining whether emissions from specific projects are definitively included in projected growth for future years, by establishing a specific budget for projects not specifically included in the Plan and emission budgets, and setting up a Mitigation Fee Program for situations that exceed these budgets.

PROPOSED METHOD OF CONTROL

In order to provide clear General Conformity budgets in the SIP, the District proposes the following approach:

- Establish a percentage of remaining emissions from each source category in the 2007 AQMP for each milestone year will be set aside as emission budgets for projects subject to general conformity, unless certain emissions are explicitly identified in the plan for such purpose;
- Emission budgets are on a first-come-first-serve basis and the District will track all consumption as part of its NEPA review process;
- If project emissions exceeded the budgets for the source category, the portion of emissions exceeding the budgets needs to be fully offset/mitigated;
- If the mitigation measures are not sufficient to offset the emissions, the District Board may~~will~~ make a finding of overall air quality benefit and allow mitigation fees in lieu of reductions;
- The District will use the fees to invest in emission reduction projects within the affected community, to the extent feasible;
- Surplus reductions to the SIP commitments due to CARB or District regulatory actions can be used as additional budgets for the duration such reductions remain surplus.

Mitigation Fee Program

The concept of the mitigation fee program proposed in this measure is to allow sources to pay a specified dollar per pollutant fee to mitigate residual emissions after all reasonably available mitigation measures are implemented. The District will establish fees per unit of pollutant equivalent to costs of potential emission reduction projects necessary to offset the emission impact. Appropriate protocols will be established to quantify and verify emission reductions.

EMISSIONS REDUCTION

Emission reductions would be sought in order to mitigate emission increases from general conformity projects that have exceeded the budgets for the source category. Surplus emission reductions achieved, if any, will be incorporated into the SIP inventories through Plan revisions.

RULE COMPLIANCE AND TEST METHODS

Compliance with the mitigation measures would be based on monitoring, recordkeeping, and reporting requirements that have been established in existing source-specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

Cost-effectives for this measure cannot be determined because the mitigation measures and the emission reductions resulting from mitigation fees are not known at this time. However, for both situations the most cost-effective control strategy would be sought. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has authority to establish an emission budget, assess mitigation measures, and seek emission reductions through the use of mitigation fees.

REFERENCES

40 CFR Part 51.858.

EMISSIONS MITIGATION AT FEDERALLY PERMITTED PROJECTS [ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	ALL SOURCES CATEGORIES
CONTROL METHODS:	ALL AVAILABLE CONTROL METHODS
EMISSIONS (TONS/DAY):	NOT DETERMINED (SEE EMISSIONS REDUCTION SECTION)
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

Background

This control measure addresses mitigation measures for Federally permitted projects impacting the District. This need for mitigation was the result of a recently proposed project.

For example, a liquefied natural gas facility has been proposed in federal waters offshore of Ventura County. The project is subject to the Deepwater Port Act, and must obtain an air permit from the EPA. While the offshore activity is within Ventura County, the Basin is downwind and will be directly impacted by the proposed project. Although the onshore pipeline to be constructed within the jurisdiction of the District is addressed through CEQA, there is a concern about the quality of natural gas as this could significantly affect the District's progress towards achieving air quality goals in the air Basin (See Control Measure CMB-04).

Regulatory History

See Control Measure 2007 AQMP CMB-04 Natural Gas Fuel Specifications

PROPOSED METHOD OF CONTROL

The proposed method of control would depend upon the emissions generated from the Federally permitted projects. However, it is expected that the control method would rely upon commercially available technologies.

Possible mitigation scenarios include:

- Call for EPA to adopt measures to mitigate stationary source emission increases in SCAB due to its permitting actions
- If EPA cannot mitigate emission increases through its regulatory actions provide mitigation fees to the District as described in Control Measure EGM-02

- If EPA is not willing to do either of these abovementioned approaches, the basin sources would need to offset such increases ~~(see Control Measure LTM-03)~~.

EMISSIONS REDUCTION

Mitigation measures would be sought in order to reduce emissions generated from federally permitted projects.

RULE COMPLIANCE AND TEST METHODS

Compliance with the mitigation measures would be based on monitoring, recordkeeping, and reporting requirements that have been established in existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

Cost-effectives for this measure cannot be determined because the mitigation measures are not known. However, the most cost-effective control strategy would be sought. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide cost effectiveness information as it becomes available. For information purposes, the current Carl Moyer uses a cost effective criteria of $14,300 per (NOx + NOG + 20 x PM) and the program has been over-subscribed.

IMPLEMENTING AGENCY

The District has authority to require mitigation measures; however, additional legal authority may be needed.

REFERENCES

40 CFR Part 51.858.

GROUP 8

District’s Mobile Source Control Measures

MITIGATION FEE PROGRAM FOR FEDERAL SOURCES [NO_X]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	FEDERAL SOURCES (AIRCRAFT, SHIPS, TRAINS, OTHER PREEMPTED SOURCES)
CONTROL METHODS:	MITIGATION FEE PROGRAM
EMISSIONS (TONS/DAY):	NOT DETERMINED
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD, U.S. EPA; POSSIBLY REQUIRING ADDITIONAL LEGISLATION

DESCRIPTION OF SOURCE CATEGORY

Background

The primary authority for establishing emission standards for ships, aircraft, trains, and new off-road farm and construction equipment less than 175 horsepower (HP) is under federal jurisdiction. The District may adopt use or operational limitations for such sources. Emissions from these federal sources continue to represent a significant and increasing portion of the emissions inventory in the South Coast Air Basin. Current emission estimates for aircraft, marine vessels, and locomotives indicate that activity and emissions from these sources will substantially increase in future years. Without adequate controls of these sources, however, the emissions reduction burden would have to be unfairly shifted to other stationary and mobile sources that have been regulated for many years, seriously jeopardizing the attainment of the 8-hour ozone and PM2.5 standards may not be possible.

Regulatory History

Locomotive, Aircraft, and Ships

In 1998, U.S. EPA adopted regulations affecting all new or remanufactured locomotives after January 1, 2000. Specific emission standards found in 40CFR Part 92 depend on the date of manufacturer or remanufacture and the type of duty-cycle, but may go as low as 5.5 g/bhp-hr NOx (Tier 2) and 0.2 g/bhp-hr PM (Tier 2) for line-haul locomotives manufactured on or after January 1, 2005. U.S, EPA is scheduled to propose new locomotive engine standards (Tier 3) by the end of 2006, for adoption sometime in 2007.

In addition, Measure M14 – National Emission Standards for Locomotives in the 1997 AQMP required low-emission locomotives to completely replace existing locomotives in the Basin by 2010. Control Measure #97M14 applied to all types of locomotives and assumed that U.S. EPA would develop a two-tiered national NOx emission standard. In adopting measure M14, ARB assumed that by 2010, locomotive fleets in the Basin will be required to emit a fleet-wide average of no more than the U.S. EPA's established Tier 2 emission level. To this end, ARB staff developed a Memorandum of Mutual Understandings and Agreements (Memorandum)

with the California Railroads and the U.S. EPA that was signed in July 1998. The Memorandum includes provisions for early introduction of clean locomotives in the Basin, which will meet the fleet-wide average target by 2010. In addition to the 1998 Railroad MOU, the state entered into an agreement in 2005 with the two Class 1 Railroads operating in California to monitor and reduce their air pollution associated health risks at 17 rail yards in the state.

As part of its attainment strategy, the District has adopted three rules applicable to railroads, which will reduce certain pollutants and toxic effects of diesel PM. The International Maritime Organization (IMO) established NOx standards in 1997 that apply to marine vessel engines over 130 kW installed on new vessels. IMO standards became effective in 2005 and applied to new ships manufactured on and after 2000. U.S. EPA adopted emission standards for commercial marine vessels in 1999 (40CFR Part 94). These standards primarily apply to commercial harbor craft since the large engines (i.e., 30 liters per cylinder) used by ocean-going ships are not covered by Part 94. However, the net emission benefit associated with the IMO requirements and EPA regulations are minimal because of their lack of stringency and the slow turnover rate of engines.

Aircraft emissions are regulated by the International Civil Aviation Organization (ICAO) and U.S. EPA. Current standards (HC, NOx, smoke) are based on engine thrust and vary depending on the engine pressure ratio. These standards are not expected to achieve any significant reductions in future years because of their lack of stringency. Currently, military aircraft are exempt from these engine standards.

California SIP

The existing regulations on federal sources are not expected to result in significant emission reductions in future years. For the PM2.5 and 8-hour ozone attainment, additional reductions would be necessary from federally regulated sources. Without an assurance that U.S. EPA will identify and commit to additional regulations and considering the attainment deadlines of 2015 for PM2.5 and 2021 for ozone, the District is proposing this Control Measure to ensure federal sources contribute their fair share to achieving federal ambient air quality standards.

The District is currently seeking to obtain broader legal authority to regulate mobile sources to the extent feasible (e.g., retrofit controls, mitigation fees).

PROPOSED METHOD OF CONTROL

As an alternative to stringent national rules and to achieve a fair share reduction commitment by federal sources to address unique local needs, this control measure proposes a mitigation fee program for federal sources. The program is to be adopted by U.S. EPA and the mitigation fee to be paid by federal sources through EPA rulemaking and/or U.S. EPA grants to the District. The District will use the funds collected to solicit proposals from both federal and non-federal sources to achieve equivalent reductions for SIP purposes. Under this control measure, U.S. EPA would be responsible for reducing NOx emissions from federal sources based on their emission contribution and the overall level of reductions needed for attainment. The estimated mitigation fee is assumed to be comparable to cost of mobile source NOx control technologies.

The program would be similar to the District's Emission Mitigation Fee Program for Power Producing Facilities (Regulation XX - RECLAIM) initiated in 2002 and to the Carl Moyer Memorial Air Quality Standards Attainment Program. The RECLAIM Emission Mitigation Fee Program was a program where power producing facilities that exceed annual allocations and met specified applicability requirements in Rule 2004 pay a participation fee to the District for generation of NOx emission reductions by the District to mitigate emission exceedances. The statewide Carl Moyer Memorial Air Quality Standards Attainment Program provides grants to offset the incremental cost of projects that reduce emissions of NOx from covered sources in California.

The District could also seek additional legislative authority to impose mitigation fees on such sources. Emission fee rates imposed on federal sources will be established based on specific criteria, including but limited to: type of federal source, emissions inventory, potential reduction opportunities, control cost, and proximity to Environmental Justice (EJ) areas. In addition, a source specific metric for determining a common unit of activity measurements could be used as a basis for establishing the fee rate. In order to ensure that the fee rate is properly adjusted from year to year, a monitoring and reporting procedure would be implemented to indicate any changes in the activity measurements or emission rates that would affect the fee charged to federal sources. Collected fees would be transferred to a special account established for the purposes of funding emission-reduction projects so that program performance can be monitored.

Selection of particular projects to be funded by the Mitigation Fee Program for federal sources would have to adhere to an implementation protocol approved by the Governing Board. This protocol will be developed through selective participation and will include specific selection criteria, including but not limited to: quantifiable emission benefits, emission reduction potential, cost-effectiveness, and proximity to affected areas (e.g., EJ areas). Projects to be funded would have to be approved by the District's Governing Board.

It is also envisioned that this mitigation fee approach would also apply to regional projects that require federal approval (e.g., new port terminals, airport expansion). As part of the development of this control measure, the District will evaluate the possibility of establishing a fee program for federally approvable projects where the emissions cannot be adequately mitigated. Fees would be levied on those excess emissions which could not be mitigated.

EMISSIONS REDUCTION

The 2023~~2020~~ baseline inventory for ships, aircraft, and trains is estimated to be approximately 173~~160~~ tons of NOx per day which is approximately 65~~63~~ percent of the off-road mobile source inventory and 36~~30~~ percent of the total NOx inventory in the Basin. At this time, it is not possible to estimate any emission reductions from this control measure.

TEST METHODS

The appropriate test method(s) would depend on the specific NOx emission reduction projects undertaken.

COST EFFECTIVENESS

Not Determined.

IMPLEMENTING AGENCY

The District has the authority under the Lewis Presley Air Quality Management Act to collect fees based on emissions. However, implementation of this control measure may require additional legislation unless implemented by U.S. EPA. U.S. EPA would appropriate funding or enable collection of monies in lieu of control. The District would then fund cost-effective reduction projects with the collected funds.

EXTENDED EXCHANGE PROGRAM [ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	SMALL OFF-ROAD ENGINES (SORE) AND RECREATIONAL OUTBOARD ENGINES
CONTROL METHODS:	EXCHANGE EXISTING IN-USE SORE FOR ELECTRICAL EQUIPMENT, OR NEW LOW-EMITTING ENGINES
EMISSIONS (TONS/DAY)	SEE EMISSIONS REDUCTION SECTION
CONTROL COST:	THE COST-EFFECTIVENESS OF THIS CONTROL MEASURE WILL VARY DEPENDING ON THE TYPE OF EQUIPMENT BUT HAS RANGED FROM $800/TON FOR LEAF BLOWERS TO $10,000 /TON FOR LAWN MOWER EQUIPMENT
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to promote accelerated turn-over of in-use small off-road engines (SORE) and other engines such as recreational outboard engines through expanded voluntary exchange programs.

Background

The small off-road engines (SORE) category consists of spark ignition engines run on gasoline or alternative fuel such as liquefied petroleum gas (LPG) or compressed natural gas (CNG), and are rated at below 25 horsepower (19 kW). The SORE equipment category includes handheld and non-handheld lawn and garden equipment such as string trimmers, leaf blowers, lawn mowers, generators, and lawn tractors, as well as other commercial/industrial equipment. This category does not include compression ignition engines or recreational vehicles. The vast majority of SORE equipment use gasoline.

Since 2003, the District has sponsored lawn mower buy back programs for residential users of old lawn mowers. This program has resulted in 11,500 high polluting gasoline-powered lawn mowers taken out of service in 2003-2005, and 4,000 lawn mowers being exchanged in 2006. The program is designed so that an individual turns in their old lawn mower in exchange for paying $100 towards a new electric-powered lawn mower. In addition to the lawn mower exchange program, the District has recently sponsored a gasoline-powered leaf blower exchange program targeted at commercial operators. In this program, an individual turns in their old gasoline-powered two-stroke leaf blower in exchange for paying $200 towards a new four-stroke gasoline-powered leaf blower certified to the CARB new engine emission standards. The new four-stroke units are less polluting than the two-stroke units. The leaf blower buy back program has resulted in 1,500 leaf blowers being exchanged.

Regulatory History

Since September 2003, CARB has established emission standards (exhaust and evaporative) for new SORE engines. However, CARB regulations do not impact existing equipment. As part of its commitment in the 2003 AQMP, in September 2003, the CARB Board also directed CARB staff to conduct research for potential increased use of electric equipment for small off-road engines. In April 2004, CARB staff reported to the Board that there is a high possibility of increasing the penetration for electric equipment through voluntary measures, incentive programs, and other consumer awareness programs.

PROPOSED METHOD OF CONTROL

In order to increase the penetration of electric equipment or new low emission gasoline-powered equipment, the District is proposing to expand its existing lawn mower/leaf blower exchange program. This expansion will be accomplished by increasing the number of exchange events and available funding for these programs. In addition, other SORE equipment as well as recreational outboard engines used in pleasure craft may also be considered for exchange programs for accelerating the turnover of existing engines. In addition to the voluntary program primarily envisioned by the control measure, the District will explore the potential of a mandatory turnover and replacement of older SORE.

EMISSIONS REDUCTION

This control measure promotes faster turnover rate of in-use engines to electric versions of the same equipment type or engines that meet the new low-emission standards. The expected emission reductions for this control measure would depend on the number and types of engines participating in the program. The expected annual emission reductions would be approximately 8 pounds VOC, 0.05 pounds NOx, and 26 pounds CO for each lawn mower replaced with an electric version; and 19 pounds VOC for each leaf blower replaced with a low-emission gas blower. The estimates for other type of equipment targeted in an exchange program would vary and are not estimated for this control measure.

RULE COMPLIANCE AND TEST METHODS

Due to its voluntary nature, compliance with the provisions of this control measure is not established. However, the criteria used for participation in existing exchange programs would be carried over into an expanded program. The type of criteria used in the existing exchange programs includes proof of residence, actual equipment operation, and limiting exchanges to one per individual.

COST EFFECTIVENESS

The cost effectiveness will depend on the types of engines or equipment participating in the exchange program. In the District's leaf blower exchange program, low emission units were offered at a cost of $200 instead of a typical retail price of $460. The total cost of this program was $225,000 funded through the District's Air Quality Investment Program (AQIP). The cost effectiveness of this leaf blower exchange program is reported to be $800 per ton.

In the lawn mower exchange program, electric lawn mowers were offered at $100 instead of at a typical retail price of $285. The total cost of the exchange program for 4,000 lawn mowers in 2006 was $856,000 funded through the District's AQIP. The cost effectiveness of this lawn mower exchange program is estimated to be $9,840 per ton.

IMPLEMENTING AGENCY

The District has successfully implemented voluntary exchange programs for leaf blowers and lawn mowers since 2003. The extended exchange program is expected to be implemented by the District.

REFERENCES

CARB - The 2003 State and Federal Strategy for the California State Implementation Plan, September 24-25, 2003.

CARB - Staff Report, Potential Electrification Programs for Small Off-Road Engines, April 2, 2004.

CARB - California Code of Regulation, Title 13, Division 3, Chapter 15, Article 1 – Evaporative Emission Requirements for Off-Road Equipment, September 2003.

CARB - Staff Report – Initial statement of reasons for proposed rulemaking public hearing to consider the adoption of exhaust and evaporative emission control requirements for small off-road equipment and engines less than or equal to 19 kilowatts, August 8, 2003.

SCAQMD - Governing Board March 3, 2006 Meeting, Agenda #5, Execute Contracts for Rule 2202 AQIP and the 2006 Lawnmower Exchange Program.

BACKSTOP MEASURES FOR INDIRECT SOURCES OF EMISSIONS FROM PORTS AND PORT-RELATED FACILITIES [NOX, SOX, PM]

CONTROL MEASURE SUMMARY

SOURCE CATEGORY: PORTS AND PORT-RELATED SOURCES (e.g., MARINE VESSELS, LOCOMOTIVES, TRUCKS, CARGO HANDLING EQUIPMENT, HARBOR CRAFT AND STATIONARY EQUIPMENT)

CONTROL METHODS: PORT AND PORT FACILITY EMISSION CONTROL PLANS, CONTRACTUAL REQUIREMENTS, RULES, TARIFFS AND INCENTIVES/DISINCENTIVES TO IMPLEMENT MEASURES INCLUDING:

- AFTERTREATMENT FOR DIESEL EQUIPMENT
- NON-DIESEL FUELED EQUIPMENT USING LNG, CNG, FUEL CELLS, ETC.
- LOW SULFUR FUELS
- EMULSIFIED DIESEL FUEL WITH DIESEL OXIDATION CONTROLS
- ELECTRICITY-POWERED SYSTEMS INCLUDING SHORE POWER FOR MARINE VESSELS
- INTERNAL ENGINE MODIFICATIONS
- RETROFIT AND REPLACEMENT OF IN-USE EQUIPMENT
- ALTERNATIVE TECHNOLOGY STRATEGIES SUCH AS BATTERY DOMINANT HYBRID SYSTEM
- VESSEL SPEED REDUCTION

EMISSIONS (TONS/DAY): TO BE DETERMINED

ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
NOX INVENTORY	TBD	TBD	TBD
NOX REDUCTION		TBD	TBD
NOX REMAINING		TBD	TBD
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
NOX INVENTORY	TBD	TBD	TBD
NOX REDUCTION		TBD	TBD
NOX REMAINING		TBD	TBD
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
SOX INVENTORY	TBD	TBD	TBD
SOX REDUCTION		TBD	TBD
SOX REMAINING		TBD	TBD
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
PM INVENTORY	TBD	TBD	TBD
PM REDUCTION		TBD	TBD
PM REMAINING		TBD	TBD

CONTROL COST: TO BE DETERMINED

IMPLEMENTING AGENCY: AQMD

DESCRIPTION OF SOURCE CATEGORY

Background

The ports of Los Angeles and Long Beach are the largest in the nation in terms of container throughput, and collectively are the single largest fixed sources of air pollution in Southern California. Emissions from port-related sources, such as marine vessels, locomotives, trucks, harbor craft and cargo handling equipment, adversely affect air quality in the local port area as well as regionally. Collectively, port-related sources create more than 100 tons per day of smog- and particulate-forming nitrogen oxides – more than the emissions from all 6 million cars in the region. Port sources also release approximately 25% of diesel particulate matter emitted in the SCAB, and marine vessels alone emit 44% of regional SOx — a precursor to particulates. Marine vessels are also virtually the only significant source category with emissions projected to increase in coming years. This is due to substantial increases in projected cargo throughput, and the relative laxity of current emissions standards for these sources. Without substantial control of emissions from port-related sources, it will not be possible for this region to attain federal ambient air quality standards for ozone or PM2.5. Port sources also contribute to cancer risks. The California Air Resources Board estimates that cancer risks caused by sources in the ports exceed 500 in 1 million for over 50,000 residents near the ports. Many more persons are affected at lower levels of risk.

In January 2006, the District Board approved the Chairman's Clean Port Initiative, including several action items to control criteria pollutant emissions and cancer risks from ports and port-related facilities. Recognizing the unique legal authorities and expertise of the ports relating to operations on lands they control, the chairman's initiative called for the ports to take sufficient and coordinated actions to control emissions. At the time the initiative was announced, the ports had never cooperated to establish a coordinated, comprehensive plan to control air pollution. The initiative also called for a summit meeting between the presidents of the harbor commissions and the District board chair, which occurred in March 2006. Following that meeting, the staffs of the two ports met, with participation by the District, CARB and EPA, and developed a draft San Pedro Bay Ports Clean Air Action Plan (CAAP). The plan proposes to utilize the authorities of the ports, including powers to establish lease conditions, port rules, tariffs and incentives, to implement emission control strategies. ~~As of the date of this draft AQMP, T~~the CAAP ~~is undergoing revision in response to public comments, with consideration~~ was approved by the harbor commissions ~~expected~~ in November of 2006.

The Chairman's initiative also called for the District to develop and adopt "backstop" rules that would take effect if the ports did not take actions that, in conjunction with standards adopted by CARB, EPA, the District and the International Maritime Organization, would achieve sufficient, timely emission reductions. The goals of the backstop rules would be to (1) achieve reductions in emission from port-related sources to levels needed for attainment of ambient air quality standards, consistent with the AQMP, (2) reduce health risks from toxics to acceptable levels, and (3) prevent increases in health risks and criteria pollutant emissions from port projects

This AQMP measure is intended to achieve the goals described above. This measure is fashioned as a "backstop" so as to allow the ports discretion regarding the manner in which emissions and risks are controlled, and regarding the implementing tools that will be used (e.g.

environmental lease conditions, port rules, tariffs or incentives), as long as performance goals are met. A key element of this measure—the criteria pollutant emission reduction goals—is taken from the AQMP attainment analysis. Based on computer modeling and other analyses conducted for the AQMP, District staff has quantified the emission reductions needed from port-related sources to attain the federal 8-hour ozone and PM2.5 ambient air quality standards. These emission reduction amounts will be incorporated into District backstop rules implementing this measure, with a goal of assuring that such reductions timely occur. In addition, the district expects to seek SIP credit for such reductions.

Regulatory History

Emissions from sources associated with the ports—marine vessels, harbor craft, cargo handling equipment, locomotives, and trucks—have historically been regulated primarily by international, federal or state authorities. The International Maritime Organization (IMO), an agency of the United Nations, has established NOx emissions limitations and fuel sulfur specifications for oceangoing vessels; the federal Environmental Protection Agency (EPA) has adopted emission standards for new locomotives, new trucks and some vessels; and the California Air Resources Board (CARB) has adopted standards for new trucks and recently voted to adopt standards for cargo handling equipment and marine auxiliary engine fuels. Neither federal nor international law explicitly require EPA or IMO regulations to be sufficiently stringent to meet the needs of a particularly polluted region such as South Coast, and the rules adopted by those bodies have not met those needs.

Key regulatory and other actions taken to date are as follows:

- *International Maritime Organization Emissions and Fuel Standards.* IMO NOx standards for new "Category 3" vessels (including the container vessels responsible for the greatest share of emissions from local ports) will achieve only a six percent reduction in emissions. IMO fuel rules allow extraordinarily high levels of sulfur content, up to 45,000 parts per million, and actual sulfur content for main engine fuels averages approximately 27,000 ppm.

- *EPA Marine Vessel Regulations.* The vast majority of oceangoing vessels calling on local portsare foreign flagged. Their emissions have not been regulated by EPA. EPA stated several years ago that it would consider adopting emission standards for foreign flag vessels in 2007, but there is no guarantee that it will do so, or that such standards will be adequate for this region. EPA has stated that there is a question regarding its authority under the Clean Air Act to regulate foreign vessels.[6]

- *EPA Emission Standards for Locomotives.* Under current EPA "Tier 2" regulations, the newest locomotives must achieve an approximate 57% reduction in NOx emissions. In 2004, EPA stated its intent to propose more stringent locomotive emission standards, but

[6] As stated by EPA, this is an issue of statutory authority under the Clean Air Act. 68 Fed.Reg. 9759 (February 28, 2003). This is not a question of authority of the United States to control emissions from foreign flag vessels. International law recognizes the authority of a nation to adopt environmental standards for vessels that enter the nation's ports. *United Nations Convention on the Law of the Sea,* Art. 21.1; Art. 25.2 and Art. 211.3.

those regulations have been delayed and there is no assurance that such standards will be sufficient for this region to achieve healthful levels of particulates, ozone or toxics.

- *EPA and CARB Emission Standards For Trucks.* Adopted standards are stringent, but full benefits are many years away because the standards generally apply only to new units and trucks have long useful lives.

- *CARB Marine Auxiliary Engine and Cargo Handling Rules.* The majority of marine vessel emissions are created by main propulsion engines, but auxiliary engines emissions are important, in part because they occur at dock in closer proximity to persons in and around the port. In December 2005, the CARB Board voted to adopt fuel sulfur standards for marine auxiliary engines, including those on foreign flag vessels, in waters out to 24 nautical miles. The rule will limit fuel sulfur to 5,000 ppm, with the potential to require 1,000 ppm sulfur content by 2010 pending a technology and fuel availability review.[7] The rule has not completed all administrative review processes, and industry has filed arguments that CARB lacks the authority to adopt or enforce the rule against foreign flag vessels beyond California waters. The CARB Board also voted in December to adopt emission standards for cargo handling equipment such as yard tractors.

- *MOUs.* In 1998, CARB entered into an MOU with the Union Pacific and Burlington Northern Santa Fe railroads which established a fleet average emissions limit for locomotives operating in the South Coast Air Basin. The intended effect of this MOU is to accelerate introduction of Tier 2 locomotives (achieving an approximate 57% level of NOx control) in this region. In June 2005, CARB entered into a second MOU with the same two railroads that is intended to reduce health risks near railyards and is projected by CARB to achieve a 20% reduction in PM emissions. Finally, several years ago, the ports, shipping interests, and regulatory agencies entered into a MOU seeking voluntary reductions in vessel speed to reduce NOx emissions.

- *SCAQMD Rules Governing Locomotive Idling and Risk Assessment.* In 2005 and 2006, the District adopted rules requiring railroads to minimize unnecessary locomotive idling, and to develop emissions inventories and health risk assessments and notify the public of health risks.

- *Funding Programs.* SCAQMD, CARB and EPA have funded numerous projects to reduce emissions from port-related sources.

- *CARB Emission Reduction Plan for Ports and Goods Movement.* This plan, adopted in April, 2006, includes a wide ranging set of proposed control strategies, designed to achieve an 85% reduction in risk from diesel particulate matter compared to risks in 2000, and to achieve specified reductions in criteria pollutant emissions. The measures in the plan are described in conceptual terms, and implementing agencies generally are not identified. The plan recognizes that action by local bodies (such as the ports through their lease agreements) is one potential means to implement its measures. CARB staff has also stated its intent to

[7] The District believes that levels lower than 5,000ppm are feasible; the Danish shipping company MEARSK recently announce that it is using fuel with sulfur content of no more than 2,000 ppm in main and auxiliary engines within 24 miles of the California coast.

develop proposed rules during 2007 that would, among other things, limit fuel sulfur content for vessel main engines and require shore power for ships at dock.

- *Port Actions.* Both the ports of Los Angeles and Long Beach have developed emission control programs and plans that will help mitigate air quality impacts. (*E.g.* Port of Long Beach *Green Port Policy*,[8] Port of Los Angeles *Clean Air Program*[9]). To date, however, port actions (along with the regulatory and other actions described above) have not arrested growth in port emissions. The draft *San Pedro Bay Ports Clean Air Action Plan* (CAAP) currently under development would substantially reduce emissions at a pace that, for some measures, is faster than proposed and adopted CARB measures. In addition, as noted earlier, the ports, as landlords to marine terminals and other facilities, have legal authority to require and incentivize controls in ways that regulatory agencies do not. There will not, however, be an enforceable obligation for the ports to implement the CAAP unless a mechanism such as the backstop rules envisioned by this measure are adopted.

PROPOSED METHOD OF CONTROL

The goal of this measure is to establish, and ensure achievement of, the following standards:

- *Port Standards.* Control emissions from port-related sources sufficiently to—
  - reduce year 2014 and ~~2020~~2023 emissions of NOx, SOx and PM to implement the AQMP strategy to attain federal PM2.5 and 8-hour ozone ambient air quality standards,
  - ensure interim progress by reducing year 2011 NOx, SOx and diesel PM emissions to 2001 levels,
  - by 2020, further control diesel PM sufficiently to reduce health risk from the ports by at least 85% compared to 2000 levels,
  - if necessary, continue progress to reduce cancer risk from diesel PM to a lower level to be determined through rulemaking.
- *Project Standards.* Assure that approvals of port projects will—
  - implement all measures needed to achieve the Port Standards, and
  - prevent significant increases in NOx, SOx, PM, and health risk from diesel PM.

This control measure will be implemented through District rules directed at the ports or operators of port facilities (e.g. marine terminals and railyards). These "backstop" rules will become effective if the ports or facilities do not take actions sufficient to achieve the port and project standards. More specific descriptions of the standards and backstop rules are set forth below:

[8] http://www.polb.com/environment/green_port_policy.asp
[9] http://www.portoflosangeles.org/environment_air.htm

1. Backstop of Port Standards for Nonattainment Pollutants

Summary: This rule will establish enforceable nonattainment pollutant emission reduction goals for the ports in order to implement the Air Quality Management Plan (AQMP). This "backstop" rule will come into effect if aggregate emissions from port sources exceed specified emissions targets. If emissions do not exceed such targets, the ports and source operators will have no control obligations under this rule.

Elements of Rule:

Emissions Targets: In developing the year 2007 revision to the AQMP, District staff has identified emission reductions from port-related sources that are necessary to timely attain federal PM2.5 and 8-hour ozone standards. In doing so, staff has considered analyses of needed regional emissions reductions, control factors and schedules in CARB's *Emission Reduction Plan for Ports and Goods Movement*, the draft *San Pedro Bay Ports Clean Air Action Plan*, and other information. Based on such information, staff has calculated mass emissions targets for NOx, SOx, and diesel PM for the ports. The emissions targets are for the years 2014 and 2020—the years in which attainment must be demonstrated for the PM2.5 and "8-hour" ozone National Ambient Air Quality Standards. As part of this rulemaking, staff will also calculate triennial mass emission milestones for years beginning in 2008 that are reasonable to achieve the emissions targets. In order to assure early progress, and consistent with goals stated in CARB's *Emission Reduction Plan for Ports and Goods Movement*, the milestones for the year 2011 will be below emissions in the year 2001.

Scope of Emission Included. Emissions from all sources associated with each port, including equipment on port property, marine vessels traveling to and from the port while in California Coastal Waters, locomotives and trucks traveling to and from port-owned property while within the South Coast Air Basin.

Trigger Causing Backstop Rule Regulatory Requirements to Come Into Effect. Emissions exceeding a target or triennial milestone, as determined by the District Executive Officer in consideration of annual port emission inventories and any other relevant data.

Requirements if Backstop Triggered. Two options for structuring this backstop rule will be considered during rulemaking. The first focuses obligations on operators of terminals and other facilities at the ports; the second focuses obligations on the ports themselves.

Option 1: Facility Plans. If this backstop rule is triggered for a port, emission reduction requirements will be established for each facility at the port that will, in aggregate, be sufficient to bring the port into compliance with the target or milestone within a timeframe specified in the rule. The emission reduction requirements will be allocated among port facilities by the port (with District approval), or the port may refer the issue to the District Executive Officer to decide based on activity level and level of control at each facility. Each facility operator will then be required by the backstop rule to submit to the District a plan including measures sufficient to timely achieve the required emission reductions. The operator may choose what measures to include and what sources to control, but the measures must provide assurance that the

required emissions reductions will be achieved. During rulemaking, other options to achieve emission reductions will be evaluated such as, but not limited to a mitigation fee program, accelerated emission reductions, etc. Failure to implement the approved plan would be a violation of this rule by the facility operator.

Option 2: Port Plan. If this backstop rule is triggered for a port, that port shall submit an Emission Control Plan to the District. The plan shall include measures sufficient to bring the port back into compliance with the emissions target or milestone within a timeframe specified in the rule. Failure to implement the plan would be a violation of this rule by the port.

2. Backstop of Port Standards for Health Risk

Summary. This rule will establish enforceable requirements to control diesel particulate matter sufficiently to reduce health risks by at least 85% by 2020, and to further reduce emissions if necessary to achieve acceptable levels of health risk. This "backstop" rule will come into effect if a port does not adopt and implement a plan sufficient to reduce port risks, or if risks exceed milestones.

Elements of Rule

Risk Reduction Milestones. In developing this rule, the District will establish triennial risk reduction milestones for the ports necessary to assure that, by the year 2020, health risks from diesel particulate matter will be reduced by 85% compared to risks in 2000. The scope of the health risk and health risk milestones including the sources, TACS, etc will be discussed during rulemaking. Risk reduction milestones will be stated in a form determined during rulemaking, and may be a percentage risk reduction, a risk level, an amount of diesel PM emission reduction, or other form. Depending on the form of the risk reduction milestones, the ports will be required to submit triennial reports to verify progress. During rulemaking, the District will also consider what, if any, additional emissions reductions will be necessary to achieve acceptable levels of health risk.

Trigger Causing Backstop Rule Regulatory Requirements to Come Into Effect. Failure of a port to implement a plan of measures that provide assurance of achieving the 85% standard, or emissions exceeding a triennial milestone as determined by the District Executive Officer in consideration of periodic port emission inventories and any other relevant data.

Requirements if Backstop Triggered. This rule will be implemented in a fashion similar to one of the two options stated above under *Backstop of Port Standards for Nonattainment Pollutants,* except that emissions or risk control requirements would be established based on the risk reduction goals of this rule. During rulemaking, other options to achieve emission reductions will be evaluated such as, but not limited to a mitigation fee program, accelerated emission reductions, etc.

3. Backstop of Port Project Standards

Summary. This rule will establish requirements for new~~approval of~~ port projects in order to (1) prevent significant increases in NOx, SOx and PM, and health risk from diesel PM, and (2)

ensure that port projects implement all control measures needed to achieve the Port Standards described elsewhere in this measure. This "backstop" rule will come into effect if a port approves a project that does not assure that the project standards in this measure will be met.

Elements of Rule

Applicability. This rule will apply to projects on port land for which a CEQA document such as an Environmental Impact Report, ~~or~~ Environmental Impact Statement or mitigated negative declaration is prepared and/or~~(including~~ terminal and railyard capacity expansions, lease approvals and lease modifications~~)~~.

Project Standards. The following standards will be proposed for adoption:

1. Risk Limits. Incremental health risks caused by emissions from facilities affected by a project may not exceed pre-project risks by more than the following:

- Maximum Individual Cancer Risk: 10 in a million.
- Noncancer Acute and Chronic Hazard Index: 1.0

2. Nonattainment Pollutant Limits. Emissions from a port facility affected by a project may not exceed pre-project emissions by amounts that exceed a specified level such as the District's CEQA significance thresholds unless—

- maximum available controls are employed by sources that operate at, or to and from, the facility, and
- feasible mitigations are provided for any emissions increases.

During rulemaking, the district will also consider whether or not to require that emissions increases be offset.

Contribution to Emissions and Risk Reductions. The project approval must contain terms providing reasonable assurance that projected emissions from the new or modified facility will, in conjunction with projected emissions from the rest of the port, allow the port to achieve the emissions targets and milestones established as Port Standards under this measure.

Trigger Causing Backstop Rule to Come Into Effect. Port approval of a project that does not comply with the standards in this rule, as determined by the District Executive Officer.

Requirements if Backstop Triggered. If triggered, the backstop rule comes into effect for the project that triggered it. Such project may not commence construction unless the Executive Officer determines that the project will comply with the requirements of this rule.

RULE COMPLIANCE

Compliance with this control measure will depend on the type of control strategy implemented through each proposed rule. Compliance will be required through compliance plans, and enforced through inspections by District inspectors. .

TEST METHODS

The appropriate test methods will depend on the specific emission reduction projects undertaken and will be specified in each proposed rule. In general, the District, CARB and EPA test methods will be used, as well as manufacturer's data.

COST EFFECTIVENESS

The cost effectiveness of this control measure has not yet been determined. The District will analyze the potential cost impact associated with implementing this control measure and will provide cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has authority to adopt regulations to reduce or mitigate emissions from indirect sources, i.e. facilities such as ports that attract on and off-road mobile sources, and has certain authorities to control emissions from off-road mobile sources themselves. These authorities (which are further discussed in Addendum A of the Board Letter for Agenda Item 24, January 6, 2006 District Board meeting) include the following:

Indirect Source Controls. State law provides the District authority to adopt rules to control emissions from "indirect sources." The Clean Air Act defines an indirect source as a "facility, building, structure, installation, real property, road or highway which attracts, or may attract, mobile sources of pollution." 42 U.S.C. § 7410(a)(5)(C); CAA § 110(a)(5)(C). Districts are authorized to adopt rules to "reduce or mitigate emissions from indirect sources" of pollution. (Health & Saf. Code § 40716(a)(1)). The South Coast District is also required to adopt indirect source rules for areas where there are "high-level, localized concentrations of pollutants or with respect to any new source that will have a significant impact on air quality in the South Coast Air Basin." (Health & Saf. Code § 40440(b)(3)).

Nonvehicular (Off-Road) Source Emissions Standards. Under California law "local and regional authorities," including the ports and the District, have primary responsibility for the control of air pollution from all sources other than motor vehicles. (Health & Saf. Code § 40000). Such "nonvehicular" sources include marine vessels, locomotives and other non-road equipment. CARB has concurrent authority under state law to regulate these sources. The federal Clean Air Act preempts states and local governments from adopting emission standards and other requirements for new locomotives (Clean Air Act § 209(e); 42 U.S.C.§ 7543(e)), but California may establish and enforce standards for other nonroad sources upon receiving authorization from EPA (*Id.*). No such federal authorization is required for state or local fuel, operational, or mass emission limits for marine vessels, locomotives or other non-road equipment. (40 CFR Pt. 89, Subpt. A, App.A; *Engine Manufacturers Assn. v. Environmental Protection Agency*, 88 F.3d. 1075 (DC Cir. 1996)).

Fuel Sulfur Limits. With respect to nonroad engines, including marine vessels and locomotives, the District and CARB have concurrent authority to establish fuel limits, such as those on sulfur content. As was noted above, fuel regulations for nonroad equipment are not preempted by the Clean Air Act and do not require EPA authorization.

Operational Limits. The District has authority under state law to establish operational limits for nonvehicular sources such as marine vessels, locomotives, and cargo handling equipment (to the extent cargo handling equipment is "nonvehicular"). As was discussed above, operational limits for nonroad equipment are not preempted by Clean Air Act. In addition, the District may adopt operational limits for motor vehicles such as indirect source controls and transportation controls without receiving an authorization or waiver from EPA.

In implementing the above authorities, the District would need to consider limitations imposed by federal law, as discussed in Addendum A.

REFERENCES

SCAQMD, Clean Port Initiative Workplan, January 2006; Addendum A

CARB, Proposed 2003 State and Federal Strategy for the California State Implementation Plan, May 2003.

Port of Los Angeles, Port of Long Beach, Draft San Pedro Bay Ports Clean Air Action Plan, June 2005

CARB Emission Reduction Plan for Ports and Goods Movement, April 2006

No Net Increase Task Force, Report to Mayor Hahn and Councilwoman Hahn, June 2005.

CARB Diesel Particulate Matter Exposure Assessment Study of the Ports of Los Angeles an Long Beach, April 2006

EMISSION REDUCTIONS FROM THE CARL MOYER PROGRAM [NO_X AND PM]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:	ON-ROAD AND OFF-ROAD DIESEL VEHICLES AND EQUIPMENT		
CONTROL METHODS:	CARL MOYER PROGRAM		
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
NO_X INVENTORY	553.4~~494.7~~	392.3~~314.0~~	309.3~~215~~.2
NO_X REDUCTION		7.5~~10.1~~	12.9~~13.4~~
NO_X REMAINING		384.8~~303.9~~	296.4~~201.8~~
SUMMER PLANNING INVENTORY	**2002**	**2014**	**~~2020~~2023**
NO_X INVENTORY	555.6~~496.8~~	393.6~~315.1~~	310.5~~215.4~~
NO_X REDUCTION		7.5~~10.1~~	12.9~~13.4~~
NO_X REMAINING		386.1~~305.0~~	297.6~~202.0~~
ANNUAL AVERAGE	**2002**	**2014**	**~~2020~~2023**
PM2.5 INVENTORY	26.2~~22.8~~	16.3~~11.6~~	12.2~~6.6~~
PM2.5 REDUCTION		0.2~~3~~	0.4
PM2.5 REMAINING		16.1~~11.3~~	11.8~~6.2~~
CONTROL COST:	$14,300 PER TON		
IMPLEMENTING AGENCY:	AQMD		

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to continue the use of the Carl Moyer Memorial Air Quality Standards Attainment Program to reduce air pollution emissions by facilitating the move to cleaner-burning engines in both on-road and off-road vehicle fleets. The Carl Moyer Program encourages early introduction of clean air technology into the on-road and off-road vehicle fleets by providing funds to help purchase new vehicles or new engines (repowers) and for installation of retrofit units on older engines. This includes funding for technologies that reduce emissions of oxides of nitrogen (NOx) and particulate matter (PM) caused by the combustion of diesel fuel in engines.

Background

In fiscal year 1998-99, the California State Legislature created the Carl Moyer Program, named in honor of a key figure in developing state air quality measures, to facilitate the move to cleaners-burning engines, which otherwise would have taken decades.

The program continues to drive early introduction of clean air technologies, and includes funding for measures that reduce NOx, VOC, and PM caused by the combustion of diesel fuel and gasoline in on-road vehicles and off-road engines. The program also funds aftertreatment devices such as diesel oxidation catalyst and PM filters.

A variety of vehicle classes and types are funded under the Carl Moyer Program to help purchase new vehicles or new engines/repowers and for installation of retrofit units on older engines. New vehicles and engines must achieve a 30 percent reduction, and repowered vehicles and retrofits must achieve a 15% reduction of NOx emissions compared to current emission standards. New engines should be CARB-certified and retrofits should be CARB-verified. Projects reducing PM and/or VOC are also eligible for funding provided they are cost-effective. Alternative fuel engines, such as those using compressed natural gas, liquefied natural gas, propane and electricity will be given preference for funding if less polluting. Cleaner diesel engines may also be considered in the off-road category.

Vehicles and equipment funded must remain in operation for at least three years, and 75 percent of their use must be within the South Coast Air Basin. All potential projects must meet cost-effectiveness requirements to be eligible for funding consideration.

The Carl Moyer Program under its new guidelines also includes "Fleet Modernization" and "Light-Duty Vehicle Repair and Scrapping" programs. The fleet modernization Program replaces pre-1990 heavy-duty diesel vehicles with 2006 and newer diesel or 2004 and newer natural gas vehicles. The Light-Duty Vehicle Repair and Scrapping Program identifies high polluting light-duty vehicles with remote sensing and offers repair or scrapping options.

Regulatory History

In addition to the legislature introducing the Carl Moyer Program, SB 1107 and AB 923 were passed with support from the business community, environmental groups, and public agencies which provide a long-term source of funding for the expansion of the Carl Moyer Program.

PROPOSED METHOD OF CONTROL

The proposed control measure is based on the implementation of the Carl Moyer Program by the District. The measure proposes to take credit for the emission reductions achieved through past and future projects funded under this program for SIP purposes, in two phases. Examples of projects include on-road heavy-duty vehicle modernization, installation of retrofit units, engine repowers, and remote sensing and repair or early retirement. Phase I of this control measure is based on the projects implemented from 1998 to 2006. Emission reductions from Phase I are estimated at 4.2~~6.8~~ tons per day of NOx and 0.1~~2~~ ton per day of PM2.5 in 2014 and 6.2 tons per day of NOx and 0.2 ton per day of PM2.5 in 202~~0~~3 based on Carl Moyer Program's emission

quantification protocols taking into account CARB's baseline adjustments for these projects. The~~se~~ remaining reductions for Phase I are reflected in the ~~Draft~~ 2007 AQMP as baseline inventory adjustments.

Phase II of this measure is based on future reductions to be achieved from the implementation of new projects under the Carl Moyer Program. These reductions were estimated based on the committed level of funding for this Program and a conservative cost-effectiveness assumption of $14,300 per ton specified in the Carl Moyer Program guidelines (although existing projects have substantially lower cost-effectiveness). The reductions are estimated to be 3.3 tons per day of NOx and 0.1 ton per day of PM2.5 in 2014, and 6.6 tons per day of NOx and 0.2 ton per day of PM2.5 in 202~~0~~3. These reductions are reflected under the proposed mobile source control measures to avoid double counting.~~For the Draft 2007 AQMP, future reductions may overlap in some instances~~. ~~However, actions will be taken to ensure no double counting occurs~~ Emission reductions associated with both Phase I and Phase II are shown in the Summary Table.

Every three to five years, emission reductions from projects funded under the Carl Moyer Program will be quantified, verified, and incorporated in the revised baseline emissions as part of SIP Revision process.

EMISSIONS REDUCTION

The emission reductions from Phases I and II of the control measure are reflected in the Control Measure Summary Table. In addition, the implementation of Light-Duty Vehicle Repair and Scrapping will start generating VOC emission reductions.

RULE COMPLIANCE AND TEST METHODS

The District has developed policies and procedures to ensure that this control measure is successfully implemented. In addition to the District's requirements for program implementation, the District adheres to CARB's Carl Moyer Guidelines. Because the Carl Moyer Program is implemented by a partnership of CARB and the District, CARB has oversight authority to ensure that funds are expended as required by the Health and Safety Code and to ensure that the Carl Moyer Program Guidelines are met. CARB is required to audit the District's program by reviewing the District's solicitation, evaluation, selection, contract, and invoicing process. CARB staff also visits a sample of funded projects to ensure that public funds are used to pay for qualifying projects that are operating and obtaining emission reductions.

COST EFFECTIVENESS

The cost effectiveness of this control measure is based on the Carl Moyer Program guidelines which establish an upper limit of $14,300 per ton.

IMPLEMENTING AGENCY

The District has authority to implement this control measure, and CARB has oversight authority.

AB 923 LIGHT-DUTY VEHICLE HIGH-EMITTER IDENTIFICATION PROGRAM [VOC, NOX, CO]

CONTROL MEASURE SUMMARY

SOURCE CATEGORY: GASOLINE- AND DIESEL-POWERED ON-ROAD LIGHT-DUTY VEHICLES UP TO 8500 LBS. GVWR

CONTROL METHODS: REMOTE SENSING TO IDENTIFY HIGH EMITTING VEHICLES WITH REPAIR AND RETIREMENT COMPONENT

EMISSIONS (TONS/DAY):

ANNUAL AVERAGE	2002	2014	2023
VOC INVENTORY	301.1	108.7	73.2
VOC REDUCTION		0.9	0.7
VOC REMAINING		107.8	72.5
NOX INVENTORY	326.4	102.0	52.1
NOX REDUCTION		0.4	0.5
NOX REMAINING		101.6	51.6
CO INVENTORY	3099.1	1115.8	650.2
CO REDUCTION		11.2	13.0
CO REMAINING		1104.6	637.2
SUMMER PLANNING ININVENTORY (SUMMER FOR VOC AND NOX; WINTER FOR CO)	**2002**	**2014**	**2023**
VOC INVENTORY	302.3	112.9	77.2
VOC REDUCTION		0.9	0.8
VOC REMAINING		112.0	76.4
NOX INVENTORY	311.4	97.3	49.8
NOX REDUCTION		0.4	0.4
NOX REMAINING		96.9	49.3
CO INVENTORY	3049.5	1093.8	635.0
CO REDUCTION		10.9	12.7
CO REMAINING		1082.9	622.3

CONTROL COST: NOT DETERMINED

IMPLEMENTING AGENCY: SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to implement a control strategy for purposes of identifying high emitting vehicles and augmenting the current Smog Check program applicable

to gasoline- and diesel-powered vehicles up to 8,500 lbs. gross vehicle weight (GVW). These vehicles include passenger cars, vans, and light-duty pick-up trucks.

Background

Light-duty vehicles are major contributors of air pollutants in the South Coast Air Basin. While vehicle miles traveled increased more than 50% over the last 20 years, vehicle emissions have dropped by a factor of almost three due to increasingly stringent vehicle emission standards. Yet, the light and medium duty vehicle fleet continues to contribute more than a third of the Basin's total emissions of ozone and particulate matter forming pollutants in part due to high emitting vehicles. Studies show that the highest emitting 10% of the light duty fleet contribute well over 50% of the fleet's total emissions of ozone and particulate matter forming pollutants emphasizing the need to identify and repair these high emitting vehicles to ensure further emission reductions from the light duty vehicle fleet.

Motor vehicle emissions progressively increase as vehicle's age and accumulate mileage. The causes of these emissions increases are numerous, but can be broadly categorized in terms of normal deterioration of properly functioning on-board emission control system components, emission control system malfunctions due to design flaws and/or lack of proper maintenance, and tampering. In recognition that emission reductions could occur through regular emission testing of vehicles and repairing those vehicles with high in-use emissions, Smog Check programs have been established in an attempt to ensure that vehicles stay clean as they age, but room for improvements in such programs exist.

Recent studies involving roadside pull-over testing have concluded that repairs on vehicles failing smog check tests may not be lasting the full biennial cycle and may be operating on roadways as high emitters prior to the next smog check test requirements. A remote sensing program can identify these high emitting off-cycle vehicles and offer incentives to either repair such vehicles or offer incentives to retire such vehicles.

Regulatory History

On September 23, 2004, the Governor signed AB 923 (Firebaugh) which resulted in a significant increase in incentive funding for programs that achieve emission reductions from vehicular sources and off-road engines. The legislation identified and emphasized that in-use higher emitting vehicles are sources that need additional scrutiny and control in part because of their large contribution to the fleet's total emissions. To address this, the District has developed and will be implementing, under the AB923 program, a pilot program to identify and repair or retire high emitting on-road vehicles.

PROPOSED METHODS OF CONTROL

Remote Sensing To Identify High Emitting Vehicles and Require Off-Cycle Repairs or Vehicle Retirement – Currently, California vehicles less than 8,500 lbs. GVW are required to undergo Smog Check testing every two years or upon change of a vehicle's ownership. Recent studies have indicated that repairs done in conjunction with the Smog Check Test Program do not last the entire biennial cycle and result in high emitting vehicles being driven on California

roadways. The implementation of a remote sensing program as a component to California's Smog Check Program will also capture those vehicles that circumvent California's Smog Check program through various techniques such as clean piping (using the clean tailpipe exhaust of one vehicle for another). The use of remote sensing programs identifying high emitting vehicles will allow foralso result in off-cycle repairs and encourage vehicle retirement of identified high emitting vehicles. The current Consumer Assistance Program (CAP) operated by BAR encourages vehicle retirement for on-cycle (those vehicles within 3 three months of its smog check test due date) vehicles that cannot pass the Smog Check Test. Vehicles identified as high emitters that are off-cycle to the smog check test are not eligible under the CAP program implemented by BAR and the State of California. This control measure would apply only to those vehicles identified as high emitters that are off-cycle to California's Smog Check Program. The benefits to the program would be the off-cycle repair or vehicle retirement occurring prior to the next smog check emission test.

EMISSIONS REDUCTIONS

Identification of high-emitting light- and medium-duty vehicles would result in estimated annual average emission reductions of VOC and NOx are 0.9 and 0.4 tons per day by 2014, and 0.7 and 0.5 tons per day by 2023.

COST EFFECTIVENESS

CARB is using the Carl Moyer $14,300 per ton threshold to calculate the cost effectiveness of the pilot program. In designing and developing a pilot program for purposes of identifying high emitting vehicles through remote sensing technology and the subsequent repair or retirement of high emitting vehicles, the cost effectiveness estimates for the program range from below the $14,300 per ton threshold at the low end and just above the $14,300 per ton threshold at the highest end. Because this program is solely reliant on a volunteer participation rate by the consumers, the exact cost effectiveness of the program is difficult to assess prior to the program implementation. In recognition of the program being a pilot program, CARB recognized this as a pilot program and has accepted the cost effectiveness analysis as being within the acceptable range of the $14,300 per ton threshold.

IMPLEMENTING AGENCY

The implementing agencies would be the South Coast Air Quality Management District under the auspices of AB 923 and guidelines set forth by CARB for the Light-Duty Vehicle Program.

REFERENCES

Gross Emitting Vehicles: A Review of the Literature, June 2004, UC Davis-Caltrans Air Quality Project, Task Order No. 27, Prepared for The California Department of Transportation. http://aqp.engr.ucdavis.edu/Documents/Gross%20Emitter%20Lit%20Review%20v11%5B1%5D.doc

Smog Check Program Evaluation Project, Prepared for CARB and BAR, Prepared by Sierra Research, Presented to California IM Review Committee, October 24, 2006
http://www.imreview.ca.gov/presentations/p_heirigs_sierra_res_10.24.06.pdf

Various Remote Sensing studies identified through Coordinating Research Council (CRC) "Recent Reports and Study Results" at website
http://www.crcao.com/reports/recentstudies00-02/recent_reports_and_study_results.htm

"US Remote Sensing Legislation"
http://www.rsd-remotesensing.com/legislation.asp

AB 923 MEDIUM-DUTY VEHICLE HIGH-EMITER IDENTIFICATION PROGRAM [VOC, NOx, CO]

CONTROL MEASURE SUMMARY

SOURCE CATEGORY: GASOLINE- AND DIESEL-POWERED MEDIUM-DUTY VEHICLES WITH GVWR BETWEEN 8,500 AND 14,000 LBS.

CONTROL METHODS: REMOTE SENSING TO IDENTIFY HIGH EMITTING VEHICLES WITH REPAIR AN D RETIREMENT COMPONENT

EMISSIONS (TONS/DAY):

ANNUAL AVERAGE	2002	2014	2023
VOC INVENTORY	22.0	9.6	7.0
VOC REDUCTION		0.5	0.6
VOC REMAINING		9.1	6.4
NOX INVENTORY	39.9	27.7	20.5
NOX REDUCTION		0.5	0.7
NOX REMAINING		27.2	19.8
CO INVENTORY	233.6	70.3	41.4
CO REDUCTION		5.6	6.2
CO REMAINING		64.7	35.2
SUMMER PLANNING INVENTORY (SUMMER FOR VOC AND NOX; WINTER FOR CO)	**2002**	**2014**	**2023**
VOC INVENTORY	20.8	9.1	6.7
VOC REDUCTION		0.5	0.6
VOC REMAINING		8.6	6.1
NOX INVENTORY	38.7	27.1	20.0
NOX REDUCTION		0.5	0.7
NOX REMAINING		26.6	19.3
CO INVENTORY	233.6	70.8	41.7
CO REDUCTION		5.6	6.3
CO REMAINING		65.2	35.4

CONTROL COST: NOT DETERMINED

IMPLEMENTING AGENCY: SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (MAY REQUIRE STATE LEGISLATION)

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to implement a control strategy for purposes of identifying high emitting medium-duty vehicles and augmenting the current Smog Check

program applicable to gasoline- and diesel-powered vehicles between 8,500 and 14,000 lbs. gross vehicle weight (GVW). These vehicles include medium- and light-heavy-duty pick-up trucks, vans, and delivery trucks. The existing Smog Check Program only includes vehicles up to 10,000 lbs. GVW and therefore a segment of the applicable vehicles are not currently subject to any in-use test program for gaseous pollutants.

Background

Medium- and light-heavy-duty vehicles are major contributors of air pollutants in the South Coast Air Basin. While light-duty vehicle emission standards have dropped by a factor of almost three due to increasingly stringent vehicle certification standards, the medium-duty vehicle certification standards have not seen such a precipitous drop. This combined with the vehicle miles traveled increasing by more than 50% over the last 20 years and the fact that California's Smog Check Program only includes vehicles weighing up to 10,000 lbs. GVW, thereby excluding a sub-portion of this category to no in-use testing requirements, suggests that there may be a significant component of the medium-duty vehicle fleet that contribute a far greater share of the Basin's total emission of ozone and particulate matter forming pollutants. Studies show that the highest emitting 10% of the light- and medium-duty fleet contribute well over 50% of the fleet's total emissions of ozone and particulate matter forming pollutants emphasizing the need to identify and repair these high emitting vehicles to ensure further emission reductions from the medium-duty vehicle fleet.

Motor vehicle emissions progressively increase as vehicle's age and accumulate mileage. The causes of these emissions increases are numerous, but can be broadly categorized in terms of normal deterioration of properly functioning on-board emission control system components, emission control system malfunctions due to design flaws and/or lack of proper maintenance, and tampering. In recognition that potential substantial emission reductions could be generated by regularly emission testing in-use vehicles and repairing those vehicles with high in-use emissions, Smog Check programs have been established in an attempt to ensure that in-use vehicles stay clean as they age, but room for improvements in such program exist.

However, recent studies involving roadside pull-over testing have concluded that repairs on vehicles failing smog check tests may not be lasting the full biennial cycle and may be operating on roadways as high emitters prior to the next smog check test. A remote sensing program can identify these high emitting off-cycle vehicles and offer incentives to either repair such vehicles or offer incentives to retire such vehicles.

Regulatory History

On September 23, 2004, the Governor signed AB 923 (Firebaugh) which resulted in a significant increase in incentive funding for programs that achieve emission reductions from vehicular sources and off-road engines. The legislation identified and emphasized that in-use higher emitting light-duty vehicles are sources that need additional scrutiny and control in part because of their large contribution to the fleet's total emissions. To address this, CARB adopted guidelines to achieve additional emissions reductions from the light-duty vehicle sectors. This proposal would require that current legislation (AB 923) be expanded to include medium-duty vehicles from 8,5010 lbs to 14,000 lbs GVW and specify that these vehicles be included in the

high-emitter identification program under the Carl Moyer Program. AB 923 funds could be used to provide financial assistance in the repair or replacement of the high-emitting vehicle.

PROPOSED METHODS OF CONTROL

Remote Sensing To Identify High Emitting Vehicles and Require Off-Cycle Repairs or Vehicle Retirement – Currently, California vehicles less than 10,000 lbs. GVW are required to undergo Smog Check testing every two years or upon change of a vehicle's ownership. Recent studies have indicated that repairs done in conjunction with the Smog Check Test Program do not last the entire biennial cycle and result in high emitting vehicles being driven on California roadways. The implementation of a remote sensing program as a component to California's Smog Check Program will also capture those vehicles that circumvent California's Smog Check program through various techniques such as clean piping (using the clean tailpipe exhaust of one vehicle for another). The use of remote sensing programs to identify high emitting vehicles will allow for also result in off-cycle repairs and encourage vehicle retirement of identified high emitting vehicles. The current Consumer Assistance Program (CAP) operated by BAR encourages vehicle retirement for on-cycle (those vehicles within 3 three months of its smog check test due date) vehicles that cannot pass the Smog Check Test. Vehicles identified as high emitters that are off-cycle to the smog check test are not eligible under the CAP program implemented by BAR and the State of California. This control measure would apply only to those vehicles identified as high emitters that are off-cycle to California's Smog Check Program. The benefits to the program would be the off-cycle repair or vehicle retirement occurring prior to the next smog check emission test.

EMISSIONS REDUCTIONS

Identification of high-emitting medium-duty vehicles with gross vehicle weight from 10,001 to 14,000 lbs. would result in estimated annual average emission reductions of VOC and NOx are 0.5 and 0.5 tons per day by 2014, and 0.6 and 0.7 tons per day by 2023.

COST EFFECTIVENESS

CARB is using the Carl Moyer $14,300 per ton threshold to calculate the cost effectiveness of the pilot program. In designing and developing a pilot program for purposes of identifying high emitting vehicles through remote sensing technology and the subsequent repair or retirement of high emitting vehicles, the cost effectiveness estimates for the program range from below the $14,300 per ton threshold at the low end and just above the $14,300 per ton level at the highest end. Because this program is solely reliant on a volunteer participation rate by the consumers, the exact cost effectiveness of the program is difficult to assess prior to the program implementation. In recognition of the program being a pilot program, CARB recognized this as a pilot program and has accepted the cost effectiveness analysis as being within the acceptable range of the $14,300 per ton threshold.

IMPLEMENTING AGENCY

The implementing agency would be the South Coast Air Quality Management District under the auspices of AB 923. The Carl Moyer guidelines set forth by CARB for Light- and Medium-Duty

Vehicle Program would need to be amended to incorporate vehicles with gross vehicle weight rating from 8,500 to 14,000 lbs.

REFERENCES

Gross Emitting Vehicles: A Review of the Literature, June 2004, UC Davis-Caltrans Air Quality Project, Task Order No. 27, Prepared for The California Department of Transportation. http://aqp.engr.ucdavis.edu/Documents/Gross%20Emitter%20Lit%20Review%20v11%5B1%5D.doc

Smog Check Program Evaluation Project, Prepared for CARB and BAR, Prepared by Sierra Research, Presented to California IM Review Committee, October 24, 2006 http://www.imreview.ca.gov/presentations/p_heirigs_sierra_res_10.24.06.pdf

Various Remote Sensing studies identified through Coordinating Research Council (CRC) "Recent Reports and Study Results" at website http://www.crcao.com/reports/recentstudies00-02/recent_reports_and_study_results.htm

"US Remote Sensing Legislation" http://www.rsd-remotesensing.com/legislation.asp

CONCURRENT REDUCTIONS FROM GLOBAL WARMING STRATEGIES [ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	STATIONARY AND MOBILE SOURCES OF FUEL COMBUSTION
CONTROL METHODS:	CONCURRENT REDUCTIONS FROM GLOBAL WARMING STRATEGIES
EMISSIONS (TONS/DAY):	SEE EMISSION REDUCTION SECTION
CONTROL COST:	TO BE DETERMINED
IMPLEMENTING AGENCY:	CARB, CEC, PUC, AQMD

DESCRIPTION OF SOURCE CATEGORY

This control measure seeks to claim concurrent SIP reductions from all fuel combustion source global warming strategies related to fuel efficiency improvements and renewable energy sources.

Background

There is broad scientific consensus that the increased concentrations of greenhouse gases (GHGs) in the atmosphere will lead to global climate change in this century. The industrial revolution and the increased consumption of fossil fuels (e.g., gasoline, diesel, wood, coal, etc.) have contributed to substantial increase in atmospheric levels of greenhouse gases primarily carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons. These gases trap the sun's heat in the atmosphere, like a blanket, causing the atmospheric temperatures to rise. Over time, the increased temperature could result in climate change effects such as raising sea levels, altering precipitation patterns, and changing water supplies and crop yields. Global warming could also adversely affect human health, harm wildlife, and damage fragile ecosystems. Higher atmospheric temperatures would also result in more emissions, increased smog levels, and the associated health impacts.

Regulatory History

In June 2005, Governor Schwarzenegger signed Executive Order #S-3-05 which established the following greenhouse gas targets:

By 2010, Reduce to 2000 Emission Levels
By 2020, Reduce to 1990 Emission Levels
By 2050, Reduce to 80% Below 1990 Levels

The emission levels in California were estimated to be 426 million metric tons CO2 equivalent for 1990, 473 million metric tons CO2 equivalent for 2000, 532 million metric tons CO2 equivalent for 2010, and 600 million metric tons CO2 equivalent for 2020. The Governor's goals for emission reductions were estimated to be approximately 59 and 174 million tons CO2 equivalent by 2010 and 2020, respectively.

The Executive Order created the Climate Action Team, with the California Environmental Protection (Cal/EPA) as the lead responsible for coordinating efforts from multiple agencies including California Air Resources Board (CARB), California Energy Commission (CEC), Resources Agency and Public Utilities Commission (CPUC), California Integrated Waste Management Board (CIWMB), Business, Transportation, & Housing (BT&H), and Department of Food and Agriculture (CDFA). The mission of the Climate Action Team was to develop and implement emission reduction strategies to achieve the Governor's greenhouse gas targets; and to submit a progress report to the Governor and the legislature on a biannual basis, starting in 2006.

The Climate Action Team's report, published in March 2006, recommends 46 specific emission reduction control strategies for greenhouse gas. Many of the strategies also reduce ozone, criteria and toxic pollutants. Table 3 provides a summary of 11 control measures that were adopted by various state agencies and are underway. These measures were estimated to provide approximately 22 million tons CO2 equivalent in emission reductions in 2010, and 68 million tons CO2 equivalent in emission reductions in 2020, which were about half way towards meeting the Governor's goals.

As shown in Table 4, the motor vehicle standards would provide the largest emission reductions about 30 millions tons CO2 equivalent reductions in 2020. Two other key strategies in the state are the Energy Efficiency Programs and the Renewable Portfolio Standard which contributed about 16 and 11 millions tons CO2 equivalent reductions in 2020. The 11 control strategies already adopted only provide less than half of the emission reductions needed for California, which are 22 millions ton and 68 million tons reduction in 2010 and 2020 respectively. Table 1 contains a list of additional control measures recommended by the Climate Action Team that need to be adopted in the next two years to achieve the Governor's emission reduction goals. A brief explanation of the 11 control measures already adopted and underway is presented below.

TABLE 3

Emission Reduction Strategies Underway in California[a]

Agency	Strategies	Emission Reductions (Million Tons CO_2) 2010	2020
CARB	Vehicle Climate Change Standards	1	30
	Diesel Anti-idling	1	1.2
CPUC	Accelerated Renewable Portfolio Std to 33% by 2020 (including load-serving entities [LSE])	5	11
	California Solar Initiative (Million Solar Roofs)	0.4	3
	Investor Owned Utility Energy Efficiency Programs	4	8.8
CIWMB	Achieving 50% Statewide Recycling Goal	3	3
CEC	Building Energy Efficiency Standards	1	2
	Appliance Energy Efficiency Standards	3	5
	Fuel-efficient Replacement Tires & Inflation Programs	1.5	1.5
BT&H	Green Buildings Initiative	0.5	1.8
CARB	Hydrogen Highway	Included [b]	
	Total Potential Emission Reductions	**22**	**68**

a) Climate Action Team 2006 Report to Governor Schwarzenegger and the Legislature

b) The emission benefits of Hydrogen Highway have been captured in other programs such as the motor vehicle regulations and the green building initiative.

Motor Vehicle Standards (CARB)

Regulations were adopted by the CARB in September 2004 in response to the requirements in Assembly Bill 1493, Pavley, Chapter 200, Statutes of 2002. The regulations apply to new passenger vehicles and light duty trucks beginning with 2009 model year through 2016 model year. The ARB analysis indicated that these regulations would result in 30 millions tons CO2 equivalent emission reductions by 2020.

Diesel Anti-Idling (CARB)

In July 2004, the ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling which will reduce climate change emissions by 1.2 millions tons CO2 equivalent by 2020.

Renewable Portfolio Standard (CPUC and CEC)

The Renewable Portfolio Standard (RPS), established in 2002, requires that all load serving entities achieve a goal of 20 percent of retail electricity sales from renewable energy sources by 2017. The Governor has increased this goal to 33 percent renewable which was adopted by CPUC and CEC in 2005 as described in the 2005 Energy Action Plan II. The two agencies have already commenced review of the legal, regulatory, and infrastructure changes necessary to achieve the Governor's goal. It was estimated that this measure would result in 11 millions tons CO2 equivalent emission reductions by 2020.

California Solar Initiative (CPUC)

The Governor has initiated a goal of installation 1 million solar roofs or an equivalent 3,000 MW by 2017 on new and existing residential, commercial and industrial properties, increase the use of solar thermal systems to offset the increasing demand for natural gas, use of advanced metering in solar applications, and creation of a funding source that can provide rebates over 10 years through a declining incentive schedule. In August 2006, the CPUC further outlined a detailed plan to implement this $2.9 billion California Solar Initiative over a 10-year period. This plan will be administered through Pacific Gas and Electric Company, Southern California Edison, Southern California Gas Company and the San Diego Regional Energy Office. It was estimated that this measure would result in 3 millions tons CO2 equivalent emission reductions by 2020.

Investor-Owned Utility Energy Efficiency Program (CPUC)

In September 2004, the CPUC adopted emission reduction targets for the investor-owned utility energy efficiency programs through 2013 and set savings targets for both electricity and natural gas. It was estimated that this measure would result in 8.8 millions tons CO2 equivalent emission reductions by 2020.

Achieving 50% Statewide Recycling Program (CIWMB)

Achieving the State's 50 percent recycling goal was established by the Integrated Waste Management Act of 1989, AB 939, Sher, Chapter 1095, Statutes of 1989. Currently a diversion rate of 48 percent has been achieved on a statewide basis. This measure reduces the greenhouse gas emissions associated with energy used for material extraction and production as well as methane gas emissions from landfills. The CIWMB estimated a reduction of approximately 3 millions tons CO2 equivalent in 2020.

Building Energy Efficiency Standards (CEC)

Public Resources Code 25402 authorizes the CEC to adopt and periodically update (i.e. every three years) its building energy efficiency standards which apply to newly constructed buildings, and additions to or alterations to existing buildings. Recent policies have placed priority on and established specific goals for updating of the standards promoting the combination of solar photovoltaic and high-efficiency buildings and addressing demand response. The CEC estimated a reduction of approximately 2 millions tons CO2 equivalent in 2020.

Appliance Energy Efficiency Standards (CEC)

Public Resources Code 25402 authorizes the CEC to adopt and periodically update its appliance energy efficiency standards that apply to devices and equipment using energy that are sold or offered for sale in California. New standards for a variety of appliances were adopted in December 2004. Some standards under consideration in December 2004 were delayed to further consider manufacturer comments. The CEC estimated this program would provide a savings of approximately 5 millions tons CO2 equivalent in 2020.

Fuel-Efficient Replacement Tires and Inflation Programs (CEC)

State legislation, Chapter 912, Statutes of 2001, encourages the production and use of fuel-efficient tires and directed the CEC to investigate, recommend, and implement measures to improve fuel-efficiency of vehicle tires and to set mandatory fuel efficiency standard for all

after-market tires sold in California. The CEC estimated this program would provide a savings of approximately 1.5 millions tons CO2 equivalent in 2020

Green Buildings Initiative (BT&H)

Governor Schwarzenegger's Green Building Executive Order, S-20-04, calls for a reducing of energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels. The Executive Order requires state agencies to take specific actions with state-owned and -leased buildings, and contains various strategies and incentives to encourage private building owners and operators in order to achieve the 20 percent target. Preliminary estimates for this control measure are approximately 1.5 millions tons CO2 equivalent emission reductions in 2020.

Hydrogen Highway (CARB)

The California Hydrogen Highway Network (CA H2 Net) is a state initiative to promote the use of hydrogen as a means of diversifying the sources of transportation energy. The CA H2 Net requires the utilizing of at least 20 percent renewable resources in the production of hydrogen to reduce climate change emissions as well as criteria and toxic pollutants. The emission reductions of this program are captured in other programs such as the motor vehicle regulations.

TABLE 4

Emission Reduction Strategies for Adoption in Next 2-Years

Agency	Strategies	Emission Reduction (Million Tons CO_2) 2010	2020
CARB	Other New Light Duty Vehicle Technology Improvements	0	4
	HFC Reduction Strategies	2.7	8.5
	Transport Refrigeration Units, Off-road Electrification, Port Electrification (ship to shore)	<1	<1
	Manure Management	1	1
	Semi Conductor Industry Targets	2	2
	Alternative Fuels: Biodiesel Blends	<1	<1
	Alternative Fuels: Ethanol	<1	3.2
	Heavy-Duty Vehicle Emission Reduction Measures	0	3
	Reduced Venting and Leaks in Oil and Gas Systems	1	1
CEC	Cement Manufacturing	<1	<1
	Municipal Utility Energy Efficiency Programs/ Demand Response	1	5.9
	Municipal Utility Renewable Portfolio Standard	<1	3.2
	Municipal Utility Combined Heat and Power	0	<1
	Municipal Utility Electricity Sector Carbon Policy	3	9
	Alternative Fuels: Non-Petroleum Fuels	TBD	TBD
CPUC	Investor-Owned Utility (IOU) Additional Energy Efficiency Programs and Demand Response	NA	6.3
	IOU Combined Heat and Power Initiative	1.1	4.4
	IOU Electricity Sector Carbon Policy	1.6	2.7
CIWMB	Landfill Methane Capture	2	3
	Zero Waste—High Recycling		3
Water Depart	Water Use Efficiency	0.4	1.2
Forestry Depart.	Forest Management	1-2	2-4
	Forest Conservation	4.2	8.4
	Fuels Management/Biomass	3.4	6.8
	Urban Forestry	0	3.5
	Afforestation/Reforestation	0	12.5
BT&H	Measures to Improve Transportation Energy Efficiency	1.8	9
	Smart Land Use and Intelligent Transportation	5.5	18
	Conservation tillage/cover crops	TBD	TBD
	Enteric Fermentation	<1	<1
	Transportation Policy Implementation	TBD	TBD
	Total Potential Emission Reductions	**39**	**197**

AB32 codifies the State goal by requiring the State GHG emissions be reduced to 1990 levels by 2020 through an enforceable statewide cap on GHG emissions which will be phased in starting on 2012. AB32 also directs CARB to develop appropriate regulations and establish a mandatory reporting system for tracking and monitoring GHG. The bill specifically requires the CARB to:

- By January 2008, adopt regulations to mandatory require reporting and verification of statewide greenhouse gas emissions, and to monitor and enforce compliance with this program, starting with the sources or categories of sources that contribute the most to statewide emissions (e.g. electric generation, coal, oil and gas plants);

- By January 2008, determine what the statewide greenhouse gas emissions level was in 1990 which must be achieved by 2020 as directed by the Governor in 2005;

- On or before June 2007, publish and make available to the public a list of discrete early action greenhouse gas emission reduction measures that can be implemented prior to January 2011; and on or before January 2010, adopt regulations to implement these measures to achieve maximum technologically feasible and cost effective emission reductions;

- On or before January 2011, adopt greenhouse gas emission limits and additional measures, above and beyond the measures identified in 2007, which may include market-based compliance mechanisms, to achieve the statewide greenhouse gas emission limits and statewide reductions.

PROPOSED METHOD OF CONTROL

Achieving reduction targets specified in AB32 would require significant development and implementation of energy efficiency technologies and extensive shifting of energy production to renewable sources, as outlined in Tables 3 and 4 above. In addition to reducing GHG emissions, such strategies could concurrently reduce emissions of criteria pollutants associated with fossil fuel combustion.

This measure proposes to quantify the concurrent emission reductions associated with Statewide GHG programs targeted at stationary and mobile sources in the Basin working with various state agencies.

Once quantified, these reductions will be incorporated in the revised baseline emissions as part of the SIP revision process.

EMISSIONS REDUCTION

Every three to five years, concurrent emission reductions associated with implementation of global warming strategies will be quantified and incorporated in the revised baseline emissions as part of the SIP revision process.

REFERENCES

Assembly Bill 32, Nunez, California Global Warming Solutions Act of 2006.

California Public Utilities Work Plan, January 2006.

California Solar Initiative, FACT Sheet, August 24, 2006.

Climate Action Team Final Report to the Governor and Legislature, March 2006.

Energy Action Plan II, California Energy Commission and Public Utilities Commission, September 2005.

Executive Order S-3-05 by the Governor of the State of California.

State Agency Work Plan, February 2006.

State Chronological Actions to Address Global Climate Change, March 2006

~~GROUP 9~~

~~District's Long-Term Control Measures~~

~~REACTIVITY-BASED CONTROLS~~
~~[VOC]~~

~~CONTROL MEASURE SUMMARY~~			
~~SOURCE CATEGORY:~~	~~ARCHITECTURAL COATINGS, MISCELLANEOUS COATINGS AND SOLVENTS AND CONSUMER PRODUCTS~~		
~~CONTROL METHODS:~~	~~LOWERING REACTIVITY~~		
~~EMISSIONS (TONS/DAY):~~	~~SEE EMISSIONS REDUCTION SECTION~~		
~~SUMMER PLANNING INVENTORY~~	~~**2002**~~	~~**2014**~~	~~**2020**~~
~~VOC INVENTORY~~	~~207.7~~	~~170.8~~	~~175.1~~
~~VOC REDUCTION~~		~~---~~	~~80.0~~
~~VOC REMAINING~~		~~---~~	~~95.1~~
~~CONTROL COST:~~	~~NOT DETERMINED~~		
~~IMPLEMENTING AGENCY:~~	~~AQMD/CARB~~		

~~DESCRIPTION OF SOURCE CATEGORY~~

~~Background~~

~~Over the past two decades, regulations for coating and solvents have primarily focused on lowering the VOC content which has significantly reduced the VOC emissions from these categories. Reformulation of high-VOC compounds to low-VOC alternatives has resulted in substantial reductions in VOC emissions and improvement of ambient air quality. Despite these improvements, emissions from solvents and coatings continue to be significant and further reductions are needed in the future to meet the ambient air quality standards. Further reducing the VOC content of solvents and coatings may be very challenging. This is due to the limitations of resin chemistry, and the fact that it limits the formulation's flexibility in reformulating products. Because different chemicals used in coatings and solvents exhibit different reactivity rates in forming ozone in the atmosphere, a reactivity-based approach could produce equivalent air quality benefits to the mass-based approach. Therefore, because of the need to achieve additional VOC reductions for ozone attainment demonstration, reformulation based on lower reactive compounds need to be evaluated and considered in future rulemakings for coatings, solvents, and consumer products in order to provide a viable compliance option.~~

~~The VOC emissions are emitted from stationary sources and mobile sources and this long-term control measure addresses emissions from only stationary sources.~~

~~Regulatory History~~

~~Previous regulations have focused on reducing the VOC content within the solvents and coatings. However, VOC reactivity has been handled through the delisting of VOC compounds by the U.S. EPA and CARB. CARB's LEV programs considered reactivity in regulatory compliance options.~~

~~PROPOSED METHOD OF CONTROL~~

~~Under this control measure, the District is proposing to reduce the VOC ozone forming potential by reducing the overall reactivity from VOC containing materials. The focus of VOC source categories would be architectural coatings, miscellaneous coatings and solvents and consumer products. The proposed measure would require all applicable coatings or paints to be formulated with a 50 percent minimum by volume acetone reactivity-equivalent materials beginning in 2015. Alternative compliance options such as mass-based controls or product averaging would also be explored.~~

~~EMISSIONS REDUCTION~~

~~The air quality benefits of this long-term measure are considered as part of the modeling analysis. Equivalent VOC mass emission reductions have been determined to be approximately 80 tons per day by 2020 of which 56 tons per day of reductions are associated with consumer products under CARB's jurisdiction and the remaining 24 tons per day reductions are from coatings and solvent categories under the District's jurisdiction.~~

~~RULE COMPLIANCE AND TEST METHODS~~

~~Further study would also be required to evaluate the reactivity of different compounds under various meteorological conditions used to develop a systematic approach for regulatory programs.~~

~~COST EFFECTIVENESS~~

~~The cost-effectiveness of this control measure has not been determined.~~

~~IMPLEMENTING AGENCY~~

~~CARB and the District have the authority to regulate emissions from source categories subject to this measure.~~

~~FURTHER EMISSION REDUCTIONS FROM NO_X RECLAIM FACILITIES~~

~~[NO_X]~~

~~CONTROL MEASURE SUMMARY~~			
~~SOURCE CATEGORY:~~	~~NO_X RECLAIM FACILITIES~~		
~~CONTROL METHODS:~~	~~ALL AVAILABLE CONTROL METHODS~~		
~~EMISSIONS:~~			
~~ANNUAL AVERAGE~~	~~2002~~	~~2014~~	~~2020~~
~~NOX INVENTORY~~	~~TBD~~	~~TBD~~	~~TBD~~
~~NOX REDUCTION~~		~~TBD~~	~~TBD~~
~~NOX REMAINING~~		~~TBD~~	~~TBD~~
~~SUMMER PLANNING INVENTORY~~	~~2002~~	~~2014~~	~~2020~~
~~NOX INVENTORY~~	~~TBD~~	~~TBD~~	~~TBD~~
~~NOX REDUCTION~~		~~TBD~~	~~TBD~~
~~NOX REMAINING~~		~~TBD~~	~~TBD~~
~~CONTROL COST:~~	~~TO BE DETERMINED~~		
~~IMPLEMENTING AGENCY:~~	~~AQMD~~		

~~DESCRIPTION OF SOURCE CATEGORY~~

~~Background~~

~~Under the RECLAIM program, facilities are issued NOx and/or SOx allocations. Allocations decline annually until 2003, and remain constant thereafter. To meet their annual allocation, facilities have the option of installing pollution control equipment, changing operations, or purchasing RECLAIM Trading Credits (RTCs).~~

~~Additional emission reductions from RECLAIM may be needed to meet the federal "as expeditiously as practicable" and the state "all feasible measures" requirements. When the RECLAIM program was adopted, it was designed to achieve a Best Available Retrofit Control Technology (BARCT) level of emission reductions. As BARCT is updated to reflect improvements in pollution control equipment, additional reductions from the RECLAIM program may be possible.~~

~~This BARCT assessment is made in conjunction with the approximate 3-year cycle of the AQMP. Any applicable BARCT identified during the AQMP would then be subject to the rulemaking process.~~

~~Regulatory History~~

~~On October 15, 1993, the AQMD's Governing Board adopted the RECLAIM program. Regulation XX – RECLAIM includes 11 rules that specify the applicability, allocations, definitions, requirements, and monitoring, reporting, and recordkeeping requirements. When the RECLAIM program was adopted, it originally included 392 NO_x and 41 SO_x commercial and industrial facilities. Since the adoption of RECLAIM, there have been a number of amendments to the RECLAIM rules.~~

~~During late 2000, the combination of the energy crisis and delayed installation of pollution control equipment resulted in high RTC prices. A series of mechanisms are now in place to stabilize RTC prices. As part of the rule amendment proceeding and program evaluation, both U.S. EPA and ARB have requested the District to revisit the ending allocation for the RECLAIM NO_x program.~~

~~In January 2005, the Board adopted further reductions to RECLAIM Allocations starting Compliance Year 2007 to implement BARCT. Reductions would proceed until the 2011 compliance year. The total NOx reduction from the RECLAIM facilities was determined to be 7.7 tons per day. As such, RECLAIM is designed to achieve the same level of emissions reductions as would have been achieved in aggregate by implementing the subsumed rules and command-and-control measures as well as complying with state law, such as California Health and Safety Code §39616(e). The BARCT associated with the January 2005 amendment was identified in Control Measure CMB-10 in the 2003 AQMP.~~

~~PROPOSED METHOD OF CONTROL~~

~~The proposed measure will be implemented in two phases:~~

- ~~Phase I: Beginning in 2008 the RECLAIM allocations will be reduced to offset the potential emission increases due to the introduction of natural gas with a Wobbe Index greater than 1360. As described in CMB-04, natural gas with higher heating value would potentially increase NOx emissions from natural gas combustion equipment. Since RECLAIM represents about 70% of AQMD permitted stationary source NOx emissions, the proposed measure would require the RECLAIM program through its market mechanism to offset the emissions.~~

- ~~Phase II: It is anticipated that BARCT technology would evolve in the next 10 to 15 years. In addition, facilities in the RECLAIM program are required to install BACT if RECLAIM NSR is triggered. This phase of the control is to further reduce the RECLAIM allocations to reflect future BARCT and any BACT installations due to RECLAIM NSR requirements.~~

~~In addition, during rule development for MCS-01 its applicability to RECLAIM program will also be examined to ensure equity between RECLAIM and non-RECLAIM sources.~~

~~EMISSION REDUCTION~~

~~The phase I of emission reductions are estimated to be at least 2.5 tons per day of NOx. Based on historical advancements in control technology and RECLAIM's fair share in the 2021 ozone attainment demonstration, it is anticipated that the Phase II reductions would range from 3 to 5 tons per day.~~

~~RULE COMPLIANCE AND TEST METHOD~~

~~Compliance with the provisions of this control measure would be based on monitoring, recordkeeping and reporting requirements that have been established in either the RECLAIM program or existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.~~

~~COST EFFECTIVENESS~~

~~The cost effectiveness of this control measure has not yet been determined.~~

~~IMPLEMENTING AGENCY~~

~~The District has the authority to regulate emissions from stationary sources.~~

~~REFERENCE~~

~~Health and Safety (H&S) Code: § § 40913, 40914, 40920.5, § 40406 and § 40440 (b)(1)~~

~~14 California Code of Regulations, section 15364~~

~~See Control Measure 2007CMB-04 for further references.~~

~~LONG-TERM CONTROL MEASURE FOR FUGITIVE EMISSONS [VOC]~~

~~CONTROL MEASURE SUMMARY~~			
~~SOURCE CATEGORY:~~	~~GASOLINE DISPENSING FACILITIES, PETROLEUM REFINERIES, CHEMICAL PLANTS, AND GREEN WASTE COMPOSTING~~		
~~CONTROL METHODS:~~	~~PHASE I: TECHNOLOGY ASSESSMENT AND EMISSIONS CHARACTERIZATION~~ ~~PHASE II: DEVELOPMENT AND IMPLEMENTATION OF CONTROL STRATEGIES~~		
~~EMISSIONS (TONS/DAY):~~			
~~ANNUAL AVERAGE~~	~~**2002**~~	~~**2014**~~	~~**2020**~~
~~VOC INVENTORY~~	~~34.5~~	~~31.9~~	~~33.5~~
~~VOC REDUCTION~~		~~0.0~~	~~10.1~~
~~VOC REMAINING~~		~~31.9~~	~~23.5~~
~~SUMMER PLANNING INVENTORY~~	~~**2002**~~	~~**2014**~~	~~**2020**~~
~~VOC INVENTORY~~	~~34.5~~	~~32.0~~	~~33.5~~
~~VOC REDUCTION~~		~~0.0~~	~~10.1~~
~~VOC REMAINING~~		~~32.0~~	~~23.5~~
~~CONTROL COST:~~	~~TO BE DETERMINED~~		
~~IMPLEMENTING AGENCY:~~	~~SCAQMD~~		

~~DESCRIPTION OF SOURCE CATEGORY~~

~~Background~~

~~The emission sources targeted under this control measure include a variety of fugitive emissions from gasoline dispensing facilities, petroleum refineries, chemical plants, and green waste composting. Emissions from these fugitive emission source categories have been reduced over time and will be further reduced through the short- and intermediate-term measures as proposed. However, in aggregate, fugitive VOC emissions will still represent a significant emission source. Therefore, it is necessary to further consider reducing emissions from this source category.~~

~~The objective of this control measure is to further develop data and methodology to better define and refine emissions from each specific source category. In addition, new technologies, methods, and work practices need to be identified and evaluated that could locate, eliminate, and/or reduce fugitive emissions more effectively and efficiently. These developments will provide opportunities for further reductions in fugitive emissions.~~

~~Regulatory History~~

~~Gasoline Dispensing Facilities - New and existing gasoline dispensing facilities are regulated under District Rule 461, "Gasoline Transfer and Dispensing." Among other requirements, vapor recovery components need to be CARB-certified. New, relocated, and modified facilities are subject to Regulation XIII, "New Source Review," and Rule 1401, "New Source Review of Toxic Air Contaminants".~~

~~Petroleum Refineries - Rules applicable to this industry may include, but are not limited to: Regulations IV, IX, X, XIII, XIV, and XX and Rules 1105, 1173, and 1178.~~

~~Chemical Plants - Regulations IV, IX, X, XIII, XIV, and XX, as well as Rules 1141, 1141.2, 1159, 1163, and 1189 may be applicable to these sources.~~

~~Green Waste Composting – Rules applicable to this category may include, but are not limited to: Regulations IV, IX, X, XIII, XIV, XX and Rules 1133, 1133.1 and 1133.2.~~

~~PROPOSED METHOD OF CONTROL~~

~~This control measure will be implemented in two phases. In the first phase, emissions data and characteristics for each source category will be developed and refined. Technology assessments will be conducted to identify and evaluate any control technology, method or work practices that may be applied to each affected source category. Alternative leak detection methods, for example, are being developed that have the potential to be more efficient in detecting fugitive leaks from pipeline components, process equipment, and oil/gas production facilities. Low emitting packing and seals, leakless devices, and durable and reliable vapor recovery systems may be applicable more widely to petroleum products processing, distribution and gasoline dispensing facilities. New storage tank accessories or better roof seals are other examples that may become available to further reduce fugitive emissions. Depending on the result of the assessment, specific control strategies will be developed for implementation in the second phase. Good management practices to reduce fugitive emissions will also be evaluated and incorporated into operating procedures.~~

~~EMISSIONS REDUCTION~~

~~An estimated 10.1 tons per day of VOC will be reduced by the year 2020.~~

~~RULE COMPLIANCE AND TEST METHODS~~

~~Compliance and testing for this control measure would be based on monitoring, recordkeeping, and reporting requirements that have been established in either the RECLAIM program or existing source-specific rules and regulations. Compliance would also be verified through inspections and other recordkeeping and reporting requirements. Additional test methods may need to be developed once specific control methods are defined.~~

~~COST EFFECTIVENESS~~

~~Cost-effectiveness has not yet been determined for this control measure.~~

~~IMPLEMENTING AGENCY~~

~~The District has the authority to regulate emissions from the targeted sources.~~

~~CONCURRENT REDUCTIONS FROM GLOBAL WARMING STRATEGIES [ALL POLLUTANTS]~~

~~CONTROL MEASURE SUMMARY~~			
~~SOURCE CATEGORY:~~	~~STATIONARY AND MOBILE SOURCES OF FUEL COMBUSTION~~		
~~CONTROL METHODS:~~	~~CONCURRENT REDUCTIONS FROM GLOBAL WARMING STRATEGIES~~		
~~EMISSIONS (TONS/DAY):~~			
~~ANNUAL AVERAGE~~	~~2002~~	~~2014~~	~~2020~~
~~NOX INVENTORY~~	~~1066.5~~	~~642.6~~	~~266.0~~
~~NOX REDUCTION~~		~~---~~	~~40.0~~
~~NOX REMAINING~~		~~---~~	~~226.0~~
~~SUMMER PLANNING INVENTORY~~	~~2002~~	~~2014~~	~~2020~~
~~VOC INVENTORY~~	~~717.1~~	~~386.9~~	~~179.3~~
~~VOC REDUCTION~~		~~---~~	~~27.0~~
~~VOC REMAINING~~		~~---~~	~~152.3~~
~~CONTROL COST:~~	~~TO BE DETERMINED~~		
~~IMPLEMENTING AGENCY:~~	~~CARB, CEC, PUC, AQMD~~		

~~DESCRIPTION OF SOURCE CATEGORY~~

~~This control measure seeks to achieve concurrent reductions from all fuel combustion source global warming strategies related to fuel efficiency improvements and renewable energy sources.~~

~~Background~~

~~There is broad scientific consensus that the increased concentrations of greenhouse gases (GHGs) in the atmosphere will lead to global climate change in this century. The industrial revolution and the increased consumption of fossil fuels (e.g., gasoline, diesel, wood, coal, etc.) have contributed to substantial increase in atmospheric levels of greenhouse gases primarily carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons. These gases trap the sun's heat in the atmosphere, like a blanket, causing the atmospheric temperatures to rise. Over time, the increased temperature could result in climate change effects such as raising sea levels, altering precipitation patterns, and changing water supplies and crop yields. Global warming could also adversely affect human health, harm wildlife, and damage fragile ecosystems. Higher atmospheric temperatures would also result in more emissions, increased smog levels, and the associated health impacts.~~

~~Regulatory History~~

~~In June 2005, Governor Schwarzenegger signed Executive Order #S-3-05 which established the following greenhouse gas targets:~~

~~By 2010, Reduce to 2000 Emission Levels~~
~~By 2020, Reduce to 1990 Emission Levels~~
~~By 2050, Reduce to 80% Below 1990 Levels~~

~~The emission levels in California were estimated to be 426 million metric tons CO2 equivalent for 1990, 473 million metric tons CO2 equivalent for 2000, 532 million metric tons CO2 equivalent for 2010, and 600 million metric tons CO2 equivalent for 2020. The Governor's goals for emission reductions were estimated to be approximately 59 and 174 million tons CO_2 equivalent by 2010 and 2020, respectively.~~

~~The Executive Order created the Climate Action Team, with the California Environmental Protection (Cal/EPA) as the lead responsible for coordinating efforts from multiple agencies including California Air Resources Board (CARB), California Energy Commission (CEC), Resources Agency and Public Utilities Commission (CPUC), California Integrated Waste Management Board (CIWMB), Business, Transportation, & Housing (BT&H), and Department of Food and Agriculture (CDFA). The mission of the Climate Action Team was to develop and implement emission reduction strategies to achieve the Governor's greenhouse gas targets; and to submit a progress report to the Governor and the legislature on a biannual basis, starting in 2006.~~

~~The Climate Action Team's report, published in March 2006, recommends 46 specific emission reduction control strategies for greenhouse gas. Many of the strategies also reduce ozone, criteria and toxic pollutants. Table 1 provides a summary of 11 control measures that were adopted by various state agencies and are underway. These measures were estimated to provide approximately 22 million tons CO_2 equivalent in emission reductions in 2010, and 68 million tons CO_2 equivalent in emission reductions in 2020, which were about half way towards meeting the Governor's goals.~~

~~As shown in Table 1, the motor vehicle standards would provide the largest emission reductions about 30 millions tons CO_2 equivalent reductions in 2020. Two other key strategies in the state are the Energy Efficiency Programs and the Renewable Portfolio Standard which contributed about 16 and 11 millions tons CO_2 equivalent reductions in 2020. The 11 control strategies already adopted only provide less than half of the emission reductions needed for California, which are 22 millions ton and 68 million tons reduction in 2010 and 2020 respectively. Table 2 contains a list of additional control measures recommended by the Climate Action Team that need to be adopted in the next two years to achieve the Governor's emission reduction goals. A brief explanation of the 11 control measures already adopted and underway is presented below.~~

~~TABLE 1~~
~~Emission Reduction Strategies Underway in California[a]~~

~~**Agency**~~	~~**Strategies**~~	~~**Emission Reductions (Million Tons CO_2)**~~	
		~~**2010**~~	~~**2020**~~
~~CARB~~	~~Vehicle Climate Change Standards~~	~~1~~	~~30~~
	~~Diesel Anti-idling~~	~~1~~	~~1.2~~
~~CPUC~~	~~Accelerated Renewable Portfolio Std to 33% by 2020 (including load-serving entities [LSE])~~	~~5~~	~~11~~
	~~California Solar Initiative (Million Solar Roofs)~~	~~0.4~~	~~3~~
	~~Investor Owned Utility Energy Efficiency Programs~~	~~4~~	~~8.8~~
~~CIWMB~~	~~Achieving 50% Statewide Recycling Goal~~	~~3~~	~~3~~
~~CEC~~	~~Building Energy Efficiency Standards~~	~~1~~	~~2~~
	~~Appliance Energy Efficiency Standards~~	~~3~~	~~5~~
	~~Fuel-efficient Replacement Tires & Inflation Programs~~	~~1.5~~	~~1.5~~
~~BT&H~~	~~Green Buildings Initiative~~	~~0.5~~	~~1.8~~
~~CARB~~	~~Hydrogen Highway~~	~~Included [b]~~	
	~~**Total Potential Emission Reductions**~~	~~**22**~~	~~**68**~~

~~a)Climate Action Team 2006 Report to Governor Schwarzenegger and the Legislature~~

~~b)The emission benefits of Hydrogen Highway have been captured in other programs such as the motor vehicle regulations and the green building initiative.~~

~~Motor Vehicle Standards (CARB)~~

~~Regulations were adopted by the CARB in September 2004 in response to the requirements in Assembly Bill 1493, Pavley, Chapter 200, Statutes of 2002. The regulations apply to new passenger vehicles and light duty trucks beginning with 2009 model year through 2016 model year. The ARB analysis indicated that these regulations would result in 30 millions tons CO_2 equivalent emission reductions by 2020.~~

~~Diesel Anti-Idling (CARB)~~

~~In July 2004, the ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling which will reduce climate change emissions by 1.2 millions tons CO2 equivalent by 2020.~~

~~Renewable Portfolio Standard (CPUC and CEC)~~

~~The Renewable Portfolio Standard (RPS), established in 2002, requires that all load serving entities achieve a goal of 20 percent of retail electricity sales from renewable energy sources by 2017. The Governor has increased this goal to 33 percent renewable which was adopted by CPUC and CEC in 2005 as described in the *2005 Energy Action Plan II*. The two agencies have already commenced review of the legal, regulatory, and infrastructure changes necessary to achieve the Governor's goal. It was estimated that this measure would result in 11 millions tons CO_2 equivalent emission reductions by 2020.~~

~~California Solar Initiative (CPUC)~~

~~The Governor has initiated a goal of installation 1 million solar roofs or an equivalent 3,000 MW by 2017 on new and existing residential, commercial and industrial properties, increase the use of~~

~~solar thermal systems to offset the increasing demand for natural gas, use of advanced metering in solar applications, and creation of a funding source that can provide rebates over 10 years through a declining incentive schedule. In August 2006, the CPUC further outlined a detailed plan to implement this $2.9 billion California Solar Initiative over a 10-year period. This plan will be administered through Pacific Gas and Electric Company, Southern California Edison, Southern California Gas Company and the San Diego Regional Energy Office. It was estimated that this measure would result in 3 millions tons CO_2 equivalent emission reductions by 2020.~~

~~Investor-Owned Utility Energy Efficiency Program (CPUC)~~

~~In September 2004, the CPUC adopted emission reduction targets for the investor-owned utility energy efficiency programs through 2013 and set savings targets for both electricity and natural gas. It was estimated that this measure would result in 8.8 millions tons CO_2 equivalent emission reductions by 2020.~~

~~Achieving 50% Statewide Recycling Program (CIWMB)~~

~~Achieving the State's 50 percent recycling goal was established by the Integrated Waste Management Act of 1989, AB 939, Sher, Chapter 1095, Statutes of 1989. Currently a diversion rate of 48 percent has been achieved on a statewide basis. This measure reduces the greenhouse gas emissions associated with energy used for material extraction and production as well as methane gas emissions from landfills. The CIWMB estimated a reduction of approximately 3 millions tons CO_2 equivalent in 2020.~~

~~Building Energy Efficiency Standards (CEC)~~

~~Public Resources Code 25402 authorizes the CEC to adopt and periodically update (i.e. every three years) its building energy efficiency standards which apply to newly constructed buildings, and additions to or alterations to existing buildings. Recent policies have placed priority on and established specific goals for updating of the standards promoting the combination of solar photovoltaic and high-efficiency buildings and addressing demand response. The CEC estimated a reduction of approximately 2 millions tons CO_2 equivalent in 2020.~~

~~Appliance Energy Efficiency Standards (CEC)~~

~~Public Resources Code 25402 authorizes the CEC to adopt and periodically update its appliance energy efficiency standards that apply to devices and equipment using energy that are sold or offered for sale in California. New standards for a variety of appliances were adopted in December 2004. Some standards under consideration in December 2004 were delayed to further consider manufacturer comments. The CEC estimated this program would provide a savings of approximately 5 millions tons CO_2 equivalent in 2020.~~

~~Fuel-Efficient Replacement Tires and Inflation Programs (CEC)~~

~~State legislation, Chapter 912, Statutes of 2001, encourages the production and use of fuel-efficient tires and directed the CEC to investigate, recommend, and implement measures to improve fuel-efficiency of vehicle tires and to set mandatory fuel-efficiency standard for all after-market tires sold in California. The CEC estimated this program would provide a savings of approximately 1.5 millions tons CO_2 equivalent in 2020~~

~~Green Buildings Initiative (BT&H)~~

~~Governor Schwarzenegger's Green Building Executive Order, S-20-04, calls for a reducing of energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels. The Executive Order requires state agencies to take specific actions with state-owned and -leased buildings, and contains various strategies and incentives to encourage private building owners and operators in order to achieve the 20 percent target. Preliminary estimates for this control measure are approximately 1.5 millions tons CO_2 equivalent emission reductions in 2020.~~

~~Hydrogen Highway (CARB)~~

~~The California Hydrogen Highway Network (CA H2 Net) is a state initiative to promote the use of hydrogen as a means of diversifying the sources of transportation energy. The CA H2 Net requires the utilizing of at least 20 percent renewable resources in the production of hydrogen to reduce climate change emissions as well as criteria and toxic pollutants. The emission reductions of this program are captured in other programs such as the motor vehicle regulations.~~

~~TABLE 2~~

~~Emission Reduction Strategies for Adoption in Next 2-Years~~

~~**Agency**~~	~~**Strategies**~~	~~**Emission Reduction (Million Tons CO_2)**~~	
		~~**2010**~~	~~**2020**~~
~~CARB~~	~~Other New Light Duty Vehicle Technology Improvements~~	~~0~~	~~4~~
	~~HFC Reduction Strategies~~	~~2.7~~	~~8.5~~
	~~Transport Refrigeration Units, Off-road Electrification, Port Electrification (ship to shore)~~	~~<1~~	~~<1~~
	~~Manure Management~~	~~1~~	~~1~~
	~~Semi Conductor Industry Targets~~	~~2~~	~~2~~
	~~Alternative Fuels: Biodiesel Blends~~	~~<1~~	~~<1~~
	~~Alternative Fuels: Ethanol~~	~~<1~~	~~3.2~~
	~~Heavy-Duty Vehicle Emission Reduction Measures~~	~~0~~	~~3~~
	~~Reduced Venting and Leaks in Oil and Gas Systems~~	~~1~~	~~1~~
~~CEC~~	~~Cement Manufacturing~~	~~<1~~	~~<1~~
	~~Municipal Utility Energy Efficiency Programs/ Demand Response~~	~~1~~	~~5.9~~
	~~Municipal Utility Renewable Portfolio Standard~~	~~<1~~	~~3.2~~
	~~Municipal Utility Combined Heat and Power~~	~~0~~	~~<1~~
	~~Municipal Utility Electricity Sector Carbon Policy~~	~~3~~	~~9~~
	~~Alternative Fuels: Non-Petroleum Fuels~~	~~TBD~~	~~TBD~~
~~CPUC~~	~~Investor-Owned Utility (IOU) Additional Energy Efficiency Programs and Demand Response~~	~~NA~~	~~6.3~~
	~~IOU Combined Heat and Power Initiative~~	~~1.1~~	~~4.4~~
	~~IOU Electricity Sector Carbon Policy~~	~~1.6~~	~~2.7~~
~~CIWMB~~	~~Landfill Methane Capture~~	~~2~~	~~3~~
	~~Zero Waste – High Recycling~~		~~3~~
~~Water Depart~~	~~Water Use Efficiency~~	~~0.4~~	~~1.2~~
~~Forestry Depart.~~	~~Forest Management~~	~~1-2~~	~~2-4~~
	~~Forest Conservation~~	~~4.2~~	~~8.4~~
	~~Fuels Management/Biomass~~	~~3.4~~	~~6.8~~
	~~Urban Forestry~~	~~0~~	~~3.5~~
	~~Afforestation/Reforestation~~	~~0~~	~~12.5~~
~~BT&H~~	~~Measures to Improve Transportation Energy Efficiency~~	~~1.8~~	~~9~~
	~~Smart Land Use and Intelligent Transportation~~	~~5.5~~	~~18~~
	~~Conservation tillage/cover crops~~	~~TBD~~	~~TBD~~
	~~Enteric Fermentation~~	~~<1~~	~~<1~~
	~~Transportation Policy Implementation~~	~~TBD~~	~~TBD~~
	~~**Total Potential Emission Reductions**~~	~~**39**~~	~~**197**~~

~~AB32 codifies the State goal by requiring the State GHG emissions be reduced to 1990 levels by 2020 through an enforceable statewide cap on GHG emissions which will be phased in starting on 2012. AB32 also directs CARB to develop appropriate regulations and establish a mandatory reporting system for tracking and monitoring GHG. The bill specifically requires the CARB to:~~

- ~~By January 2008, adopt regulations to mandatory require reporting and verification of statewide greenhouse gas emissions, and to monitor and enforce compliance with this program, starting with the sources or categories of sources that contribute the most to statewide emissions (e.g. electric generation, coal, oil and gas plants);~~

- ~~By January 2008, determine what the statewide greenhouse gas emissions level was in 1990 which must be achieved by 2020 as directed by the Governor in 2005;~~

- ~~On or before June 2007, publish and make available to the public a list of discrete early action greenhouse gas emission reduction measures that can be implemented prior to January 2011; and on or before January 2010, adopt regulations to implement these measures to achieve maximum technologically feasible and cost effective emission reductions;~~

- ~~On or before January 2011, adopt greenhouse gas emission limits and additional measures, above and beyond the measures identified in 2007, which may include market-based compliance mechanisms, to achieve the statewide greenhouse gas emission limits and statewide reductions.~~

~~PROPOSED METHOD OF CONTROL~~

~~Achieving reduction targets specified in AB32 would require significant development and implementation of energy efficiency technologies and extensive shifting of energy production to renewable sources, as outlined in Tables 1 and 2 above. In addition to reducing GHG emissions, such strategies would concurrently reduce emissions of criteria pollutants associated with fossil fuel combustion.~~

~~This measure proposes to quantify the concurrent emission reductions associated with Statewide GHG programs targeted at stationary and mobile sources in the Basin working with various state agencies. Emission reductions from these programs will be applied toward the long-term reduction targets proposed in the Draft 2007 AQMP for meeting the federal ozone standard by 2021 (or 2024).~~

~~The District will continue to collaborate with various State agencies in quantifying the concurrent combustion emission reductions.~~

~~EMISSIONS REDUCTION~~

~~For the purpose of this draft plan, a 15 percent reduction in criteria pollutant emissions from all fuel combustion source categories is assumed. In the next several months, the reduction assumption would be refined based on further consultation with CARB and stakeholder input.~~

~~REFERENCES~~

~~Assembly Bill 32, Nunez, California Global Warming Solutions Act of 2006.~~

~~California Public Utilities Work Plan, January 2006.~~

~~California Solar Initiative, FACT Sheet, August 24, 2006.~~

~~Climate Action Team Final Report to the Governor and Legislature, March 2006.~~

~~Energy Action Plan II, California Energy Commission and Public Utilities Commission, September 2005.~~

~~Executive Order S-3-05 by the Governor of the State of California.~~

~~State Agency Work Plan, February 2006.~~

~~State Chronological Actions to Address Global Climate Change, March 2006.~~

~~FURTHER VOC REDUCTIONS FROM MOBILE SOURCES~~

~~[VOC]~~

~~CONTROL MEASURE SUMMARY~~			
~~SOURCE CATEGORY:~~	~~ON-ROAD AND OFF-ROAD MOBILE SOURCE CATEGORIES~~		
~~CONTROL METHODS:~~	~~ACCELERATED FLEET TURN-OVER, RETROFITS~~		
~~EMISSIONS (TONS/DAY):~~	~~TBD~~		
~~ANNUAL AVERAGE~~	~~2002~~	~~2014~~	~~2020~~
~~VOC INVENTORY~~	~~669.7~~	~~336.9~~	~~279.8~~
~~VOC REDUCTION~~		~~0.0~~	~~20.0~~
~~VOC REMAINING~~		~~336.9~~	~~259.8~~
~~SUMMER PLANNING INVENTORY~~	~~2002~~	~~2014~~	~~2020~~
~~VOC INVENTORY~~	~~707.7~~	~~378.1~~	~~318.4~~
~~VOC REDUCTION~~		~~0.0~~	~~20.0~~
~~VOC REMAINING~~		~~378.1~~	~~298.4~~
~~CONTROL COST:~~	~~TO BE DETERMINED~~		
~~IMPLEMENTING AGENCY:~~	~~CARB~~		

~~DESCRIPTION OF SOURCE CATEGORY~~

~~Background~~

~~The emission sources targeted under this control measure include on-road mobile source such as passenger cars, light-, medium, and heavy-duty vehicles and motorcycles and off-road mobile sources such as aircraft, trains, marine vessels, pleasure craft, recreational vehicles, and construction and industrial equipment.~~

~~The objective of this long-term control measure is to achieve further VOC reductions from mobile sources in order to attain the federal 8-hour ozone standard by 2020.~~

~~Regulatory History~~

~~CARB and U.S. EPA have adopted a number of regulations affecting on-road and off-road mobile sources. For the most part, these regulations have established new engine standards or fuel requirements for various source categories. However, additional regulations need to be developed for accelerated turn-over and retrofit of existing vehicles and equipment in order to accelerate the emission benefits associated with new engine and fuel standards.~~

~~PROPOSED METHOD OF CONTROL~~

~~This control measure proposes to achieve further VOC reductions from various mobile source categories beyond the reductions achieved from the short-term measures through 1) accelerated turn-over existing equipment and vehicles and replacement with new equipment meeting the new engine standards; and 2) retrofit of existing vehicles and equipment with add-on controls such as oxidation~~

~~catalysts and evaporative emission controls. Potential categories include passenger cars and light-, medium and heavy-duty vehicles as well as pleasure craft and recreational vehicles.~~

~~EMISSIONS REDUCTION~~

~~The emission reduction target for this measure is 20 tons of VOC by 2020.~~

~~RULE COMPLIANCE AND TEST METHODS~~

~~Compliance for this control measure would be based on CARB's adopted regulation(s) affecting existing on-road and off-road mobile sources.~~

~~COST EFFECTIVENESS~~

~~Cost-effectiveness has not yet been determined for this control measure.~~

~~IMPLEMENTING AGENCY~~

~~CARB has the authority to regulate emissions from the targeted sources.~~

SECTION 2

CONTINGENCY MEASURES

INTRODUCTION

This appendix contains the contingency control measures for the 2007 AQMP. Both the state and federal Clean Air Acts require that the AQMP contain contingency measures in the event that the District fails to either achieve interim emission reduction goals or maintain adequate progress towards attainment of ambient air quality standards.

The expected progress in meeting the AQMP attainment goals, measured in terms of emission reductions, is verified through the annual auditing program called the Reasonable Further Progress (RFP) program. In the event the RFP shows that the implementation of the AQMP is not providing adequate progress and the interim emission reduction goals have not been met, the District must take action to bring forward measures that are scheduled for later adoption or implementation, or to implement certain "contingency" control measures. The contingency measures contained in this appendix are designed to ensure that an appropriate level of emission reductions progress continues to be made. In addition, these contingency measures are control options that could be instituted in addition to, or in place of, the AQMP control measures.

Contingency Measures

The 2007 AQMP contains 4 contingency control measures. Although implementation of these measures is expected to reduce emissions, there are issues that limit the viability of these measures as AQMP control measures at this time. Issues surrounding these measures include, but are not limited to the availability of District resources to implement and enforce the measure, cost-effectiveness of the measure, potential adverse environmental impacts, potential economic impacts, effectiveness of emission reductions, and availability of methods to quantify emission reductions. Table 5 lists the contingency control measures and adoption/implementation issues associated with the measure. The responsibility to adopt and implement the measures falls on the District, ARB, and EPA.

TABLE 5

Contingency Control Measures

AQMP Measure Number	Title
CTY-01	Offsetting the Potential Emission Increase Due to the Change in Natural Gas Specifications [NOx]
CTY-02	Emission Charges of $5,000 per Ton for Stationary Sources with Potential to Emit Over 10 Tons per Year [VOC and NOx]
CTY-03	Banning Pre-Tier 3 Off-Road Diesel Engines During High Pollution Days [NOx, VOC, and PM]
CTY-04	Accelerated Implementation of CARB's Mobile Source Control Measures [All Pollutants]

FORMAT OF CONTROL MEASURES

Included in each control measure description is a title, summary table, description of source category, proposed method of control, estimated emission reductions, rule compliance, test methods, cost effectiveness, and references. The type of information that can be found under each of these subheadings is described below.

Control Measure Number

Each control measure is identified by a control measure number (such as "CM #2007CTY-01") located at the upper right hand corner of every page. "CM #" is the abbreviation for "control measure number" and is immediately followed by the year of the AQMP revision (such as "2007" for 2007). The next designation represents the source category or control measure type;; for example "CTY" represents contingency measure.

Summary Table

Each measure contains a table that summarizes the measure and is designed to identify the key components of the control measure. The table contains a brief explanation of the source category, control method, emission reductions, control costs, and implementing agency.

Although initial assessments to identify the potential magnitude of emission reductions and cost effectiveness of these measures may have been conducted, fully quantified emission reductions and control cost are not included at this time. If these measures

should undergo rulemaking and as additional data and information becomes available, the emission reductions and cost effectiveness of these measure will further be assessed and fully quantified.

Information Contained in Measures

Similar to the stationary source control measures in Section I of this appendix, each of the measures contain the following sections:

- **Description of Source Category** provides an overall description of the source category, number of sources in the Basin, description of emission sources, and regulatory history.
- **Proposed Method of Control** includes applicable emission control technologies, expected performance such as projected control efficiency, and current applications.
- **Emission Reductions and Cost Effectiveness:** As previously indicated, emission reductions and control costs associated with the measures are not included in this appendix. As the more data and information becomes available regarding quantification of potential emission reductions, these measures will be updated.
- **Rule Compliance and Test Methods** refers to the applicable monitoring, recordkeeping and reporting requirements envisioned to ensure compliance. The test method section refers to appropriate approved District, ARB, and EPA source test methods.
- **Implementing Agency** is the agencies responsible for implementing the control measure. Also included in this section is a description of any jurisdictional issues that may affect the control measures implementation.

Contingency Measures

OFFSETTING THE POTENTIAL EMISSION INCREASE DUE TO THE CHANGE IN NATURAL GAS SPECIFICATIONS [NO_X]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	NO_X RECLAIM FACILITIES
CONTROL METHODS:	ALL AVAILABLE CONTROL METHODS
EMISSIONS (TONS/DAY):	SEE EMISSIONS REDUCTION SECTION
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

The background, regulatory history, and other details pertaining to the change in natural gas specifications is described in Control Measure #2007CMB-04.

PROPOSED METHOD OF CONTROL

Beginning in 2008, the RECLAIM allocations will be reduced which will offset any potential emission increases due to the introduction of natural gas with a Wobbe Index greater than 1360. As described in CMB-04, natural gas with higher heating value would potentially increase NOx emissions from natural gas combustion equipment. Since RECLAIM represents about 70% of District permitted stationary source NOx emissions, the proposed measure would require the RECLAIM program through its market mechanism to offset the emissions.

EMISSIONS REDUCTION

Emission reductions resulting from this control measure are estimated to be at least 2.5 tons per day of NOx. However, further analysis is needed to assess the magnitude of this potential increase in NOx emissions.

RULE COMPLIANCE AND TEST METHODS

Compliance with the provisions of this control measure would be based on monitoring, recordkeeping and reporting requirements that have been established in either the RECLAIM program or existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

The cost effectiveness of this control measure has not yet been determined

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from stationary sources.

REFERENCES

Health and Safety (H&S) Code: §§ 40913, 40914, 40920.5, § 40406 and § 40440 (b)(1)

14 California Code of Regulations, section 15364

See Control Measure 2007#CMB-04 for further references

EMISSION CHARGES OF $5,000 PER TON FOR STATIONARY SOURCES WITH POTENTIAL TO EMIT OVER 10 TONS PER YEAR [VOC AND NOx]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	STATIONARY SOURCES OF VOC AND NOX WITH POTENTIAL TO EMIT OVER 10 TONS PER YEAR
CONTROL METHODS:	EMISSION CHARGES
EMISSIONS (TONS/DAY):	NOT DETERMINED
CONTROL COST:	SEE COST EFFECTIVENESS SECTION
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

Regulatory History

This control measure was first introduced in the 1994 AQMP and then carried over to the 1997 AQMP and then the 2003 AQMP.

If a serious or severe area fails to attain the 8 hour standard by the statutory date, the area must implement a measure requiring major stationary sources to either reduce their emissions to 80% of what they were in the attainment year, or pay an annual fee of $5,000 (adjusted for inflation) for each ton in excess of 80% of the baseline (2024).

The $5,000 per ton fee applies to every "major stationary source" of VOC emissions, whether permitted or not. The definition of major stationary source is any source with a "potential to emit" of 10 tons per year, not just sources with actual emissions of ten tons per year. Therefore, the fee should be based on total actual emissions, not just permitted emissions. However, fugitive emissions are not included in determining potential to emit (PTE) unless the sources is one of the types of facilities listed in 40 CFR Part 70, section 70.2. If the facility is already a major source, then fugitive emissions would be included in its total emissions. If the facility has taken a synthetic minor permit limiting them to less than 10 tpy, then these facilities would not be subject to the fee.

It should also be noted, pursuant to section 182(f) of the federal Clean Air Act, the plan provisions required under this subpart, which includes the fee, which are applicable to major stationary sources of VOC as well as major stationary sources of NOx. That is, unless EPA finds that additional reductions of NOx would not contribute to attainment. Since the draft final 2007 AQMP proposes a NOx-heavy strategy, it is assumed that the fee applies to major NOx sources as well.

PROPOSED METHOD OF CONTROL

The l990 federal Clean Air Act requires that the AQMP include all control measures, means or techniques, including economic incentives such as fees, as may be necessary to reach attainment. Further, the Act requires that all stationary sources of VOC emissions (with PTE greater than 10 tons per year) in an extreme nonattainment area that has failed to attain the ambient air quality standard for ozone pay a fee as a penalty for such failure (Title I, Section 185).

This control measure proposes that if the federal ambient air standards are not met by the year 2024, the District shall impose an emissions fee of $5,000 per ton of VOC and NOx, separately, emitted by each major source in excess of 80 percent of the sources baseline emissions. The fee rate will be adjusted annually to reflect increases in the consumer price index. The fee shall be paid for each calendar year after the year 2024 and until the area meets the 8-hour ozone standard. This fee will be in addition to the annual emission fee required by District Rule 301.

EMISSIONS REDUCTION

Implementation of this measure is expected to result in emission reductions as facilities seek to further reduce emissions to reduce the fees proposed by this measure. Projected emission reductions are uncertain at this time, and require further analysis.

TEST METHODS

The EPA and AQMD approved test methods for this measure include:

EPA METHOD 24 – DETERMINATION OF VOLATILE MATTER CONTENT,WATER CONTENT, DENSITY, VOLUME SOLIDS, AND WEIGHT SOLIDS OF SURFACE COATINGS

EPA METHOD 25 – DETERMINATION OF TOTAL GASEOUS NONMETHANE ORGANIC EMISSIONS AS CARBON

EPA METHOD 7E – DETERMINATION OF NITROGEN OXIDES EMISSIONS FROM STATIONARY SOURCES (INSTRUMENTAL ANALYZER PROCEDURE)

AQMD METHOD 25.1 – DETERMINATION OF TOTAL GASEOUS NON-METHANE ORGANIC EMISSIONS AS CARBON

AQMD METHOD 25.3 – DETERMINATION OF LOW CONCENTRATION NON-METHANE NON-ETHANE ORGANIC COMPOUND EMISSIONS FROM CLEAN FUELED COMBUSTION SOURCES

AQMD METHOD 100.1 – INSTRUMENTAL ANALYZER PROCEDURES FOR CONTINUOUS GASEOUS EMISSION SAMPLING

Additional or alternative test methods, protocols and guidelines may be used provided they are approved by EPA, ARB and AQMD.

COST EFFECTIVENESS

The cost-effectiveness of this measure is estimated to be not to exceed $5,000/ton of VOC or NOx. It is assumed that a facility would opt to pay fees if on-site controls exceed $5,000/ton.

IMPLEMENTING AGENCY

This measure will be implemented to give affected sources the option of reducing their emissions to 80% of baseline emissions or paying the fee on every ton above 80%. As such, the District has authority under H & S 40001 (rules to attain standards) to implement this measure.

REFERENCES

South Coast Air Quality Management District. Rule 301 - Permit Fees. Amended June 1993.

BANNING PRE-TIER 3 OFF-ROAD DIESEL ENGINES DURING HIGH POLLUTION DAYS [NOX, PM, VOC]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	OFF-ROAD CONSTRUCTION, INDUSTRIAL ENGINES
CONTROL METHODS:	REPLACE OR RETROFIT OLDER ENGINES TO TIER III EQUIVALENT OR BETTER
EMISSIONS (TONS/DAY):	NOT DETERMINED
CONTROL COST:	NOT DETERMINED
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to ban the operation of Tier 0, Tier 1 and Tier 2 off-road diesel engines (larger than 25 horsepower) during high pollution days.

Background

Off-road heavy-duty construction and industrial equipment account for 19% and 7% of the total NOx and PM emissions, respectively, in 2014. At least 60% of today's heavy-duty construction equipment fleets were manufactured before 1988 and not subject to new engine standards. In their study, CARB indicated that large old diesel off-road equipment remain in use for long periods of time, sometimes up to 60 years. This long life means that cleaner engines are introduced to the fleet at a very slow rate. Therefore, further emission reductions could be achieved by banning the operation of the older engines and accelerating the introduction of cleaner engines and emissions control technologies.

Regulatory History

The Federal Clean Air Act prohibits states from adopting emission standards from new engines used in construction and farming equipment less than 175 horsepower. Diesel engines greater than 175 horsepower are regulated by CARB. In August 1998, U.S. EPA adopted new emission standards pertaining to off-road diesel engines. Subsequently, in January 2000 and in December 2004, CARB adopted amendments to existing California emission standards to harmonize with the federal requirement. These amendments included a tiered approach starting from 1996 for Tier 1 to 2008-2012 for Tier 4.

CARB is currently proposing to establish declining fleet average emission levels for off-road equipment over 25 horsepower as stated in Control Measure, ARB-OFRD-04, Cleaner In-Use Off-Road Equipment, of the Proposed State Strategy for California's 2007 State Implementation Plan, January 31, 2007. The owners have the flexibility of swapping, purchasing newer cleaner engines, adding emission control devices to older engines, or even just restricting unnecessary equipment idling. CARB estimates that this measure would reduce NOx emissions by 13.8 tons per day, VOC emissions by 2.2 tons per day, and PM2.5

emissions by 2.5 tons per day by 2014; and 13.2 tons per day, VOC emissions by 2.1 tons per day, and PM2.5 emissions by 1.7 tons per day by 2020. CARB staff is currently in the process of developing a statewide regulation to implement this measure. The District is also proposing a complementary strategy for this source category to achieve additional reductions (refer to SC-OFFRD-01.)

PROPOSED METHOD OF CONTROL

In the event the SCAB fails to attain the PM2.5 standard by 2015, the District will propose to ban the use of pre-Tier 3 off-road diesel engines during high pollution days.

EMISSIONS REDUCTION

The emission reductions from this control measure have not yet been determined. They will be assessed once ARB-OFRD-04 & SC-OFFRD-01 measures are implemented.

RULE COMPLIANCE

Compliance with this control measure would be through monitoring, reporting and recordkeeping requirements under the District regulations.

COST EFFECTIVENESS

The cost effectiveness of this control measure has not yet been determined.

IMPLEMENTING AGENCY

Under state law the District has authority to establish operational requirements for nonvehicular sources (nonroad sources) such as off-road construction and industrial equipment, to the extent not preempted under federal law (Health & Safety Code Section 39002). This control measure would be implemented by the District using this authority and/or its authority to reduce emissions from indirect sources (Health & Safety Code Section 40716). While the District does not belive this would be necessary, if necessary, the District would seek authority from the EPA.

REFERENCES

CARB Proposed State Strategy for California's 2007 State Implementation Plan, January 31, 2007.

ACCELERATED IMPLEMENTATION OF CARB'S MOBILE SOURCE CONTROL MEASURES [ALL POLLUTANTS]

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	ON-ROAD AND OFF-ROAD MOBILE SOURCES
CONTROL METHODS:	ALL AVAILABLE CONTROL METHODS
EMISSIONS (TONS/DAY):	REDUCTIONS AS ESTIMATED IN CARB'S CONTROL MEASURES WILL BE ACCELERATED BY ONE YEAR
CONTROL COST:	COSTS AS ESTIMATED IN CARB'S CONTROL MEASURES WILL OCCUR ONE YEAR EARLIER
IMPLEMENTING AGENCY:	AQMD

DESCRIPTION OF SOURCE CATEGORY

Background

CARB's draft proposed state strategy includes a number of control measures for mobile sources and consumer products based on all available control technologies which are proposed to be implemented between 2007 and 2020. CARB includes 12 control measures for these categories as identified in Appendix IV-B-1. The intent of this contingency control measure is to accelerate the implementation schedule of those measures by one year.

Regulatory History

CARB has the responsibility for developing the state strategy component of the AQMP's overall control strategy.

PROPOSED METHOD OF CONTROL

In the event the District or Air Resources Board determines that the Basin failed to either achieve interim emission reduction goals or maintain adequate progress towards attainment of the PM2.5 and the 8-hour ozone standard, the District requests that CARB accelerate its adoption and implementation schedule for the remaining mobile source control measures in the 2007 AQMP by one year. Upon determining that an RFP milestone target has not been reached, or the District fails to demonstrate attainment for applicable air quality standards, the District will request that CARB accelerate the adoption and/or implementation of the remaining control measures that have not yet been adopted or fully implemented to the extent feasible. Accelerating the implementation schedule, although feasible, may require additional staffing resources and added implementation costs.

EMISSIONS REDUCTION

The emission reductions from the accelerated schedules of CARB's proposed control measures will be equivalent to those emission reductions projected for each individual control measure for the same milestone year and will not be altered by a change in the implementation date.

COST EFFECTIVENESS

Accelerating the implementation schedule may change the cost effectiveness associated with each measure.

IMPLEMENTING AGENCY

CARB

REFERENCES

CARB Proposed State Strategy for California's 2007 State Implementation Plan, January 31, 2007.

ATTACHMENT A

TO PROPOSED MODIFICATIONS TO

DRAFT 2007 AQMP APPENDIX IV-A

EVALUATION OF CONTROL MEASURES

PROPOSED BY OTHER DISTRICTS/STATES

In an effort to ensure that all feasible measures are incorporated in the 2007 AQMP, in addition to the Reasonably Available Control Measures (RACM) Demonstration included in Appendix VI, staff has also reviewed and evaluated control measures proposed by other districts and states for inclusion in their respective SIPs. Specifically, staff evaluated control measures being considered by the air pollution control districts of San Joaquin Valley, Sacramento Metropolitan and San Francisco Bay Area in California as well as control measures being considered by Texas and Midwest States. This attachment provides a summary of this evaluation. In general, the rules and regulation already adopted or control measures proposed by the District as part of the 2007 AQMP are equivalent or greater stringency than the control measures being considered by these areas. District staff commits to closely monitor the evolution, adoption and subsequent implementation of these control measures by their respective areas and states. In the event there are any more stringent elements than those incorporated in District programs that emerge from this process that are feasible and cost-effective for this District, staff commits to pursue their inclusion into the District's future rulemaking activities.

A summary of the control measures and the process of developing these control measures in other air districts is provided below and is summarized in Table A-1 of Attachment A.

San Joaquin Valley Area

The San Joaquin Valley is classified as a "Serious" non-attainment area and is required to meet the 8-hour ozone standards by June 2013. As discussed in their final draft plan, published in January 29, 2007, the San Joaquin Valley District took various steps to generate concepts for control measures such as investigating control strategies and measures in other districts and agencies, analyzing all district rules affecting NOx and VOC to assess possibilities for strengthening and expanding their applicability, and conducting Town Hall meetings to gather ideas from the public. After considering a variety of factors, including technological feasibility and practicality of emission controls, emission inventories, emission reductions, control costs, rate and timing of emissions reductions, the San Joaquin Valley District published a final draft list of control measures consisting of 19 measures that could be reasonable developed and implemented by the 2012 date based on current available existing technologies. In addition, San Joaquin Valley District also introduced 20 control measures[10] where further feasibility studies are needed since information has not yet been available to satisfactorily evaluate a particular control. The list of 19 measures that could be implemented in San Joaquin Valley area by year 2012 is shown in Table A-1 of Attachment A – Control Measures from Other Districts. The San Joaquin Valley area included all of CARB's proposed control measures to reduce mobile source emissions in their final draft AQMP. Cost-effectiveness data was not provided in their plan.

[10] Twenty measures required further studies identified by the San Joaquin Valley APCD are: ICE Electrification & Pump Efficiency, Prescribed Burning, Oil Production Sumps, Heavy Crude Oil Components, Solid Fuel Fired Boilers, Small Boilers, Wine Fermentation & Storage, Asphalt Roofing Pesticide Fumigation Chambers Dryers, Asphalt Paving, Bakeries, POTW Water Treatment, Reduction of Animal Matter, Refinery Turnaround Units, Refinery Vacuum Devices, and Refinery Wastewater Separators.

As shown in Table A-1 of Attachment A – Control Measures from Other Districts, District staff includes all feasible control measures that are also included in the San Joaquin Valley's 2007 AQMP, except the control measure for wine fermentation and storage since there is no such facility in the District.

In addition, since the South Coast Basin is classified as Severe-17 for ozone non-attainment (potentially will be bumped-up to "Extreme"), the SCAQMD's draft plan includes more stringent control measures than San Joaquin's draft plan as discussed in Appendix VI – Reasonable Available Control Measures (RACM) Demonstration.

Sacramento Metropolitan

The Sacramento regional area is classified as a "Serious" non-attainment area and is required to meet the 8-hour ozone standards by June 2013. As discussed in their draft plan, the Sacramento district took various steps to generate concepts for control measures such as investigating control strategies and measures in other districts and agencies, analyzing all District rules affecting NOx and VOC to assess possibilities for strengthening and expanding their applicability, and conducting public meetings. After considering a variety of factors, including technological feasibility and practicality of emission controls, emission inventory of the source category and emission reductions, control costs, rate and timing of emissions reductions, the Sacramento regional area published a draft list of control measures consisting of 10 measures for stationary and area sources and several voluntary measures for mobile sources as shown in Table A-1 of Attachment A. The Sacramento area includes all CARB's proposed control measures to reduce mobile source emissions in their plan. Cost-effectiveness for stationary source control measures was estimated to be in a range of $1,000 - $18,000 per ton of emissions reduced.

As shown in Table A-1 of Attachment A, District staff includes all feasible control measures that are also included in the Sacramento's 2007 AQMP. In addition, as discussed in Appendix VI – Reasonably Available Control Measures (RACM) Demonstration, it contains additional control measures that are not included in the Sacramento's draft plan.

San Francisco Bay Area

With respect to 8-hour ozone standards, the Bay Area is classified as "Marginal" and is required to meet the 8-hour standards by June 2007. The Bay Area Air Quality Management District in cooperation with the Metropolitan Transportation Commission and the Association of Bay Area Governments, prepared the Bay Area 2005 Ozone Strategy to demonstrate how the San Francisco Bay Area would achieve compliance with the state one-hour air quality standard for ozone as expeditiously as practicable. The control strategies to meet the one-hour ozone standards would be relied upon in the transition to meet the 8-hour ozone standards. After carefully reviewing and analyzing a list of 390 control measure suggestions (not including transportation control measures), the Bay Area finalized a list of 38 control measures for their 2005 AQMP including:

- 15 measures for stationary sources as shown in Table A-1 of Attachment A with cost effectiveness reported from $800 per ton to $22,000 per ton emission reduced

- 4 control strategies for mobile sources, including diesel equipment idling model ordinance, green contracting model ordinance, low-emission vehicle incentives, and vehicle buy-back program, with estimated cost effectiveness ranging from $500 per ton to $40,000 per ton emission reduced
- 19 transportation control measures that cover the full spectrum of transportation strategies, including bus transit, rail transit, ferry service, carpooling and vanpooling, bicycle and pedestrian enhancements, land use programs, pricing measures, traffic management, employer programs and youth programs, and public education and episodic measures. The estimated cost-effectiveness of the transportation measures was not provided.

The Bay Area relied on CARB's proposed control measures to reduce mobile source emissions and committed to further study 20 additional control measures in the 2006-2007 time frame including areas such as refinery wastewater treatment, commercial charbroilers, cooling towers, adhesives and sealants, architectural coatings and episodic measures.

As shown in Table A-1 of Attachment A, District staff includes all feasible control measures that are also included in the Bay Area's plan; and as discussed in Appendix VI – Reasonably Available Control Measures (RACM) Demonstration, it also contains additional control measures that are not included in the Bay Area's plan.

State of Texas

The Texas Commission on Environmental Quality (TCEQ) contracted with the North Central Texas Council of Governments (NCTCOG) to evaluate and quantify potential control measures to develop the 8-hour ozone SIP for the Dallas-Forth Worth (DFW) and Houston-Galveston-Brazoria (HGB) areas. The NCTCOG subcontracted with two consultants, Environ International and the Sierra Nevada Air Quality Group, to perform the strategy development work. An initial master list consisted of 1,050 potential control strategies was developed. After a series of public meetings and further evaluation (based on criteria such as permanent, quantifiable, enforceable, surplus, practicality, likely public acceptance, timing of implementation to meet January 2009 attainment date, emissions benefit, and cost effectiveness), the NCTCOG settled on a final list of 61 control measures shown in Table A-1 of Attachment A including the following:

- 17 control measures for point and area sources, which focus on NOx reductions more than VOC reductions, including further reductions for boilers, internal combustion engines, kilns, electric generation units, cold cleaning, architectural and industrial coatings, and area source credits for energy conservation and efficiency. Cost-effectiveness was estimated to be from $100 - $20,000 per ton emission reduced.
- 11 non-road mobile strategies including aircraft emission standards, California portable engine rule, incentives for emission reductions with public funding, freight rail infrastructure improvements, hybrid-electric locomotives, lawn mower replacement program, limitations on idling of heavy-duty construction equipment,

locomotive idling restrictions, rail efficiency, and Tier II standards for locomotives. Cost effectiveness was reported to be from $1,000 - $51,914 per ton emission reduced.

32 on-road mobile strategies, including transportation control measures, such as adopting California vehicle standards, additional taxi fleet emissions testing, Texas repair and replacement assistance program, California low-emitting vehicle II standards, CARB 2007 on-highway diesel engine standards, heavy-duty and light-duty idling restriction, speed limit decrease for heavy-duty diesel trucks, expanded I/M to include diesel vehicles, higher vehicle occupancies, idle reduction infrastructure, intelligent transportation systems, freeway and arterial bottleneck programs, bicycle and pedestrian programs, congestion (value) pricing, drive-thru service restrictions, parking cash-out, pay-as-you-drive, transit off-peak pass, traffic signal improvements, and fare-free transit-system-wide on ozone action days. Cost effectiveness was estimated to be from minus $137,883 (savings) to $106,686 per ton emission reduced.

The TCQE selected a subset of 61 control measures proposed by NCTCOG to include in the proposed 2007 8-Hour SIP for Dallas-Fort Worth (DFW) and Houston-Galveston-Brazoria (HVB) metropolitan area. The TCQE chose to focus on measures that can be implemented by 2009 which can provide quantifiable NOx reductions from major sources such as power plants, boilers, internal combustion engines, and cement kilns units. For VOC reductions, the TCQE focused in under-estimated and under-reported sources such as storage tank's roof landing, flash emissions, degassing of storage tanks, transport vessels, and marine vessels. For on-road and off-road mobile source control measures, the TCQE recommended to adopt California mobile source standards and supported several voluntary measures proposed by the SCAQMD. The TCQE rejected all the control measures that were not included in the SCAQMD's 2007 AQMP based on the reasons that these measures either would not accelerate the attainment date, were not enforceable, emission reductions could not be quantified or would not be significant, or would potentially have adverse impacts. As shown in Table A-1 of Attachment A, the SCAQMD's Draft AQMP includes all control measures that are recommended by the TCQE for the Dallas-Fort Worth (DFW) and Houston-Galveston-Brazoria (HVB) metropolitan areas in their 2007 draft AQMPs.

Midwest States

The five states of the Midwest Regional Planning Organization (RPO), including Illinois, Michigan, Wisconsin, Indiana, and Ohio, are considering adopting additional control measures as part of their planning to achieve regional haze goals and to attain the ozone and PM2.5 National Ambient Air Quality Standards (NAAQS). The Lake Michigan Air Directors Consortium (LADCO) issued a contract to MACTEC Engineering and Consulting to identify and evaluate candidate control measures to support the state's air quality planning activities. Under this contract, MACTEC was tasked to identify candidate control measures for regional haze, PM2.5, and ozone; collect information to support the Best Available Retrofit Technology (BART) engineering analysis required by the regional haze rules; conduct a technical and economic assessment of available control measures; and conduct a comprehensive assessment of Reasonably Available Control Technology (RACT) for VOC and NOx.

MACTEC carefully reviewed hundreds of control measures and recommended a preliminary list of 70 control measures. After further analyses using criteria such as costs for implementation, and timing to implement the control measures to meet the attainment dates, MACTEC finalized a list of 17 control strategies focusing on further control electric generating units; industrial, commercial, and institutional boilers; petroleum refineries; iron and steel plants, Portland cement plants, chemical plants, industrial surface coating, industrial solvent cleaning (degreasing), architectural and industrial maintenance (AIM) coatings; printing presses; portable fuel container, auto refinishing, consumer solvents, gasoline dispensing facilities; asphalt paving; gasoline highway vehicles, diesel trucks and non-road engines. Cost-effectiveness of the control measures was reported from $200 - $20,000 per ton VOC reduced, $700 - $4,493 per ton NOx, and $800 - $6,912 per ton SOx.

As shown in Table A-1 of Attachment A, District staff includes all control measures that are suggested by the Midwest RPO to their five states including Illinois, Michigan, Wisconsin, Indiana and Ohio.

TABLE A-1

Control Measures from Other Districts

This table lists the proposed control measures developed by San Joaquin Valley, Sacramento, Bay Area, North Central Texas Council of Governments, and Lake Michigan Air Directors Consortium (LADCO) or Midwest Regional Planning Organization (Midwest RPO) for their respective ozone plans. The District's current rules and regulations have equivalent or greater stringency than other agencies' rules and regulations and proposed control measures in their respective SIPs with few exceptions, and as discussed in Appendix VI, the District commits to monitor the rule development of other agencies and, if necessary, further study and reevaluate the feasibility, costs and cost effectiveness, and air quality benefits of further controls.

Control Measure Concept	**2007 AQMP Control Measure [2]**
San Joaquin's Control Strategies for Stationary Sources [1]	
Develop alternatives for open burning	BCM-04
Increase best management practices and add-on control for confined animal facilities	MCS-07
Lower NOx standards for boilers, steam generators and process heaters rating 2-5 mmbtu/hr (potentially 9ppmv with low NOx and 6 ppmv with SCR and SNCR)	MCS-07
Promote the use of electric heaters to replace boilers, steam generators and process heaters from 2-5 mmbtu/hr by incentives	FLX-01
Lower NOx standards for boilers, steam generators and process heaters rating more than 5 mmbtu/hr to 6 ppmv potentially ppmv with SCR and SNCR	MCS-07
Lower NOx standards for stationary gas turbines by 50% (current at 5 ppmv-50 ppmv for gas-fueled turbines, 3 ppmv for units >10 MW combined cycle, 25 ppmv -50 ppmv for liquid fueled turbines)	MCS-07
Promote electrification and accelerate replacement of ICEs less than 50 bhp by incentives	FLX-01
Lower NOx limit for glass melting furnaces (SCR technology)	MCS-07
Lower NOx limit for residential water heaters based on South Coast Rule 1121 limit and accelerate replacement with electric units through incentives	FLX-01
Develop Alternative Compliance Programs for previously regulated sources where additional controls are determined to be extremely expensive (e.g. large boilers)	FLX-01
Further control on composting and biosolids, implementing BACT and other districts measures.	MCS-07
Composting Green Waste	MCS-04

Note: 1) San Joaquin Valley developed and included 19 control measures as shown in this table for their 2007 AQMP; and identified additional 20 areas that would require further studies that would be conducted in 2008-2012; 2) In Control Measure MCS-07, the District commits to monitor the rule development of other agencies, and conduct further analysis to determine the feasibility, air quality benefits, and incremental costs/cost effectiveness of further controls if needed. In Control Measure FLX-01, the District proposes to implement a Carl Moyer-type incentive program for stationary sources.

TABLE A-1 (continued)

Control Measures from Other Districts

Control Measure Concept	**2007 AQMP Control Measure** [2]
Polystyrene Foam Operations – Lower VOC limits or increase control efficiency of control equipment.	MCS-01 MCS-07
Wine Fermentation and Storage	No Source
Flares Control – incorporating experiences from BAAQMD and SCAQMD rules	Existing rule in place
Soil Decontamination – Increase overall capture and control efficiency and eliminate allowances for aeration	MCS-07
Gasoline Storage & Transfer – Removal of exemptions, increase inspection frequency, increase control efficiency, and implementing other measures	MCS-07
Aviation Fuel Transfer – Reduce emissions associated with loading/unloading and fugitive emissions associated with aviation fuel transfer and storage	MCS-07
Architectural Coatings Rule – Lower VOC limits to match those in other districts such as SCAQMD and where possible provide incentives for non-use of high VOC coatings during high ozone days.	SC-LTM-03
Solvent Cleaning Operations – Lower allowable VOC content to match other air districts	MCS-07
Adhesives – Lower certain VOC limits, increase control efficiency requirements to 95%, require use of HVLP spray equipment.	MCS-07
Sacramento's Control Strategies for Stationary Sources	
Architectural Coatings –Lower VOC limits	SC-LTM-03
Automotive Refinishing – Lower VOC limits	MCS-07
Degreasing/Solvent Cleaning – Lower VOC limits	MCS-07
Graphic Arts–Lower exemption level & cleaning solvent limits	MCS-07
Natural Gas Production and Processing – Establish leak inspection frequencies and repair periods	FUG-01
Unspecified Coatings - Impose VOC limitations for coating operations that have not been covered by the existing rules, establish requirements for transfer efficiency, surface preparation and cleanup	MCS-07
Asphalt Concrete - Low NOx burners/Flue gas re-circulation	MCS-07
Boilers, Steam Generators, and Process Heaters – Lower standards	MCS-07
IC Engines - High percentage of the engines are registered as emergency power backup. Require installation of new emissions reduction technologies	MCS-07
Large Water Heaters and Small Boilers – Establish limit for units from less than 75,000 btu/hr – 1 mmbtu/hr.	MCS-07

Note: 2) There are two general District's control measures in this table: a) Control Measure MCS-07 – Application of All Feasible Measures in which the District commits to monitor the rule development of other agencies, and conduct further analysis to determine the feasibility, air quality benefits, and incremental costs/cost effectiveness of further controls if needed.; and b) Control Measure FLX-01 – Economic Incentive Programs in which the District proposes to implement a Carl Moyer-type incentive program for stationary sources.

TABLE A-1 (continued)

Control Measures from Other Districts

Control Measure Concept	**2007 AQMP Control Measure** [2]
Bay Area's Control Strategies for Stationary Sources	
Auto Refinishing - Reduce VOC limits for some coating categories	MCS-07
Graphic Arts Operations - Reduce VOC limits for flexographic ink and clean up solvent	MCS-07
High Emitting Spray Booths - Require additional controls on spray booths that emit >20 tons per year	MCS-07
Polyester Resin Operations - Reduce allowable monomer content for some types of polyester resins	MCS-07
Wood Coating Operations - Reduce VOC limits for some coating categories	MCS-07
Flares - Minimize flaring	MCS-07
Gasoline Bulk Terminals and Plants - Require automatic shutoff and backpressure monitors, set more stringent leak, emission standards	MCS-07
Marine Loading Operations - Control additional categories, set more stringent leak standards and/or control housekeeping emissions	MCS-07
Organic Liquid Storage - Tighten existing requirements and/or control lower vapor pressure liquids	MCS-07
Pressure Relief Devices - Improve enforceability of rule	MCS-07
Wastewater Systems - Control emissions from wastewater collection systems	MCS-07
Industrial, Institutional and Commercial Boilers - Extend existing limits to smaller boilers and/or set a more stringent standard	MCS-07
Large Water Heaters and Small Boilers - Require new, small boilers and large water heaters to meet NOx limits	MCS-07
Stationary Gas Turbines - Implement BARCT NOx limits on existing turbines	MCS-07
Energy Conservation - Educate government, industry and the public in energy efficient choices	MCS-03
North Central Texas's Control Strategies	
• **Stationary Sources**	
Adopt BARCT to existing sources and BACT to new sources of electric generating units, boilers, petroleum refineries, iron/steel plants, Portland cement and chemical plants	MCS-07
Architectural & Industrial Coatings	MCS-01
Area Source Credit for Energy Conservation and Efficiency	MCS-03
Cold Cleaning Regulations	MCS-07
Commercial and Consumer Products Requirements	MCS-07 SC-LTM-03

Note: 2) There are two general District's control measures in this table: a) Control Measure MCS-07 – Application of All Feasible Measures in which the District commits to monitor the rule development of other agencies, and conduct further analysis to determine the feasibility, air quality benefits, and incremental costs/cost effectiveness of further controls if needed.; and b) Control Measure FLX-01 – Economic Incentive Programs in which the District proposes to implement a Carl Moyer-type incentive program for stationary sources.

TABLE A-1 (continued)

Control Measures from Other Districts

Control Measure Concept	**2007 AQMP Control Measure** [2]
Fuel Hose Permeation	None
Glycol Dehydrators	MCS-07
NOxEAT Software	None
Boilers & Heaters (All types)	MCS-07
Stationary IC Engines	MCS-07
Kilns (e.g. lime, aggregate, brick, Portland cement)	MCS-07
Alternate Energy Sources to Reduce Emissions from Electricity Generation	FLX-01
• **Mobile Sources**	
Aircraft Emissions Standards	EPA's Jurisdiction
California Portable Engine Rule	Existing Rule
Emission Reduction Contract Incentives with Public Funding	
Enhanced TERP Program – provide funds for HHDT retrofit/replacement	MOB-04
Freight Rail Infrastructure Improvements	TCM
Lawn Mower Replacement Program	MOB-02
Limitations on Idling of Heavy-Duty Construction Equipment	ARB-OFFRD-04
Locomotive Idling Reductions	Existing Rule 3502
Hybrid-Electric Locomotives	ARB-OFFRD-02 SC-OFFRD-04
Tier II Locomotive Emission Standards	ARB-OFFRD-02 SC-OFFRD-04
1974 and Older Model Year Vehicles I/M Exemption	ARB-ONRD-01
Additional Taxi Fleet Emissions Testing	ARB-ONRD-01
AirCheck Texas Repair and Replacement Assistance Program	None
Bicycle and Pedestrian Programs	TCM
California Low Emitting Vehicle (LEV) II Standards	Existing Std
CARB 2007 On-Highway Diesel Engine Standards	Existing Std
Clean Fleet Vehicle Procurement Policy/Clean Fleet Program	ARB-ONRD-04
Congestion (Value) Pricing	None
Drive-Thru Service Restrictions	None
ETR-Best Workplaces Program	TCM
ETR-Transit Subsidy Programs	TCM
ETR-Vanpool/Carpool Programs	Existing Program
Expanded I/M to Include Diesel Vehicles	ARB-ONRD-01
Freeway and Arterial Bottleneck Program	TCM
Heavy-Duty Vehicle Idling Restriction and Policy	Existing Std
Higher Vehicle Occupancies	TCM
Idle Reduction Infrastructure	Existing Program

Note: 2) There are two general District's control measures in this table: a) Control Measure MCS-07 – Application of All Feasible Measures in which the District commits to monitor the rule development of other agencies, and conduct further analysis to determine the feasibility, air quality benefits, and incremental costs/cost effectiveness of further controls if needed.; and b) Control Measure FLX-01 – Economic Incentive Programs in which the District proposes to implement a Carl Moyer-type incentive program for stationary sources.

TABLE A-1 (continued)

Control Measures from Other Districts

Control Measure Concept	**2007 AQMP Control Measure [2]**
Intelligent Transportation Systems	TCM
Light-Duty Vehicle Idling Restriction and Policy	None
Military Ground Equipment Emissions Testing	None
Lower Reid Vapor Pressure	ARB-ONRD-03
Traffic Signal Improvements	TCM
Transit Off-Peak Pass	TCM
Stricter I/M Policy Enforcement	ARB-ONRD-1
Speed Limit Decrease for Heavy Duty Diesel Trucks	None
Parking Cash-Out	None
Pay-As-You-Drive	None
Fare-Free Transit, System-Wide on Ozone Action Days	None
Midwest RPO's Candidate Control Strategies for Stationary Sources	
Adopt BARCT to existing sources and BACT to new sources of electric generating units, boilers, petroleum refineries, iron/steel plants, Portland cement and chemical plants	On-going Program MCS-07
Cold cleaning – Establish above RACT standards for degreasing, cold cleaning (vapor pressure maximum of 1 mm Hg at 68 degrees F & VOC limit of 0.21 lb/gal)	
Vapor degreasers - Expand MACT standards to all vapor degreasers, regardless of solvent types	Existing Std
Lithographic printing - Adopt 90% control efficiency and more stringent VOC limits (e.g. SCAQMD limits) for inks, coatings and fountain solutions	MCS-07
Rotogravure and flexographic printing - Adopt MACT standards for control equipment, 100% capture efficiency, 92% overall control efficiency for publication, 95% for other gravure and flexo	MCS-07
Petroleum Tanks - Lower tank size applicability for petroleum external floating roof tanks and fixed roof tanks (e.g. include 10,000 gallons tanks) and make requirements more stringent	MCS-07
Automotive Coating and Refinishing – Increase RACT stringency 100% capture and 95% control efficiency	MCS-07
Metal Can Coating – Increase RACT stringency 100% capture, 97% control for new sources, and 95% for existing.	MCS-07
Paper and other web surface coating – Lower VOc limit to 2.2 lbs/gal or increase RACT stringency to 100% capture, 90 % -95% control	MCS-07
Wood furniture coating – Adopt SCAQMD VOC limits and revisit the exemption level	Existing Std

Note: 2) There are two general District's control measures in this table: a) Control Measure MCS-07 – Application of All Feasible Measures in which the District commits to monitor the rule development of other agencies, and conduct further analysis to determine the feasibility, air quality benefits, and incremental costs/cost effectiveness of further controls if needed.; and b) Control Measure FLX-01 – Economic Incentive Programs in which the District proposes to implement a Carl Moyer-type incentive program for stationary sources.

Air Resources Board

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Alan C. Lloyd, Ph.D.
Agency Secretary

Arnold Schwarzenegger
Governor

November 4, 2005

Mr. David L. Crow
Air Pollution Control Officer
San Joaquin Valley Air Pollution Control District
1990 East Gettysburg
Fresno, California 93726-0244

Dear Mr. Crow:

Please find enclosed three copies of the report titled "San Joaquin Valley Air Pollution Control District Program Review Report of Findings and Recommendations." The report is based on our evaluation of the San Joaquin Valley Air Pollution Control District's (District's) air pollution control program.

I would like to take this opportunity to express our pleasure in working with you and the staff of the District. We appreciate your comments on the draft report and found them useful in helping us finalize the report. We hope this report will be useful to you in enhancing the District's air pollution control program.

Consistent with our policy on program evaluations, I am requesting that you prepare an action plan identifying your response to the report recommendations. I would like to receive the action plan by December 30, 2005. I also request that you submit a progress report on implementing the action plan by June 30, 2006.

Once again, I thank you for the cooperation that District staff demonstrated during the program evaluation. If you have any questions regarding this matter, please contact me at (916) 445-4383 or Bob Fletcher, Chief, Stationary Source Division, at (916) 324-8167.

Sincerely,

Catherine Witherspoon
Executive Officer

Enclosure

cc: Bob Fletcher, Chief
Stationary Source Division

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Website: http://www.arb.ca.gov.

California Environmental Protection Agency

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California Environmental Protection Agency
AIR RESOURCES BOARD

San Joaquin Valley Air Pollution Control District Program Review

Report of Findings and Recommendations

Prepared by the
California Air Resources Board
Stationary Source Division
October 2005

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REPORT OF FINDINGS AND RECOMMENDATIONS

Introduction

Air Resources Board (ARB) staff conducted a review of San Joaquin Valley Air Pollution Control District's (District) air quality program. This program review was conducted as part of ARB's oversight role with respect to air pollution control and air quality management districts (districts) in California and is in accordance with Section 41500 of the Health and Safety Code (HSC). The purpose of district program reviews is to provide constructive feedback to the districts to assist districts in carrying out their air quality programs. The program reviews acknowledge significant district accomplishments and identify and make recommendations for program improvement.

This review of the District's program was comprehensive in nature. Areas reviewed by ARB staff consisted of the District's compliance, permitting, portable equipment registration, rule development, emissions inventory, AB 2588 "Hot Spots," Carl Moyer, and ambient air monitoring programs. Staff from five ARB Divisions participated in this effort.

This program review commenced with an entrance conference held in the District's Fresno office. During the conference, an outline of proposed review activities was presented to District management. ARB staff's presentation covered the scope, method and content of the program evaluation, general logistics and time lines related to the effort. Following the entrance conference, a detailed review of the air pollution control activities of the District was conducted including major field inspection activities. ARB staff examined files and records from the preceding two years. Once the field and site review work was completed, the data obtained were reviewed and analyzed, and initial findings and recommendations were prepared. Several discussions were held with the District, and the District provided comments on drafts of the review document.

ARB has asked the District to submit an action plan within 90 days that sets forth how the District intends to address the recommendations that resulted from our review. Periodic reports are expected from the District that summarizes steps taken to carry out the action plan.

The District's air program was last reviewed in 1994 at the request of the then newly unified District to provide input on strengths and weaknesses in critical program areas. To accommodate the District's desire for a comprehensive review, the scope of this year's review was expanded beyond the traditional permitting and compliance components to cover other areas like emissions inventory, air monitoring, rules and regulations, and air toxics programs. For purposes of historical perspective, the current District is the sole air quality management organization in the San Joaquin Valley Air Basin and was formed in 1992 by the unification of eight individual county districts.

The program review findings and recommendations presented in this report are based on an office review of various program areas, interviews with staff and management, and field data from facility inspections, diagnostics testing of gasoline dispensing facilities, and source testing of selected stationary sources. As part of the review, ARB staff also interviewed a number of stakeholders, including business, agriculture, and environmental representatives. Their comments are included in this report.

District Information

The District's jurisdiction is coincident with the area contained in the San Joaquin Valley Air Basin, encompassing nearly 25,000 square miles. The area includes Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare Counties, and the valley portion of Kern County. Valley population has grown from 2.9 million in 1994 to approximately 3.3 million in 2002, and is expected to exceed 3.6 million by 2005. In 1994, approximately 69 million vehicle-miles were traveled each day within the District boundaries. In 2003, an estimated 90 million vehicle-miles are driven daily.

The District maintains regional offices in Modesto, Fresno, and Bakersfield, with headquarters in the Fresno office. In the 2002 – 2003 fiscal year, the District was staffed by a total of 233 positions, with a budget of approximately 34 million dollars. The District's organization includes the Compliance Division with 70 positions, the Permit Services Division with 67 positions and the Planning Division with 54 positions. The balance of 42 positions are for General Administration, Personnel, Administrative Services, and the District Counsel.

Attainment Status

Ozone

The San Joaquin Valley experiences some of the worst ozone pollution in the country, with both high levels and frequent episodes. Since 1980, pollution controls have cut ozone-forming emissions substantially, despite growth in population, vehicle travel, and the expanding economy. The emission controls have improved the long-term air quality trends, decreasing the number of days over the federal 1-hour standard and the geographic scope of the problem. However, based on the United States Environmental Protection Agency's (U.S. EPA) more protective 8-hour standard, Valley residents still breathe unhealthy levels of ozone on about a third of the days in a year.

The San Joaquin Valley was originally classified as a serious nonattainment area for the federal 1-hour ozone standard, with a 1999 attainment deadline. The Valley did not attain in 1999 and was reclassified in 2001 by U.S. EPA as a severe area with a 2005 attainment deadline. The District then adopted the 2002 and 2005 Rate of Progress Plan that satisfied all the planning requirements for

severe nonattainment areas except for the attainment demonstration. In 2003, the District Board recognized the difficulty in attaining the standards by 2005 and voted to request a voluntary reclassification to extreme nonattainment. U.S. EPA granted the request in May 2004, reclassifying the Valley from severe to extreme nonattainment, which requires tighter emission controls and a demonstration that the region would attain by 2010. In October 2004, the District adopted the 2004 Ozone Plan. The 2004 Ozone Plan is designed to attain the federal 1-hour ozone standard by 2010 and fulfills the remaining legal requirements of the federal 1-hour ozone planning.

In June 2004, U.S. EPA's more health-protective 8-hour ozone standard went into effect. Under the federal 8-hour standard, the Valley is classified as a serious nonattainment area, with a 2013 attainment deadline. The District is required to prepare an 8-hour ozone State Implementation Plan (SIP) by June 2007. ARB staff has begun working with staff from districts throughout California to prepare the necessary inventory and modeling updates for the 8-hour ozone SIPs.

The San Joaquin Valley is also a severe nonattainment area for the State 1-hour ozone standard. State air quality standards are more health protective than the federal standards.[1] The District is pursuing an all feasible measures strategy to attain the State standard.

Particulate Matter

Particulate matter consists of a mixture of fine airborne solid particles and liquid droplets (aerosols). The size of particulate matter can vary from coarse wind blown dust particles to fine particles directly emitted or formed from chemical reactions occurring in the atmosphere. Federal and State particulate matter standards focus on PM10 and PM2.5. PM10 comprises particles with an aerodynamic diameter less than or equal to 10 microns, while PM2.5 are particles less than or equal to 2.5 microns in aerodynamic diameter.

In the Valley, particulate matter varies significantly by season. The highest peak concentrations occur during October through January, while spring and summer experience the lowest peak concentrations. Over the last decade, substantial progress has been made reducing ambient levels of PM10 and the number of days over the federal PM10 standard.

The federal 1990 Clean Air Act Amendments established air quality standards for PM10 that consist of a 24-hour standard and an annual standard. The Valley was initially classified as a moderate PM10 nonattainment area, but could not demonstrate attainment by the 1994 attainment date. As a result, in 1993, U.S. EPA reclassified the Valley as a serious nonattainment area. The District submitted a new PM10 SIP in 1997, but subsequently withdrew it due to likely

[1] ARB approved a new State 8-hour ozone standard in April 2005, with special consideration for children's health. The State 1-hour ozone standard is retained.

U.S. EPA disapproval. In 2003, the District submitted the 2003 PM10 Plan designed to attain the standards by 2010, and fulfilled all outstanding legal requirements under the federal PM10 standard. The 2003 PM10 Plan also includes a commitment to update the Plan in 2006 to ensure continued progress towards meeting the 2010 attainment deadline.

In 2004, U.S. EPA published final designations for the federal PM2.5 standards. The Valley is designated as a nonattainment area, and the District is required to submit a PM2.5 SIP in 2008.

The San Joaquin Valley is also designated as a non-attainment area for both the State PM10 standards and the State PM2.5 standard. As with ozone, the State air quality standards for particulate matter are more health protective than the federal standards.

Findings and Recommendations

Presented below are findings and significant recommendations for program improvement, by program area. Also presented are summaries of the District's actions with respect to the 1994 program review findings. Finally, a summary of the stakeholder comments is presented. Appendices A through J following this Report of Findings and Recommendations provide details regarding individual program areas, additional suggestions for program improvements, progress made by the District since the 1994 program review, and stakeholder comments.

The District should continue to ensure that it is implementing all reasonable emission reduction opportunities for stationary sources. We are aware of the many challenges (i.e., geographical, meteorological, and population growth rate) faced by the District as it works towards improving air quality in the Valley. We also are cognizant of the current budgetary challenges faced by government agencies. The recommendations contained in this report are designed to constructively assist the District with its clean air efforts in consideration of these factors.

A. Compliance Program

The ARB staff evaluated the District's compliance program with respect to inspection of permitted facilities, documentation requirements, and adherence to policies and procedures. Appendix A contains a detailed discussion of our review of the compliance program. To accomplish this task (office review), ARB staff reviewed numerous source files, interviewed District staff, and reviewed existing policies and procedures. Our review of the compliance program includes a discussion of associated elements such as legal action, complaint handling, equipment breakdown procedures, continuous emissions monitoring, source testing, asbestos demolition and renovation program, high priority violators, variances, training, and agricultural burning.

In addition to the office review, ARB staff obtained compliance data by conducting inspections of selected permitted facilities. The field portion included joint inspections by ARB and District staff of 206 industrial facilities. Stack testing to verify compliance with permitted emission rates was conducted at five facilities. ARB staff (in cooperation with District staff) also conducted diagnostics testing at 80 gasoline dispensing facilities.

A.1 Source Inspection Program

The source inspection program serves as the compliance verification component of District operations. Inspections provide feedback on the actual compliance status of permitted facilities. As part of this program, the District inspects permitted facilities on a periodic basis, documents findings in the form of inspection reports, and issues violation notices to facilities found in violation.

The District's inspection program was evaluated with respect to guidance policies, actual inspection frequency, quality of field inspections, and documentation of violations discovered during the inspection process. The District has nearly 7400 stationary sources, including about 2450 gasoline dispensing facilities (GDFs). The available inspection staff totals 53.5 positions, about 23 percent of the District's workforce.

ARB staff reviewed Compliance Division policy and procedure documents, examined selected reports, and sampled District files as part of this review. The District provided an electronic spreadsheet report of Notices of Violation (NOVs) issued in calendar years 2001 and 2002, which was of particular use in deriving the tabulated information. In addition, ARB staff interviewed District personnel including field inspectors, settlement staff, and Compliance Division management during the program review. Observations and data from joint source inspections also contributed to the findings.

The District has written policies and procedures providing guidance on all facets of this program ranging from desired inspection frequency to inspection techniques, and definition of violations for various rules. The District conducts annual inspections at most facilities, including all major sources.[2] The review showed that the District follows its inspection frequency guidelines and generally reaches its inspection goals. The District has a policy document entitled, "Variable Inspection Frequency" that guides compliance inspection frequencies in order to maximize efficiency. District policy allows for scheduling compliance inspections at frequencies that vary from 3 to 24 months depending on source category (for example internal combustion engines) and compliance record. While we believe that annual inspections for all permitted sources are desirable

[2] The District's major source emission thresholds during calendar years 2002 and 2003 are given below. Pollutant thresholds are in tons per year (tpy):
VOC – 25 tpy, NOx – 25 tpy, CO – 100 tpy, PM10 – 70 tpy, SOx – 70 tpy

as a goal, we understand that staffing resources may prevent the District from achieving this goal in all instances.

The District generally conducts thorough inspections and follows its policies and procedures that pertain to inspections and compliance verification. Inspectors use portable analyzers for NOx and CO effectively. This finding is based upon review of completed inspection reports from office files and observation of inspection techniques during the joint inspections conducted with ARB staff at 206 facilities. However, file review and interviews indicate that additional equipment and sampling and analysis capability would benefit the District's inspection program. For example, the District should acquire hydrocarbon vapor analyzers for quantifying perchloroethylene leaks at dry cleaning machines. Also, the District inspectors should place more reliance on sampling and analysis of coatings and solvents for volatile organic compound (VOC) content. Currently, minimal sampling is taking place and inspections rely on Material Safety Data Sheets for compliance verification (typically, less than 10 samples are drawn per year).

In general, inspection reports and subsequent enforcement actions are well documented. File review indicates that notices of violation (NOVs) are generally issued when violations are documented in accordance with District guidelines. District NOV guidelines establish clear procedures for the issuance of NOVs and subsequent compliance verification. Table I shows the NOV issuance for the five broad source categories identified by the District for calendar years 2001 and 2002. Table I also shows that the southern region generates more stationary source NOVs than the other regions considering the number of sources in each region. This is consistent with our findings during the joint inspections where ARB staff observed that the southern region inspectors were more aggressive in documenting violations. A contributing factor to the higher rate of NOV issuance is the fact that some of the permitted facilities in the southern region are larger and more complex than the other regions. Some of the large facilities have hundreds of permit conditions making it more probable for some noncompliance issues to emerge during an inspection.

Table I. NOVs Issued in 2001 and 2002

	Asbestos	Agricultural/ Open Burning	Other*	Stationary Sources (non-GDF)		Gasoline Dispensing Facilities (GDF)		Total
				# NOVs	Approx. # Facilities	# NOVs	Approx. # GDFs	
North	63	261	28	297	1556	165	880	814
Central	4	329	35	432	1451	484	790	1284
South	42	164	49	895	1913	367	777	1517
Total	109	754	112	1624	4920	1016	2447	3615

* The District uses the "other'' category for violations such as excessive construction dust, nuisance complaints, or unpermitted portable equipment.

Recommendations: The District should strive for annual inspections at all permitted sources and quarterly inspections for all sources with actual emissions greater than 25 tons per year. The District should have in-house laboratory capability or have a contract with a local laboratory to analyze solvent and coating samples.

A.2 Results of Source Inspections Conducted by ARB/District Staff

As part of the program review, ARB/District staff conducted 206 stationary source inspections (excluding GDFs), diagnostics testing at eighty GDFs, and source testing at five facilities. Results are discussed below.

A.2.1 Inspections at Stationary Sources (excluding GDFs)

Joint inspections were conducted at 206 facilities to obtain field data and actual compliance rates. District inspectors generally exhibited good inspection technique and issued NOVs and notices to comply (NTCs) appropriately. Table II shows the number of facilities and permit units inspected in each of the three regions as well as the number of NTCs and NOVs issued as a result of the inspections. Each NTC and NOV has a unique number for tracking purposes. NTCs are typically issued for minor violations (such as recordkeeping problems), whereas NOVs are issued for emission related violations. Overall, compliance statistics compare favorably to other districts recently reviewed.

Table II

Region	Facilities Inspected	Permit Units Inspected	NTCs	NOVs
Northern	95	421	3	17
Central	58	225	7	15
Southern	53	189	1	24
Total	**206**	**835**	**11**	**56**

Table III presents the District-wide violation rates for facilities and permit units in each source category. A facility is considered to be in violation if one or more of its permit units is in violation. Violations that result in NOVs are categorized as emission related, whereas those that result in NTCs are considered to be minor. The coatings category includes metal, wood, and plastic product coatings other than vehicle coatings. The Other VOCs category encompasses polyester resin and printing operations. The five Title V facilities in the miscellaneous category consist of two glass plants, two landfills, and one chemical waste management facility.

Table III

Source Category	Facilities Inspected	Permit Units Inspected	Violation Rate Permit Unit Basis				Violation Rate Facility Basis			
			Minor (Only)		Emission Related		Minor (Only)		Emission Related	
			No.	%	No.	%	No.	%	No.	%
Coatings	31	105	3	3%	4	4%	2	6%	4	13%
Auto Coatings	16	18	0	0%	2	11%	0	0%	2	13%
Other VOCs	11	45	0	0%	6	13%	0	0%	4	36%
Dry Cleaning	25	32	3	9%	4	13%	3	12%	4	16%
ICEs	22	45	0	0%	9	20%	0	0%	6	27%
PM (Aggregate Type Sources)	16	50	1	2%	4	8%	1	6%	4	25%
Power Plants	11	80	4	5%	3	4%	1	9%	3	27%
Food Processing	26	177	0	0%	12	7%	0	0%	7	27%
Petroleum	10	56	0	0%	5	9%	0	0%	2	20%
Incinerators	4	7	0	0%	0	0%	0	0%	0	0%
Misc.	34	220	1	0%	3	1%	1	3%	3	9%
Total	**206**	**835**	**12**	**1%**	**52**	**6%**	**8**	**4%**	**39**	**19%**

Recommendations: None

A.2.2 Diagnostics Testing of Gasoline Dispensing Facilities

This part of the program review was conducted in two phases. During the initial phase in 2003, ARB staff visited a total of 83 gasoline dispensing facilities (GDFs) during the In-Use Vapor Recovery portion of the program review. The second phase was recently conducted to determine the impact of rule improvements not reflected during the original inspections. During the second phase, 72 additional GDFs were inspected. The entire testing effort was conducted in cooperation with District staff who participated in the testing and were also present to take enforcement action at those facilities that failed the tests.

During the initial phase, 29 of the 83 facilities were balance type Phase II systems and the remaining 54 facilities were of the vacuum-assist type Phase II systems. Three of the facilities could not be tested because wind gusts at the locations on the day of the test were sufficiently strong to adversely affect the pressure measuring devices.

Eighty facilities were tested using Test Procedure (TP) 201.3, Determination of 2-Inch Water Column Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities. Eleven facilities (14%) passed TP 201.3. These included nine vacuum-assist and two balance type facilities. The nine vacuum assist systems (consisting of 146 fueling points or nozzles) were then tested under TP 201.5, Air to Liquid Volume Ratio (A/L test). A total of 105 (72%) of the fueling points passed the A/L test. The two balance systems were tested under TP 201.4, Dynamic Back Pressure. Both facilities passed this test.

Of the 69 (86%) facilities that failed to meet the static pressure performance criteria, 43 of the facilities could not be pressurized in accordance with TP 201.3. Inability to pressurize is considered a gross failure of TP 201.3 and indicates a serious and significant leak of gasoline vapor to the atmosphere. The other 26 of the facilities could not hold the required pressure for the entire five minutes in accordance with the test procedure. As summarized in Table IV, 42 of the 51 (82%) vacuum-assist type installations did not successfully complete TP-201.3. These facilities were tagged out of service by District personnel. Tagging out of service vacuum-assist systems that fail TP 201.3 is required because the systems effectiveness is reduced by more than 5 percent. Twenty-seven of the 29 (93%) balance type installations accounted for the remaining failures and were tagged with a seven day notice to comply by District personnel. The less severe seven day notice to comply provision was applied to balance type installations because balance type systems that fail TP 201.3 experience less than a 5 percent loss in effectiveness as explained later in this section.

The results of the testing clearly showed the need for more work in this area to ensure that the gasoline vapor recovery systems are operating with the effectiveness that they demonstrated during certification. The significant loss in effectiveness of vacuum-assist type of systems combined with the cumulatively, potentially substantial, loss of effectiveness of balance type systems that fail TP 201.3 must be addressed and action taken to improve performance.

The ARB's Enhanced Vapor Recovery (EVR) regulations adopted on March 23, 2000 were intended to alleviate problems associated with equipment failures. The requirement for the installation of Phase I EVR by April 1, 2005 was the first step toward correcting problems associated with equipment durability. The implementation of Phase II EVR by January 2009 should further correct problems associated with equipment durability.

A review of gasoline dispensing rules from several districts shows that District Rule 4622 appears to contain stringent requirements. This rule, titled Gasoline Transfer Into Motor Vehicle Fuel Tanks, was amended September 19, 2002. The implementation of requirements for weekly or daily periodic maintenance and inspection of facilities based on monthly throughput was a first step in addressing performance failures resulting from poor maintenance. Removing the monthly throughput criteria and implementing a requirement for self-inspection of the facility each day the facility dispenses gasoline was expected to further mitigate problems associated with poor maintenance. Requirements for annual and semi-annual testing of gasoline dispensing facilities implemented in District Rule 4622 should have improved compliance with standards associated with EVR requirements.

In order to determine the impact of the program improvements implemented in the two years since the initial vapor recovery field work was conducted for this review, ARB staff recently revisited 72 GDFs in the District to perform TP-201.3. This was

done as a means to gauge the impact of the implementation of the Phase I EVR requirements and the rule amendments. Each one of these facilities should have been subject to and passed TP-201.3 at least once in between the rounds of testing conducted by ARB. In the latest testing, 34 facilities (47%) passed TP-201.3. These included 23 vacuum-assist and 11 balance type facilities.

Although results of the testing do illustrate an improvement in the performance of the vapor recovery systems, the compliance rate with TP-201.3 is still only 47 percent, as compared to 14 percent in 2003. Table IV summarizes the results for the two sets of TP-201.3 testing. From the 2005 results, 38 (53%) facilities failed to meet the static pressure performance criteria, 22 of which could not be pressurized. These results are somewhat disappointing when considering the extent of the changes that have been put in place to the vapor recovery programs at the State and District levels to raise the in-use performance of vapor recovery equipment.

Table IV

System Type	TEST PROCEDURE (TP) 201.3 RESULTS					
	2003			2005		
	Tested	Pass	Fail	Tested	Pass	Fail
Vacuum-assist	51	9	42	31	23	8
Balance	29	2	27	41	11	30

Particularly alarming is the continued poor performance of the GDF's equipped with balance systems to comply with the leak decay requirement. As summarized in Table IV, 30 of the 41 (73%) installations did not successfully complete TP-201.3. In two-thirds of these failures, the facilities could not be pressurized. It should be noted that balance type systems configured with open vent pipes to the atmosphere have historically demonstrated the ability to achieve the required 95 percent control of vehicle refueling emissions. Although, with the implementation of Phase I EVR, these systems are no longer allowed to operate with open vent pipes. Consequently, the emissions impact associated with a balance installation failing to comply with TP-201.3 is considered minor. However, it is still crucial to maintain the leak integrity at balance sites to ensure that the optimal reductions of refueling emissions are realized. Additionally, since the district has a high number of balance sites (1800) the cumulative emissions across the region may be substantial. Furthermore, it is anticipated that the penetration of balance sites will increase to fulfill regulatory requirements. This indicates that significant concerns remain with a major control strategy for the district and as stated earlier, action must be taken to improve vapor recovery system performance.

<u>Recommendations</u>: Although District Rule 4622 has been in place for almost two years prior to the most recent review of GDFs, a high number of stations still cannot comply with the static pressure performance requirement (TP-201.3). The District should consider adding more resources to the vapor recovery program. Currently, the District allocates 10.5 positions to the enforcement of

their vapor recovery rules. In a district as geographically large as the San Joaquin Valley, to assure an improvement in compliance, the District should allocate more resources to the enforcement of their vapor recovery rules.

A.2.3 Source Testing Results

As part of this review, abbreviated relative accuracy test audit (RATA) tests for NOx and CO were performed at four facilities. Continuous emission monitoring (CEM) systems at all four facilities passed the relative accuracy test requirements. Compliance testing for NOx and CO at one additional facility showed compliance with the permitted emission limits. These results are for reporting purposes only. No attempt should be made to conclude the compliance status of permitted facilities in the District based on this limited source testing activity.

Recommendations: None

A.3 Legal Action Program

The legal action program encompasses enforcement actions taken by the District after a facility is documented to be in violation of applicable rules and regulations. In particular, the program covers the mutual settlement of notices of violation issued to non-compliant sources and any civil actions that may follow unsuccessful mutual settlement attempts. The goal of the District's legal action program is to ensure that a facility returns to compliance before settlement, and that notices of violation are settled for penalties that are commensurate with the magnitude of the violation.

In general, the District's legal action program appears to be operating properly. Mutual settlement for the District is handled by the Central Office. The District has a good policy document for the administration of its mutual settlement program. This document includes a penalty schedule, NOV guidelines, and guidelines for transfer of cases to District Counsel.

The District is effective in collecting penalties from mutual settlement cases, while fostering communication and cooperation with the responsible party throughout the process. The District has increased penalty amounts since 1994. Most stationary source (non-GDF) penalties, which are directly emission related, are listed above $500 on the penalty schedule. Since 1994, the average settlement has increased from $723 to $1215. In 1999, the District adopted a size multiplier of 1 to 5 in computing penalties; the largest facilities are subject to a five-fold penalty increase. Our review indicates that the District has used the multiplier fairly and consistently. The District has an alternative settlement program for first time violators in GDF and burn cases. If the responsible party attends a District training class, a $150 credit is applied toward reducing the penalty. The District averaged 221 days from NOV issuance to settlement for calendar years 2001 and 2002. To ensure the effectiveness of the mutual settlement program, ARB staff recommends that the District strive to achieve a

target of 90 days for average case settlement time. We recognize that staffing constraints may have contributed to delays in case settlement. It is our understanding that the District has hired additional mutual settlement staff since the review period. This should expedite case settlement.

Penalties collected and recorded by early April 2003, from NOVs issued in 2001 and 2002, are categorized and tabulated in Table V. Table V also shows the average penalties and median settlements for five source categories.

Table V. Penalties Collected from NOVs Issued in 2001 and 2002

	North		Central		South		Total
	Settlements	Average Per Closed NOV (Median)	**Settlements**	Average Per Closed NOV (Median)	**Settlements**	Average Per Closed NOV (Median)	**Settlements**
Asb.	**$52,020**	$1,576 ($600)*	**$6,600**	$2,200 ($600)	**$37,300**	$1,622 ($400)	**$99,696**
Burn	**$65,332**	$375 ($300)	**$61,233**	$280 ($165)	**$52,954**	$430 ($337)	**$180,174**
Vapor	**$31,113**	$305 ($240)	**$88,376**	$259 ($180)	**$62,357**	$217 ($180)	**$182,430**
Stat.	**$206,013**	$1,296 ($600)	**$232,562**	$1,092 ($600)	**$1,702,013**	$3,692 ($1200)	**$2,200,078**
Other	**$9,910**	$762 ($600)	**$8,770**	$675 ($300)	**$35,985**	$1,799 ($600)	**$56,102**
Total	**$364,408**		**$397,541**		**$1,890,609**		**$2,652,558**

* Median penalty values are shown in parenthesis.

As shown in Table V, there is not a large difference between average and median settlement values for the vapor (GDFs) and open/agricultural burn cases. For the stationary source category, there is a significant difference between the median and average settlement values. For example, in the southern region the median settlement for stationary sources is $1200 as compared to the average value of $3692. This difference should be expected because this category covers sources ranging from dry cleaners and coating shops to power plants and oil refineries. In the southern region, 45 percent of the NOVs in Table V settled for under $1000. Seven percent of the NOVs settled in the range of $10,000 to $76,500. The difference between median and average values in the northern and central regions is not as pronounced (compared to southern region) because they do not have as many large sources.

Recommendations: To ensure the effectiveness of the mutual settlement program, ARB staff recommends that the District strive to achieve a target of 90 days for average case settlement time.

A.4 Complaint Program

The District's complaint handling program governs the investigations of complaints received from the general public. Air pollution complaints received by the District are an essential source of information. Timely and attentive response to air pollution complaints is critical to ensure protection of public health and to maintain public trust. The District's complaint program was evaluated with respect to the framework of best management practices to respond to complaints as described in the ARB/CAPCOA Complaint Resolution Protocol of October 2002. These include the receipt, evaluation, response, and resolution of air quality complaints and feedback to the complainant. The District received approximately 6,200 complaints for calendar years 2001 and 2002. Of these complaints, individual contributions include 37 percent from odors, 33 percent from smoke/burning, 20 percent from dust, and 10 percent miscellaneous.

ARB staff did a detailed review of five percent of the complaints received in calendar years 2001 and 2002. Based on the review, the District has a good program in place to receive, process, and investigate complaints, including an after-hour complaint response program. Complainants can talk to District staff during normal working office hours. Complainants can contact the District by dialing any of three dedicated toll-free telephone numbers. The toll-free numbers are found in the District's Internet web-site and the local telephone directory. Each dedicated toll-free number represents the number from one of the three regional offices (Modesto, Fresno, and Bakersfield).

The District has an after-hour complaint response program. When a complainant calls after-hours, an after-hour message service pages the on-call inspector. The on-call inspector is then notified that a complaint has been received. The inspector then calls the message center to get the complainant's information. The inspector then responds to the complaint.

Overall, 80 percent of the complaints received are investigated within 24 hours. Complainants are informed of complaint status if the complainant leaves his/her name and telephone number.

Recommendations: None

A.5 Equipment Breakdown Program

The breakdown program is an integral component of the District's compliance program. The District's breakdown rule protects a source from enforcement action by the District, if the source reports a legitimate breakdown condition. Pollutants can be emitted during a breakdown episode at higher concentrations than during controlled operation. Therefore, it is important that breakdown occurrences are minimized and are corrected quickly. The District's Equipment Breakdown program was evaluated with respect to receipt, investigation, and

resolution of equipment breakdowns. The District received approximately 1600 breakdown reports during calendar years 2001 and 2002. Overall, the District's breakdown program is operating in a satisfactory manner. Our determination is based upon the detailed review of breakdown analysis reports and the fact that the District has a demonstrated system in place for receiving and resolving reported breakdowns. This includes identifying frequent breakdowns from the same equipment. However, ARB staff found that the District does not incorporate excess emissions arising from breakdown episodes into its emission inventory.

Recommendations: The District should consider quantifying emissions from equipment breakdowns and include them in their emissions inventory.

A.6 Continuous Emission Monitor Program

A comprehensive and efficient continuous emission monitor (CEM) program is an effective tool for compliance verification and a significant component of a district's compliance program. CEM reports allow District staff to verify a source's compliance status on a continuous basis. The District has a modern system for retrieving emissions data from facilities equipped with continuous emission monitors (CEMs). The District's telemetry system was installed in 2001 and polls 70 CEM systems within the District. The District can generate a daily and monthly polling report showing the daily and hourly operating averages for each facility. Each CEM has an alarm system set at each pollutant's permitted emission limit. The alarm system reads the telemetry system and notifies the District if emission limits are exceeded.

CEMs are tested at the prescribed frequency. District policy calls for enforcement action to be taken against sources with excess emissions or those who fail source test protocols. Our review found documented examples where the District took enforcement action against sources with excess emission reports, CEM downtime, or failed relative accuracy test audits /source tests.

The District has a CEM Excess Emissions Reporting Form for forwarding excess emission reports to the Air Resources Board (within 5 working days) as required by HSC section 42706. A minor concern in this area is that the Central and Northern Regions do not report CEM Excess Emissions to ARB.

Recommendations: CEM Excess Emissions in the Central and Northern Region should be reported to ARB within 5 working days as required by HSC section 42706.

A.7 Source Testing Program

Source testing of specific points in a process or its control devices is usually the only way to determine whether actual emissions are in compliance with a unit's

allowed emission limits. Source testing is also used to verify the accuracy of continuous emission monitors. Source testing confirms that equipment can operate in a normal representative mode while complying with its permitted emission limits. Equipment units are tested at the prescribed frequency by ARB certified contractors. The District witnesses most of the source tests and reviews all of the source test results. The District takes appropriate enforcement action against failed source tests. The District is also developing its own source testing capability. The Southern Region has a source testing van and can test for gaseous emissions (CO, NOx, and SOx). District inspectors are also trained in operating portable gas analyzers for verifying compliance of internal combustion units with permitted emission limits.

Recommendations: None

A.8 Asbestos Program

The District is responsible for enforcing the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Asbestos under the Code of Federal Register 40 Part 61 Section 61.145(a), (b), and (c) and Section 61.150. The District has adopted the Asbestos NESHAP under their Rule 4002 National Emission Standards for Hazardous Air Pollutants and collects fees under Rule 3050 Asbestos Removal Fees. The District is also responsible for meeting the 105 Grant conditions by maintaining a system for tracking asbestos demolition and/or renovation notifications. Grant conditions require the District to submit notification data to U.S. EPA on a quarterly basis and to perform a minimum number of inspections to ensure compliance.

In each region, ARB staff reviewed notifications, inspection reports, notice of violations, and the system used to track and report notifications to U.S. EPA. Also, joint inspections were conducted and District staff was interviewed as part of the review process. All three regions have proper inspection gear and have kept their asbestos certification and medical surveillance up to date. The District reviews the asbestos notification forms to ensure completeness and accuracy and also maintains a system that tracks all asbestos notifications. The District also submits quarterly notification related data to U.S. EPA on time.

With respect to inspection technique, the Northern and Southern Regions conducted their inspections in accordance with established protocols. However, the District should improve the asbestos inspections protocols adopted in the Central Region. While conducting a joint inspection in the Central Region, there was a breach of containment at the facility, and the District inspectors failed to contact the owner or the asbestos removal contractor to let them know so they could secure the area. Also, some possible asbestos containing debris was found outside the building. The District inspector collected the sample without spraying it with water. Spraying the sample with water is standard operating procedure in order to minimize exposure. Based on interviews with the Central

Region District staff, most inspections were done prior and after the asbestos removal. They should be conducted during regulated asbestos containing material removal operations in order to ensure the asbestos containing material is being removed properly. The majority of the inspection forms did not include the owner's name, contractor's name, location of facility, time of inspection, name and signature of inspector, and date of inspection.

It should be noted that as of March 1, 2005, the District has responded to many of these issues by reassigning staff in the Central Region. Staff has been trained to ensure that U.S. EPA's inspection protocols and techniques are followed in the Central Region.

Recommendations: As discussed above, the District should continue the improvement of the asbestos inspection protocols adopted for the Central Region. Further, inspection forms in the Central Region should be improved by documenting the inspection activity and including the owner/operator name.

A.9 Air Facility System Program

U.S. EPA's Title V compliance and permit database for Stationary Sources is called the Air Facility System (AFS). AFS used to be called the Aerometric Information Retrieval System or by the acronym AIRS. The requirements for AFS are governed by U.S. EPA's Continuous Monitoring Strategy (CMS) policy. This policy requires the District to submit a CMS plan which states the District will comply with the CMS policy and will submit the appropriate data on mega, major, and synthetic minor facilities to AFS. The required data include reporting of components of a Full Compliance Evaluation (FCE) quarterly and High Priority Violations (HPV) monthly. A FCE is comprised of site inspection(s), source test(s), and an annual Title V certification review. Each of these components must be entered into AFS before an FCE code can be entered. A HPV is a District's notice of violation (NOV), which meets the standards of a HPV as specified by U.S. EPA.

We found that the District is substantially behind schedule in entering the FCE data into AFS. Annual Title V certifications and source tests for pertinent AFS sources are not being updated into the AFS database. The District CMS target list does not match the list of sources in the AFS database. Both lists have overlap but each list has its own unique sources. The District should make sure the CMS target list matches the list of sources in the AFS database. The District and U.S. EPA were working to resolve this problem prior to the program review. Also, the source names, addresses and contacts of the sources in AFS do not match the source names, addresses and contacts contained in the District's NOV database. In addition, the District is not putting all the HPVs into the AFS Database. The District issued a total of 360 NOVs in calendar year 2002 to sources listed as AFS sources, but less than 5 percent of the NOVs made it into AFS database as HPVs. The District does not run Quality Assurance Reports to

confirm that data entry of FCE data and HPV data are making it into AFS, and does not generate monthly HPV reports and quarterly FCE reports for management review. District AFS staff does not routinely attend the annual AFS workshops.

Recommendations: The District should enter the Full Compliance Evaluation (FCE) data into the Air Facility System (AFS) database. The District should make sure the CMS target list matches the list of sources in the AFS database, and that source names, addresses and contacts of the sources in AFS match the source names, addresses and contacts contained in the District's NOV database. District staff should run Quality Assurance Reports to confirm that data entry of FCE data and HPV data are making it into AFS. Monthly HPV reports and quarterly FCE reports should be generated for management review. The District AFS staff should routinely attend the annual AFS workshops.

A.10 Variance Program

The District's variance program was evaluated in order to determine its consistency with HSC requirements. To accomplish this task, ARB staff reviewed District files, interviewed District staff, and listened to audio tapes of variance hearings. This is the only District in the State that has three hearing boards, one per zone. During the study period of January 1, 2001 through January 1, 2003, there were a combined total of 184 variances granted by all three zones; 25 in the northern zone, 42 in the central zone and 117 in the southern zone. ARB staff reviewed and evaluated a total of 30 variance files (4 in the northern zone, 8 in the central zone and 18 in southern zone). Numerous audio tape recordings were evaluated in each zone.

The District has developed a user friendly petition form that is provided to persons who want to request a variance. The District's petition form is well drafted and contains useful fields to help the petitioner submit a complete variance package. These fields include elements such as: what actions the petitioner has taken since first discovering they are not in compliance, a requirement to show all calculations and to provide emission factors used in estimating excess emissions, and a requirement to attach a health risk assessment and receptor modeling data if there are excessive hazardous or toxic emissions. The District is consistently recommending (and the hearing boards imposing) enforceable interim emission limits and other requirements to limit and mitigate excess emissions from sources under variance. The District staff consistently verifies that the variance's increments of progress and final compliance dates are met.

Our review found that the northern and southern zone hearing boards continue to ignore ARB's recommended procedure that hearing boards make the findings required by HSC section 42352 at the hearing. Instead, these two zones make the statement that the findings have been made in the staff report, or other

similar statements, at the hearing. It is ARB's long standing direction to hearing boards that a review of the staff report and other information, which may include a discussion and exchange of information between the petitioner and the board members, is required, if only to determine that the facts, emissions, circumstances, and conclusions provided are accurate. It is essential that hearing procedures do not give the impression, or allow for, a variance to be considered in a pro forma or cursory manner by the very panel that is charged with an independent and impartial review of the matter. Also, abatement orders that act as a variance do not always contain all the required findings for such an order (see HSC section 42452).

Recommendations: Northern and Southern zone hearing boards should make the findings required by HSC section 42352 at the hearing. It is essential for the District to ensure that hearing procedures do not give the impression, or allow for, a variance to be considered in a pro forma or cursory manner by the very panel that is charged with an independent and impartial review of the matter.

A.11 Training and Safety Program

The District has established a formal training program for new and existing field staff. The purpose is to enable all of the field staff to adequately conduct inspections and discharge their job responsibilities. The District maintains an electronic centralized "Training File" system in order to track field staff training participation. The District institutes source specific training focusing on technical issues associated with each rule category. In addition, safety aspects such as first aid, driver training, and annual physical examinations are included in the training program. Inspectors are issued sufficient safety equipment and personal protective gear.

Recommendations: None

A.12 Open/Agricultural Burning Program

Open burning can be a significant source of criteria pollutant emissions, whether from legally sanctioned open burning, agricultural burning, or wildland burning for fire prevention and forest management. The District's open/agricultural burning program was evaluated for consistency with the requirements of the HSC and the Smoke Management Guidelines in Title 17 of the California Code of Regulations (CCR). Documents reviewed for this evaluation included written policies, public information handouts, burn permits, various forms and correspondence.

The District has a comprehensive Open Burning Policy document, developed in 1994 and revised in 2002, to provide guidance in applying Rule 4103, Open Burning. It outlines extensive information on burn permit requirements, burn authorizations, complaint and compliance inspection procedures, and includes a

21-page appendix which lists 51 situations and/or materials which may be regulated by the rule.

The District now has its own Meteorology section, which determines the daily burn decisions (in consultation with ARB meteorologists), operates the prescribed burn forecast system for the District, and conducts daily conference calls with weather forecasters and burners. The District Meteorology section also allocates burn acres daily for the 93 burn allocation zones in the District. A District daily burn authorization program has been created and is centralized at the Fresno office. Burn operators take calls from all over the District, and enter the burn authorizations into the computer. The burn acres in the 93 allocation zones are authorized on a first-come, first-served basis. The daily burn report is faxed to the fire agencies every hour.

The District has a number of public information handouts: vineyard fact sheet, vegetable crop handout, vine, orchard removal burns, grape stake burn restrictions, the ban on yard burning brochure, a day-glow tag warning about burning illegal materials, and a hazard reduction burning pamphlet. The District encourages orchard growers to chip the prunings, particularly in the case of removal of an entire orchard. There is a list kept of facilities that accept green waste, or have use for biomass.

Recommendations: *None*

B. Permit Program

The districts adopt permitting regulations to govern the construction of new sources and modifications to existing sources that emit air contaminants within their jurisdiction. These programs must ensure the attainment or maintenance of applicable ambient air quality standards. Due to the severity of the District's air quality, the ARB staff conducted a review of the District's permitting program. Refer to Appendix B for further discussion of the permitting program. The primary objective was to determine whether the District has been issuing permits in accordance with their regulations and with State law, but more importantly, to assist the District in identifying specific areas for improvement.

The methodology the ARB staff used consisted of a review of the District's permit files, a review of guidelines and policy documents, and interviews with District staff and management. The review of permit files focused on the quality of the engineering evaluations and the resulting operating permits issued to the facilities. Interviews covered areas such as general administration, permit processing, filing, and application intake, computer support, staff resources, and emission calculation procedures.

The ARB staff reviewed approximately 700 of 2,782 project applications for new units and modifications to existing units issued by the District, with a focus on the 2000 to early-2003 timeframe. A conscious effort was made to cover a broad spectrum of the District's permitting actions by reviewing files for different source types and sizes. In addition, the ARB staff reviewed the permits for the biomass facilities to determine the prevalence and limitations of using urban wood waste as fuel.

B.1 Permit Administration - General

The District has a pool of well-qualified and trained professionals for permit processing. At the time of the program review, the District employed about 70 permitting services staff including managers, supervisors, engineers, and specialists. Each of the three regions in the District has a permitting office administrated by a permit services manager. The three regional managers report to the Director of Permit Services. The District is able to process about 3,000 to 4,000 permit applications per year. The District has about 7,000 permitted sources consisting of 21,000 separate permit units in its jurisdiction. The District has about 220 Title V facilities.

The District uses information technology resources to maintain a comprehensive permit database, computer network, and an intrarnet site containing files related to all permitting actions. The District is in the process of converting all of its paper files to electronic documents, another step in the District's efforts to improve permit-processing efficiency. The District's engineering evaluations are generally thorough and consistent in format and organization. Evaluations were easily accessible and made available to ARB staff via the computer network system. The District maintains an extensive list of written permitting policies that function as guidance in implementing the District's written rules.

A major challenge facing the District is the permit backlog in spite of many permit streamlining efforts. In 2003, the District had a backlog of 887 permits, which is higher than the 250 backlogged permits it had at the time of the previous review in 1994. While we acknowledge the District's extensive efforts at permit streamlining, we found a larger than expected permit backlog. To address this situation, the District should explore additional steps, including augmentation of staff resources. Backlog of permit applications was a major concern of stakeholders interviewed by ARB staff as part of the review process.

Recommendation: The District should develop and carry out a plan to reduce its permit backlog. The District may need to add additional staff to support this effort.

B.2 New Source Review Rule

ARB staff reviewed District Rule 2201 - New and Modified Stationary Source Review and several engineering evaluations conducted pursuant to the requirements of the rule.

At the time of the program review, District Rule 2201 exempted an emission unit from Best Available Control Technology (BACT) at an existing facility if the installation or modification of an emission control technique is performed solely for the purpose of compliance with a District rule, subject to several emission-limiting conditions. The ARB staff's concern was that the District could apply this exemption inappropriately and too broadly—resulting in the replacement of an entire emission unit without requiring BACT, even though the replacement is needed because the equipment is at the end of its useful life. District Rule 2201 has since been modified, and the current version exempting BACT for "the installation or modification of an emission control technique performed solely for the purpose of compliance with the requirements of District, State or Federal air pollution control laws…" does not apply to the replacement of an entire emission unit.

District Rule 2201 exempts a "routine replacement" from BACT. ARB staff believes that the District's application of this routine replacement clause may allow a new emission unit to be installed at a stationary source without requiring BACT. Regarding engineering evaluations conducted pursuant to Rule 2201, ARB staff found a case where the replacement of a turbine was considered a new unit and required to meet BACT. In a very similar project, the replacement of a turbine was considered a *routine replacement* of an existing emission unit and exempt from BACT in accordance with District Rule 2201 section 4.2.6. Such inconsistent treatment for similar situations is inappropriate.

Furthermore, ARB staff found a case where the District's calculation procedures allowed the generation of "paper" emission reductions by lowering an emission factor, apparently without confirmation via source test, rather than producing an actual reduction in usage and/or throughput.

Recommendations: Rule 2201 should be amended to clarify that routine replacement should be reserved for routine maintenance and repair of broken or worn components, not for the complete replacement of an entire stand-alone emission unit. Also, the District should ensure that the replacement of an emission unit is treated consistently. The District should ensure that its calculation procedures do not generate "paper" emission reductions by lowering an emission factor rather than actually reducing usage and/or throughput.

B.3 Permitting Policies

The District maintains an extensive list of permitting policies. These policies provide guidance to permitting staff in its three regions and help ensure that permitting actions are consistent. However, one specific policy appears to conflict with a District rule. District *Policy APR 1305: Best Available Control Technology (BACT) Policy* (November 9, 1999) allows a "small emitter" to apply BACT that is merely "achieved-in-practice," as opposed to considering applying a more stringent "technologically feasible and cost effective" BACT. This policy is in direct conflict with the definition of BACT as defined in District Rule 2201 - New and Modified Stationary Source Review. The ARB staff reviewed Rule 2201 and did not find a reference to the term "small emitter" or a specific exemption from BACT requirements for small emitters.

ARB staff noted that several permitting policies available through the District's web site and through internal documents reference incorrect rule sections, contain rule terminology that is now obsolete, and specify outdated office procedures. Furthermore, at the time of the program review, 45 policies were posted on the web. ARB staff identified 20 other policies relevant to permitting issues that should also have been posted on the Internet. Examples of these policies include Offset Requirements, Calculation of Stationary Source Potential to Emit (SSPE), and Wellhead Stuffing Box Emission Factors. A complete list of District policies which should be included on the web site is included in Appendix B.

Recommendations: The District should ensure that its policies serve to clarify rule requirements and do not alter an approved regulation. Specifically, the "smaller emitter" exemption allowed in District Policy APR 1305 should be removed or incorporated into District Rule 2201. The District should also discontinue Policy SSP 1705 for Dormant Emissions Units. Furthermore, all permitting policies should be updated to reflect the most current rule interpretation, and the non-administrative policies should be made available to industry and the public through the District's web site and/or as a published document.

B.4 Best Available Control Technology Determinations

ARB staff believes that the District is not always requiring BACT as often as it is warranted. For example, the District maintains its own Clearinghouse of BACT determinations performed by District staff for various classes and categories of source. The Clearinghouse is a functional tool that imparts consistency and provides useful guidance to project proponents. ARB staff, however, believes the District's BACT determinations can be improved. Several components of the District's BACT policy, as discussed below, do not promote the use of state-of-the-art control technologies.

The District's BACT cost-effectiveness thresholds for ozone precursors have not been revised since 1989 and are substantially lower than other districts with similar or better air quality status (Bay Area, South Coast, Ventura, San Diego). (See Table VI.)

Table VI. California Air District BACT Cost-Effectiveness Thresholds

District		NOx [per ton]	CO [per ton]	VOC [per ton]	PM10 [per ton]	SOx [per ton]
San Joaquin Valley		$9,700	$300	$5,000	$5,700	$3,900
Bay Area		$17,500	n/d	$17,500	$5,300	$18,300
South Coast		$18,300 ($19,059) [a]	$380 ($396) [a]	$19,400 ($20,204) [a]	$4,300 ($4,478) [a]	$9,700 ($10,102) [a]
Ventura		$18,000	$1,000	$18,000	$10,000	$10,000
San Diego,	small source (<15 tpy)	$13,200	n/d	$7,480 [b]	n/d	n/d
	large source (>15 tpy)	$18,000	n/d	$10,200 [b]	n/d	n/d

[a] District is proposing to update maximum cost-effectiveness criteria to these values.
[b] Proposed revision to the district's New Source Review rule would increase thresholds to $13,200 (small source) and $18,000 (large source).

The District should review and update its BACT determinations to more accurately reflect cost-effectiveness thresholds used by other districts with similar air quality status. In this manner, control technologies that are considered technologically feasible and cost effective for a class or category of source will be more frequently achieved in practice, and therefore be required to be installed.

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

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

Finally, the District publishes an updated Clearinghouse each quarter, but the majority of the changes appear to consist of adding new guidelines rather than

updating existing ones. Routine assessments are necessary to ensure control technologies previously identified as "technologically feasible" are upgraded to the "achieved-in-practice" classification.

The combined effect of these BACT policies results in missed opportunities to install the best emission controls on new or modified equipment.

Recommendations: The District should review and update its BACT determinations to reflect more accurately the cost-effectiveness thresholds used by other districts with similar air quality status. The District should also widen its BACT search to include BACT determinations from other sources. The District could include links to other available control technology databases (for example South Coast AQMD, ARB/CAPCOA, ARB DG Guidance) on its BACT Clearinghouse web site. The District should also reexamine its in-house procedures for updating its BACT Clearinghouse. The District should amend its Policy APR 1305, removing "type of business" as a criteria for determining whether a BACT control technology is achieved in practice for a given class or category of source. The District should update the interest rate used for BACT cost-effectiveness analyses to reflect current economic conditions.

B.5 Biomass Facilities

ARB staff reviewed the District permits for the biomass plants to determine the prevalence of use of urban wood waste as fuel at biomass facilities, the District limitations of such use, and the enforceability of the associated District permits.

ARB staff reviewed nine biomass permits. For most of these facilities, the initial offsets were provided by burning agricultural biomass in the boilers that had been historically burned in the field. That is, the difference in emissions from open-field burning versus burning in the boilers provided the offsets for the plant to be built. Therefore, most of the biomass facilities have permit conditions that require them to burn a minimum of agricultural biomass to meet their offset commitments. After the minimum is consumed, the balance of the fuel may come from a variety of sources—including urban wood waste.

Our review did not find specific issues with the facility permits regarding conditions relating to the use of agricultural biomass versus other fuel. Of the nine permits issued to biomass plants, only one prohibited the use of urban wood waste as fuel. Of the remaining eight biomass permits, the conditions placed in the permits related to burning wood waste varied. The most comprehensive and enforceable biomass permit issued by the District to a biomass facility was issued to Madera Power. The District should consider using the permit issued to Madera Power as a template for modifying the permits of other biomass facilities.

Three biomass facilities were inspected as part of the District review and were found to be substantially in compliance. One facility had a visible emissions

exceedance (over 5% opacity) at a conveyor transfer point. The second facility received a notice to comply for missing records related to internal combustion engine repairs and maintenance. The third facility was in full compliance.

Recommendation: The District should consider using the permit issued to Madera Power as a template for modifying the other Title V permits for biomass facilities upon renewal. These permits should contain an explicit definition of urban wood waste, a limit on contaminants in the wood waste, a periodic testing of the fuel stream for contaminants, and source-test requirements when significant changes in fuel composition occur. For minor (non-Title V) biomass facilities, the recommendations should also apply, except that source-testing requirements may be less stringent.

B.6 Adequacy of Permit Conditions

ARB staff determined that District permits have sufficient conditions to qualify them as "stand alone" documents. However, some conditions are in the form of specific emission limits that can neither be verified during a field inspection nor practically source-tested by the facility. These emission limits can only be verified by combining actual facility conditions (throughput, material type) with the emission factors used in the original engineering evaluation. An example of such a permit condition is "emissions from the material handling operation – including receiving, unloading, and conveying to silos, batch mixers, and scales – shall not exceed 0.0038 lb PM10/ton of material."

The clarity of the District's more complicated permits can be improved. For example, before inspections of complex facilities, ARB staff had to categorize permit conditions into record-keeping conditions and source-test conditions to know what documentation to request: operating data or source-test results. Industry regulated by the District also commented that conditions should be grouped together. Also, the District's permits have an equipment description on the first page of every permit. In some permits, especially when the description is more complex, clarity may be improved with a clearer item-by-item equipment listing instead of a paragraph of text describing the equipment.

Recommendations: The District should improve the clarity of its permits, especially for more complex facilities. Specifically, permits should have a clearer item-by-item equipment listing, and the District should consider grouping specific types of conditions in its permits, such as those for record-keeping, source testing or abatement. This could make the permits more user-friendly to the source and inspector.

B.7 Organization and Adequacy of Permit Evaluations

The District's engineering evaluations follow a detailed format that covers all the necessary elements of a complete engineering evaluation. The formatting in the

District's evaluations includes: a general description of the proposal, applicable rules, project location, process description, equipment listing, emission control technology evaluation, calculations, compliance, recommendations, and appendices. The appendices include BACT analysis, health risk assessments, permits to operate and other information.

The District's engineering evaluations are generally thorough and consistent in format and organization as set by internal policy and due to the use of templates for common applications and equipment. However, some of the District's engineering evaluations contained contradictory statements and inconsistencies, more than likely attributed to "cut-and-paste" mistakes when past engineering evaluations were used as templates.

Evaluations were easily accessible and made available to ARB staff via the computer network system. ARB supports the District's intentions to convert permitting documentation from hard copy to an electronic filing system. Nevertheless, ARB staff found that many of the electronic engineering evaluations were missing supporting appendices.

The ARB staff found instances where previous District requirements were weakened through the removal of permit conditions as part of a project to modify existing equipment. For example, a source received emission reduction credits (ERCs) for the replacement of natural gas-fired engines. One of the conditions of the ERCs was that a continuous emission monitoring system (CEMS) would be required to continually demonstrate the validity of the ERCs. In a subsequent permitting action, the CEMS requirement was removed and replaced with annual source testing.

Recommendations: The District should ensure that existing permit conditions are not weakened through subsequent permitting actions related to equipment modifications. As documents are converted from hard copy to an electronic filing system, the District should make sure all engineering evaluations are complete, stand-alone documents. ARB staff supports the use of templates for the purposes of permit streamlining; however, when these templates are utilized, ARB staff recommends that the District staff exercise more care in reviewing its evaluations.

C. Rule Development Program

The District's rule development program was reviewed with respect to the quality of existing rules (at the time of the review in March 2003) and the mechanism and procedures followed by the District for adopting new rules or making amendments to existing rules.

The District has a process for rules to be reviewed for enforceability, clarity, and Best Available Retrofit Control Technology (BARCT) consistency. Enforcement,

planning, and legal staff can provide input to the rule development and amendment process. Staff reports are prepared for each new or amended rule scheduled for adoption. The District gives adequate consideration to the planning and conduct of public workshops. Based on our review, there is a good public process in place for the rule development program.

An extensive analysis of the District's existing prohibitory rules (March 2003 version) was performed as part of the review process. The rule's emission limits, exemptions, monitoring and recordkeeping requirements were compared to other districts' rules in the State with similar air quality status and to BARCT and "All Feasible Measures" determinations. Emission inventories, rule development history, cost effectiveness, and special case practicability were not taken into account. These elements are usually reviewed and covered during the district's rule development process.

At the time of the rule analysis, ARB staff identified rules that could technically have more stringent emission limits. Refer to Appendix C for a listing of reviewed rules. We should note that the District has acknowledged the scope for rule improvement. The District has done extensive work, since our rule analysis, in updating many of its rule emission limits especially for boilers, turbines, and internal combustion engines, and we commend the District for this effort.

In addition, in late 2003 and early 2004, staff from the District, Sacramento Metropolitan AQMD, Bay Area AQMD, and ARB conducted an extensive review of 10 major rule categories. For each rule category, each of the appropriate district rule or rules were compared to the most stringent rule in California, as determined by the ARB. The rule categories compared included boilers, turbines, stationary internal combustion engines, adhesives, solvent cleaning, degreasing, vehicle refinishing, valves and flanges, organic liquid storage, can and coil coatings, and graphic arts. For each category examined, staff prepared a detailed comparison of each rule element, including emission limits, applicability, exemptions, and inspection requirements. In general, there were a few areas where there was a potential for further emission reductions, but no major deficiencies were identified. Where a potential for further emission reductions was identified, each district committed to evaluating and updating the rules as appropriate.

We also found that there are certain industrial source categories (such as boilers, engines, and turbines) that are covered by many rules. Having many rules for the same source category leads to confusion and difficulty in implementing the rule.

Recommendations: We recommend the District continue to review its rules to ensure that it has implemented the most effective standards commensurate with its air quality challenges. The District should repeal superseded rules for those

source categories that are covered by many rules such as boilers, engines, and turbines.

D. Portable Equipment Registration Program

The District has had an active portable equipment registration program for almost 10 years, with approximately 600 units registered according to District Rule 2280. In addition to administering these portable units, the District has enforcement responsibility for those units operating in the District that are registered under the Statewide Portable Equipment Registration Program. We estimate this range to be between 3 to 4 thousand units operating in the District under Statewide registration. The District does not routinely inspect ARB registered portable equipment or consistently enter inspection reports into the ARB database.

Some inconsistencies and inaccuracies in the District's portable equipment registration program were noted by ARB staff during the program review. Refer to Appendix D for details of the portable equipment evaluation. For example, the District should recognize the existence of certified nonroad engines in the program and not subject them to additional emission standards. Federal regulation (40 CFR Part 85) preclude states from enforcing any standards or requirements to control emissions from nonroad engines. Other discrepancies included the inconsistent use of nitrogen oxide limits from Rule 2280 in the operating conditions and the omission of annual throughput limitations in the operating conditions.

Recommendations: The District should expand its inspections to include portable equipment registered in the Statewide program and enter inspection reports into the ARB database. The District should recognize the existence of certified nonroad engines in their portable equipment registration program, and therefore should not impose any emission standards from Rule 2280 on these engines.

E. "Hot Spots" Program

The Air Toxic "Hot Spots" Program requires stationary sources to report the types and quantities of certain substances their facilities routinely release into the air to their district. The goals of the Air Toxics "Hot Spots" Program are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to reduce the risk from high-risk facilities. Refer to Appendix E for a detailed discussion of the "Hot Spots" Program Evaluation.

The District has completed the evaluation of all Phase I (facility that emits greater than 25 tons per year of PM, NOx, or SOx) and Phase II (>10 tons per year) "Hot Spots" facilities (about 150 facilities). However, in 2003, staff identified several

Phase III (less than 10 tons per year) facilities that had not completed inventory requirements.

As part of this evaluation, the District received and approved Health Risk Assessments (HRAs) in a timely manner. Upon approval of the HRA, the District immediately determined whether the facility was significant and informed the facility of the significance level and the requirements for public notification. Since the inception of the "Hot Spots" Program, the District has conducted public notification for 14 facilities. The District worked extensively with the facility and public throughout the public notification process. In cases where a facility poses a significant risk and no receptors presently exist within the impacted area, the District notifies landowners and land-use agencies of the potential significance.

The District has adopted a Board-approved policy that specifies trigger levels at which a "Hot Spots" Risk Reduction Audit and Plan (RRAP) will be required. For cancer risk, the trigger level is 100 potential cancer cases in a million. For non-cancer chronic and acute health impacts, a hazard index greater than 5 is the trigger level for RRAP.

For several facilities in the 2001 database, it was unclear why the prioritization score of a facility had changed in the "Hot Spots" program. Staff found that the District's electronic records were often incomplete and paper files were not consistently documented. The District contends that sufficient documentation exists regarding each change in a facility's status and how that affects their prioritization. The District has begun to describe any change in a facility's prioritization score or health risk assessment in their annual "Hot Spots" report.

In addition, the District has not completed all of the (screening) health risk analyses for gasoline stations, dry cleaners, and other industry-wide facilities (note: no district with significant risk industry-wide facilities has completed this evaluation).

Recommendations: The District should complete inventory reports for these last remaining Phase III facilities (less than 10 tons/yr) and submit them to ARB. The District should continue to describe any change in a facility's prioritization score or health risk assessment in their annual "Hot Spots" report, and when possible, update the emission inventory to reflect the change in status. The District should complete the screening health risk assessments for industry-wide facilities and, when necessary, require public notification for facilities with a risk above the notification threshold, as they have done for the other "Hot Spots" facilities.

F. Emission Inventory Program

Two primary areas of the emission inventory program were examined, the inventory development and data submittals. Refer to Appendix F for a detailed

discussion on the evaluation of the Emission Inventory Program. With regards to inventory development, the District has provided criteria emissions updates for facilities that emit greater than 10 tons of any criteria pollutant. For those area source categories it has updated, the District has provided ARB with detailed and clear methodologies. The District has also developed a comprehensive growth data set for use in emissions forecasting.

Currently, the District maintains criteria and toxics emissions inventories in a single database that allows data to be easily accessed and merged, making a merged data submittal possible in the future. The District has improved the data exchange process between the District and ARB with electronic databases, automated inventory calculations, and the use of ARB's most recent (CEIDARS 2.5) inventory transaction format. The District is improving in its reporting of toxics data.

As requested in the ARB Emission Inventory Guidelines, the District has provided criteria emissions updates for facilities emitting greater than 10 tons of any criteria pollutant. Although the District has recently made improvements in the reporting of facility toxics data, there are a number of facilities in the Air Toxics "Hot Spots" program for which toxics emissions have not been reported to ARB.

In addition, the District has not estimated criteria emissions for some of those area source categories for which it has responsibility. The District should review and update their area source methodologies as well as provide ARB with updated emissions estimates for these categories.

Recommendations: The District is encouraged to continue providing toxics updates for as many facilities as possible, especially those in the "Hot Spots" program. It would be helpful if the District posts their area source methodologies on their web site. The District has recently begun providing ARB with merged facility criteria and toxics data submittals and is encouraged to continue doing so.

G. Carl Moyer Program

The Carl Moyer Memorial Air Quality Attainment Program (Carl Moyer Program) is a voluntary incentive program designed to increase the replacement of older, higher-emitting diesel engines to improve air quality. ARB distributes the funds to participating Districts for local implementation and maintains monitoring, management and statewide reporting responsibilities.

As part of this program review, ARB staff reviewed files, interviewed District staff and made site visits to view engines and equipment. Refer to Appendix G for a detailed discussion of the evaluation of the Carl Moyer Program. ARB's review and findings pertaining to the Carl Moyer Program indicates the District has made many improvements to their implementation of the Carl Moyer Program since program start-up (FY1998-99). ARB continues to see progress in

implementation over time, with District staff receptive to suggestions for programmatic changes. ARB staff estimates that Carl Moyer Program Funds obligated by the District will provide over 1300 tons of NOx and a substantial amount of PM10 reductions annually for the life of the projects.

At the time of the program evaluation, some of the information contained in the District databases was inconsistent with hard copy files. The District should institute procedures for updating databases whenever there are changes to the projects.

With regards to grant applications, at the time of the program evaluation, the ARB staff found that the District uses them as working documents, with handwritten changes made throughout. Documentation of the status of the old replaced engine is not always complete. ARB staff did not find any situations where the District analyzed and responded to the absence or presence of the grant recipient's annual reports with respect to operating parameters such as hours of operation.

Recommendations: At the time of the program evaluation, ARB staff recommended that the District should institute procedures for updating databases whenever there are changes to the projects. The District should use grant applications as stand-alone documents of exactly what the grant recipient requested. Separate forms should be used to correct errors, calculate emission estimates, and justify changes. For those projects not completed as outlined in the grant contract, project eligibility and determinations should be made accordingly. The District should also completely document the status of old replaced engines. The District should analyze and respond to the absence or presence of the grant recipient's annual reports.

H. Air Monitoring Program

The districts establish air monitoring programs to collect ambient air quality data in compliance with U.S. EPA requirements to monitor progress toward meeting air quality standards, identify patterns of transported pollutants, locate metropolitan pockets of high pollutant concentrations, and provide data for indicators of daily air quality such as the Pollutant Standard Index. The District's air monitoring program was evaluated with respect to network size and siting, resources and facilities, data and data management, and quality assurance/quality control (QA/QC). Refer to Appendix H for a detailed discussion of the Air Monitoring Program.

Overall, the District complies with the U.S. EPA's regulations for air monitoring set forth in 40 CFR 50, and the U.S. EPA's guidelines included in the Quality Assurance Handbook for Air Pollution Monitoring Systems, Volume II. As such, the ARB considers the data generated and submitted by the District to the U.S.

EPA's Air Quality System (AQS) to be of good quality and data-for-record. However, the District does not have all certification equipment re-certified at the intervals suggested by the U.S. EPA, and all monitoring equipment is not calibrated using the U.S. EPA's frequency guidelines. The District has not implemented a Corrective Action Program for handling data which falls outside established limits. The District has not conducted a current detailed review of the siting criteria and instrumentation listed for each of the District's air monitoring sites in the U.S. EPA's AQS. In addition, the District has not created comprehensive QA/QC documents detailing procedures and/or guidelines for the collection, analysis, validation, storage, and reporting of data.

The District has taken several actions since the last program review, which have improved their monitoring program and data. For example, site reports are now kept at the District office and at the monitoring stations. Reports are reviewed and updated as time and personnel allow. All log entries are now initialed by the station operator. The District now operates both PM10 samplers on make-up days at collocated sites. Precision data are now being reported to the AQS for samplers run on make-up days. All calibration report files are now being kept accurate and current and at each monitoring location. Non-current calibration reports are sent to the District office where they are stored for future reference. District staff has made progress in organizing documentation and making all records accessible, and this should remain a priority until accomplished.

Recommendations: The District should have all certification equipment re-certified at the intervals suggested by the U.S. EPA. All monitoring equipment should be calibrated using the U.S. EPA's frequency guidelines. The District should implement a Corrective Action Program. The District should conduct a detailed review of the siting criteria and instrumentation listed for each of the District's air monitoring sites in the U.S. EPA's AQS. The District should create QA/QC documents detailing procedures and/or guidelines for the collection, analysis, validation, storage, and reporting of data.

I. District Actions Regarding the 1994 Program Review Findings

As mentioned previously, in 1994 the ARB conducted the first comprehensive program review of the unified District. As with all program reviews, a district is asked to implement the report's recommendation. Appendix I of this report provides several examples where the District still needs to implement the 1994 recommendations. Appendix I also includes some recommendations that have been effectively implemented. Below we highlight key recommendations that have been implemented and those significant ones that we believe still need to be addressed.

Items District has Addressed

- Consistent with ARB's 1994 recommendations, the District has increased penalty amounts since 1994.

- In response to ARB's 1994 recommendations, the District has improved its air quality complaint handling statistics.

- In 1994, ARB staff recommended improvements in the District's monitoring of emissions at major sources. In response, the District has installed a modern system for retrieving emissions data from facilities equipped with continuous emission monitors on a real time basis.

- In response to ARB's 1994 recommendations, the District has made significant improvements to its open/agricultural burning program. A daily burn authorization program has been created and is centralized at the Fresno office. Burn authorizations for the 93 allocation zones are entered into the centralized database. Further, the District now has its own meteorology section which determines the daily burn decisions and operates the prescribed burn forecast system for the District.

Items District has not Addressed

- For a district of this size, procedures for establishing in-house laboratory testing capability should be explored as recommended in 1994. The District does minimal sampling and analysis for VOC content. Compliance with VOC coating limits is typically determined by relying on material safety data sheets and facility records.

- The northern and southern zone variance hearing boards should ensure that they discuss the findings in HSC section 42352 at the hearing as is done by the central zone hearing board. An exchange of information between the petitioner and the board members regarding each finding is necessary, if only to determine that the facts, circumstances and conclusions provided are accurate.

- Although the District has taken many steps to improve and streamline its permitting process, the permit backlog has increased from 250 to 887. The District had reduced the backlog from 1700 at unification to 250 in 1994. We believe the District needs to make a concerted effort to solve this problem.

- The District's BACT cost-effectiveness thresholds for ozone precursors are still low compared to other Districts with similar air quality status (Bay Area, South Coast, Ventura, and San Diego).

- The District needs to continue its progress in making permitting policies available to interested parties by posting all non-administrative policies on its website.

- Emission inventory methodologies for area sources are still not being updated on a regular basis.

- The District has not notified ARB of all new or closed facilities for purposes of estimating emission inventories from these facilities. The District should provide an updated list of these facilities each year to ARB.

J. Summary of Comments by Stakeholders

As part of the program review process, ARB staff interviewed selected stakeholders in the San Joaquin Valley. These represent environmental/public health groups, industry, and agriculture. Most stakeholders were complimentary of the technical ability of the District rule making and other technical staff. Stakeholders mentioned that the District's mutual settlement program (for air violations) was fair in its penalty settlement amounts. Some stakeholders stated that the District holds its ground with respect to penalty amounts and will reduce penalties only if there are valid mitigating circumstances. Many stakeholders commented about the need for additional permit streamlining efforts so that new permits or modifications can be processed in a reasonable amount of time.

Some comments indicated that a number of the stakeholders did not feel the District was acting aggressively enough. A comment made was that the District's rule adoption agenda was driven by U.S. EPA sanctions, lawsuits, or fear of lawsuits instead of a genuine desire to improve the air quality at a rapid pace. Perception by one stakeholder was that adopted rules did not reflect stringent emission levels required to protect health. More than one stakeholder reflected the sentiment that the regulations associated with the oil industry were not stringent enough and contained too many exemptions.

Almost all stakeholders mentioned that the Citizens Advisory Committee (CAC) was not functioning to its full potential or doing the job it was originally designed to perform. Some comments in this area were that the CAC was dominated by industry and many of the environmental designees were not connected to any environmental or public health group. Additional comments by stakeholders can be found in Appendix J.

California Environmental Protection Agency
AIR RESOURCES BOARD

San Joaquin Valley Air Pollution Control District Program Review

Report of Findings and Recommendations

Appendices

Prepared by the
California Air Resources Board
Stationary Source Division
October 2005

Appendix A – Compliance Program

San Joaquin Valley Air Pollution Control District
Program Review

Appendix A
Compliance Program
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A. COMPLIANCE PROGRAM **A - 1**

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A. COMPLIANCE PROGRAM REVIEW

An effective Compliance Program includes many elements such as policies and procedures, enforcement, training, testing, and legal actions. During this review, ARB staff interviewed numerous staff and reviewed hundreds of District files and reports. Joint inspections were also conducted in some cases as part of the review process. Presented below are a summary of the findings, accomplishments and recommendations of a dozen areas in the Compliance Program that were evaluated.

A-1. Source Inspection Program

The source inspection program serves as the compliance verification component of District operations. Source inspections provide feedback on the actual compliance status of permitted facilities. As part of this program, the District inspects permitted facilities on a periodic basis, documents findings in the form of inspection reports, and issues violation notices to facilities found in violation. Written policies and procedures provide guidance on all facets of this program ranging from desired inspection frequency to inspection techniques, and definition of violations for various rules.

The District's inspection program was evaluated with respect to guidance policies, actual inspection frequency, quality of inspections, and documentation of violations discovered during the inspection process. The District has nearly 7400 stationary sources, including about 2450 gasoline dispensing facilities (GDFs). The available inspection staff totals about 23 percent of the District workforce. ARB staff reviewed Compliance Division policy and procedure documents, examined selected reports, and sampled District files as part of this review. The District provided an electronic spreadsheet report of NOVs issued in 2001 and 2002, which was of particular use in deriving the tabulated information. In addition, ARB staff interviewed District personnel including field inspectors, settlement staff, and Compliance Division management during the program review. Observations and data from joint source inspections also contributed to the findings.

Findings

<u>Policies and Procedures</u>

The District has a comprehensive set of general and rule specific policies and procedures for the Compliance Division that provide guidance on all aspects of the program. These compliance policies and procedures include guidelines for field inspections and enforcement actions.

1. The District has a guideline document for notices of violation (NOVs) that establishes clear procedures for the issuance of NOVs and subsequent compliance verification. The NOV guidelines specify that a NOV shall be issued for all violations of District regulations or permit conditions except

for specific minor violations detailed in the notice to comply (NTC) guidelines.

2. The District has a NTC guideline document that specifies situations where an inspector may issue a NTC in lieu of a NOV. District inspectors must get prior approval from a supervisor or manager in order to issue a NTC for situations that are not mentioned by the guideline document.

Inspection Frequency

The District conducts annual inspections at most facilities, including all major sources. In general, the District follows its inspection frequency guidelines and reaches its inspection goals. This finding is based upon review of completed inspection reports from office files and information obtained during the joint field inspections conducted with ARB staff at 206 facilities.

1. District policy does not require annual inspections for all sources. The District has a policy document entitled, "Variable Inspection Frequency" that guides compliance inspection frequencies in order to maximize efficiency. Certain source categories, including Title V and synthetic minor sources, must be inspected every 12 months. District policy allows for scheduling compliance inspections at frequencies that vary from 3 to 24 months depending on source category and compliance record. ARB staff believes that annual inspections for all permitted sources are desirable as a goal, subject to staff availability.

2. District policy does not include quarterly inspections for sources with actual emissions over 25 tons per year.

3. The District's inspection procedures for perchloroethylene dry cleaners state that each facility must be inspected at least once a year. However, these facilities are not on the Inspection Frequency Policy's list of sources subject to required annual inspections. In practice, the District does not always inspect dry cleaning facilities on an annual basis.

4. Emergency IC engines are routinely placed on a 3 year inspection schedule, whereas the policy specifies that compliance inspections may be scheduled at frequencies from 3 to 24 months, not specifically allowing for a 36 month frequency. Some IC engines were not inspected at all during the review period.

5. Draft rule specific District guidelines specify that GDFs with Phase II vapor recovery are to be inspected twice a year at four to six-month intervals. GDFs with only Phase I vapor recovery equipment are to be inspected once per year. Re-inspections are to be performed to document that Phase I or Phase II deficiencies have been corrected. Approximately 70%

to 80% of the gasoline dispensing facilities (GDF) in the District have balance vapor recovery systems and the remainder have bootless systems. The District inspects GDFs with assist-type vapor recovery systems and contracts inspections of balance-type GDFs to local county Weights and Measures agencies.

Quality of Inspections

File review of completed inspection reports and observation of inspection techniques during the joint field inspections indicate that the District generally conducts thorough inspections and follows its policies and procedures that pertain to inspections and compliance verification. Inspectors use portable analyzers for NOx and CO effectively. However, file review and interviews indicate that additional equipment and sampling and analysis capability would benefit the District's field inspection program.

1. The District uses portable analyzers for NOx and CO emissions from combustion sources to good effect. All three regions have access to portable NOx analyzers, but the Southern Region uses the analyzers more extensively than the Central or Northern Regions. The District has a portable analyzer policy that clarifies both methodology and enforcement for NOx and CO emissions testing.

2. The District does not have hydrocarbon vapor analyzers that quantify concentration for perchloroethylene leak testing at dry cleaners. Inspectors leak test perchloroethylene dry cleaning machines using their sense of smell in conjunction with an audible halogenated-hydrocarbon detector and soap bubbles.

3. Coating Sampling: The District does minimal sampling for volatile organic compound (VOC) content. Interviews with District management indicate that about 6 samples of coatings and solvents are drawn per year. The District typically relies on Material Safety Data Sheets and facility records to determine coating contents, which may not provide adequate verification of compliance.

4. The District does not always follow its rule specific visible emissions procedures, which require observations to be for a minimum of 10 minutes if any opacity reading exceeds 20%. Also, the District does not always adhere to its visible emission procedures that require the use of VEE forms to document no visible emissions.

Documentation of Inspection Findings

In general, inspection reports and subsequent enforcement actions are well documented. File review indicates that NOVs are generally issued when violations are documented in accordance with guidelines.

1. Inspection reports are generally adequate to support enforcement and follow the District's inspection procedures and report preparation policy. Inspectors use source specific forms where applicable. However, some inspection reports indicate that a facility is in compliance even though all permit units were not observed in operation.

2. The Central Region inspection reports include a comment on compliance with every permit condition, whereas the other regions may follow a different report format.

3. Inspection reports sometimes indicate that compliance with all permit conditions cannot be determined because some permit conditions are not enforceable.

4. File review verifies that NOVs are generally issued when violations are documented in accordance with District policies.

5. Documentation of NOVs is adequate for possible use in court.

6. NOVs for the five broad source categories identified by the District are shown in Table I.

Table I. NOVs Issued in 2001 and 2002

	Asbestos	Agricultural/ Open Burning	Other*	Stationary Sources (non-GDF)		Gasoline Dispensing Facilities (GDF)		Total
				# NOVs	Approx. # Facilities	# NOVs	Approx. # GDFs	
North	63	261	28	297	1556	165	880	814
Central	4	329	35	432	1451	484	790	1284
South	42	164	49	895	1913	367	777	1517
Total	109	754	112	1624	4920	1016	2447	3615

* The District uses the "other" category for violations such as excessive construction dust, nuisance complaints, or unpermitted portable equipment.

Recommendations

Significant Recommendations:

1. The District should strive for annual inspections at all permitted sources.

2. The District should strive for quarterly inspections for all sources with actual emissions greater than 25 tons per year.

3. The District should have in-house laboratory capability or have a contract with a local laboratory to analyze coating samples. Currently, minimal sampling is taking place and inspections rely on Material Safety Data Sheets for compliance verification.

Other Suggestions to Improve Program Effectiveness:

1. The District should acquire hydrocarbon vapor analyzers and adopt guidelines for their use at dry cleaners to quantify leaks and ensure uniform enforcement at this source category.

A-2. Results of Source Inspections Conducted by ARB/District Staff

As part of the program review, ARB/District staff conducted 206 stationary source inspections (excluding GDFs), diagnostics testing at eighty GDFs, and source testing at five facilities. Results of these inspections are discussed below. A complete summary of stationary source inspection results and is presented in the diskette at the end of this section.

A.2.1 Inspections at Stationary Sources (excluding GDFs)

Joint inspections were conducted at 206 facilities to obtain field data and actual compliance rates. District inspectors generally exhibited good inspection technique and issued NOVs and notices to comply (NTC) appropriately. Table II shows the number of facilities and permit units inspected in each of the three regions as well as the number of NTCs and NOVs issued as a result of the inspections. Each NTC and NOV has a unique number for tracking purposes. NTCs are typically issued for minor violations (such as recordkeeping problems), whereas NOVs are issued for emission related violations.

Table II

Region	Facilities Inspected	Permit Units Inspected	NTCs	NOVs
Northern	95	421	3	17
Central	58	225	7	15
Southern	53	189	1	24
Total	**206**	**835**	**11**	**56**

Table III displays the violation rates of facilities and individual permit units that were inspected throughout the District and in each of the three regions. A facility is considered to be in violation if one or more of its permit units is in violation. Violations that result in NOVs are categorized as emission related, whereas those that result in NTCs are considered to be minor. During the joint inspections, there was not always a strict one-to-one correspondence between the number of permit units in violation and the number of NOVs issued. On some occasions, one NOV was issued for multiple permit units in violation; at other times, multiple NOVs were used for violations occurring at a single permit unit.

Table III

Region	Facilities Inspected	Permit Units Inspected	Violation Rate Permit Unit Basis				Violation Rate Facility Basis			
			Minor (Only)		Emission Related		Minor (Only)		Emission Related	
			No.	%	No.	%	No.	%	No.	%
Northern	95	421	3	1%	17	4%	3	3%	11	12%
Central	58	225	7	3%	17	8%	5	9%	13	22%
Southern	53	189	2	1%	18	10%	0	0%	15	28%
Total	**206**	**835**	**12**	**1%**	**52**	**6%**	**8**	**4%**	**39**	**19%**

Table IV summarizes joint inspection results for the entire District by source category. The number of facilities and permit units and the number of NOVs and NTCs in each category are tabulated. The coatings category includes metal, wood, and plastic product coatings other than vehicle coatings. The Other VOCs category encompasses polyester resin and printing operations. The five Title V facilities in the miscellaneous category consist of two glass plants, two landfills, and one chemical waste management facility.

Table IV

Source Category	Facilities Inspected	Permit Units Inspected	Title V Facilities	NTCs	NOVs
Coatings	31	105	1	2	4
Auto Coatings	16	18	0	0	2
Other VOCs	11	45	0	0	9
Dry Cleaning	25	32	0	3	6
ICEs	22	45	0	0	7
PM (Aggregate Type Sources)	16	50	0	3	4
Power Plants	11	80	7	2	3
Food Processing	26	177	4	0	12
Petroleum	10	56	3	0	6
Incinerators	4	7	0	0	0
Misc.	34	220	5	1	3
Total	**206**	**835**	**20**	**11**	**56**

Table V presents the District-wide violation rates of facilities and permit units in each source category. Source categories are determined as described for Table IV.

Table V

Source Category	Facilities Inspected	Permit Units Inspected	Violation Rate Permit Unit Basis				Violation Rate Facility Basis			
			Minor (Only)		Emission Related		Minor (Only)		Emission Related	
			No.	%	No.	%	No.	%	No.	%
Coatings	31	105	3	3%	4	4%	2	6%	4	13%
Auto Coatings	16	18	0	0%	2	11%	0	0%	2	13%
Other VOCs	11	45	0	0%	6	13%	0	0%	4	36%
Dry Cleaning	25	32	3	9%	4	13%	3	12%	4	16%
ICEs	22	45	0	0%	9	20%	0	0%	6	27%
PM (Aggregate Type Sources)	16	50	1	2%	4	8%	1	6%	4	25%
Power Plants	11	80	4	5%	3	4%	1	9%	3	27%
Food Processing	26	177	0	0%	12	7%	0	0%	7	27%
Petroleum	10	56	0	0%	5	9%	0	0%	2	20%
Incinerators	4	7	0	0%	0	0%	0	0%	0	0%
Misc.	34	220	1	0%	3	1%	1	3%	3	9%
Total	**206**	**835**	**12**	**1%**	**52**	**6%**	**8**	**4%**	**39**	**19%**

A.2.2 Diagnostics Testing of Gasoline Dispensing Facilities

This part of the program review was conducted in two phases. During the initial phase in 2003 ARB staff visited a total of 83 gasoline dispensing facilities (GDFs) during the In-Use Vapor Recovery portion of the program review. During the second phase, which was conducted recently to determine the impact of rule improvements not reflected during the original inspections, 72 additional GDFs were inspected. The entire testing effort was conducted in cooperation with District staff who participated in the testing and were also present to take enforcement action at those facilities which failed the tests.

During the initial phase 29 of the 83 facilities were balance type Phase II systems and the remaining 54 facilities were of the vacuum-assist type Phase II systems. Three of the facilities could not be tested because wind gusts at the locations on the day of the test were sufficiently strong as to adversely affect the pressure measuring devices.

Eighty facilities were tested using Test Procedure (TP) 201.3, Determination of 2-Inch Water Column Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities. Eleven facilities (14%) passed TP 201.3. These included nine vacuum-assist and two balance type facilities. The nine vacuum assist systems (consisting of 146 fueling points or nozzles) were then tested under TP 201.5, Air to Liquid Volume Ratio (A/L test). A total of 105 (72%) of the fueling points passed the A/L test. The two balance systems were tested under TP 201.4, Dynamic Back Pressure. Both facilities passed this test.

Of the 69 (86%) facilities which failed to meet the static pressure performance criteria, 43 of the facilities could not be pressurized in accordance with TP 201.3. Inability to pressurize is considered a gross failure of TP 201.3 and indicates a serious and significant leak of gasoline vapor to the atmosphere. The other 26 of the facilities could not hold the required pressure for the entire five minutes in accordance with the test procedure. As summarized in Table VI, 42 of the 51 (82%) vacuum-assist type installations did not successfully complete TP-201.3. These facilities were tagged out of service by district personnel. Tagging out of service vacuum-assist systems that fail TP 201.3 is required because the systems effectiveness is reduced by more than 5 percent. Twenty-seven of the 29 (93%) balance type installations accounted for the remaining failures and were tagged with a seven day notice to comply by district personnel. The less severe seven day notice to comply provision was applied to balance type installations because balance type systems that fail TP 201.3 experience less than a 5 percent loss in effectiveness as explained later in this section.

The results of the testing clearly showed the need for more work in this area to ensure that the gasoline vapor recovery systems are operating with the effectiveness that they demonstrated during certification. The flow chart on page A-11 describes the testing effort conducted in 2003. The significant loss in effectiveness of vacuum-assist type of systems combined with the cumulatively, potentially substantial loss of effectiveness of balance type systems that fail TP 201.3 must be addressed and action taken to improve performance.

The Enhanced Vapor Recovery (EVR) regulations adopted by the Air Resources Board on March 23, 2000 were intended to alleviate problems associated with equipment failures. The requirement for the installation of Phase I EVR by April 1, 2005 was the first step toward correcting problems associated with equipment durability. The implementation of Phase II EVR by January 2009 should further correct problems associated with equipment durability.

A review of gasoline dispensing rules from several districts shows that District Rule 4622 appears to contain stringent requirements. This rule, titled Gasoline Transfer Into Motor Vehicle Fuel Tanks, was amended September 19, 2002. The implementation of requirements for weekly or daily periodic maintenance and inspection of facilities based on monthly throughput was a first step in addressing performance failures resulting from poor maintenance. Removing the monthly throughput criteria and implementing a requirement for self-inspection of the facility each day the facility dispenses gasoline was expected to further mitigate problems associated with poor maintenance. Requirements for annual and semi-annual testing of gasoline dispensing facilities implemented in District Rule 4622 should have improved compliance with standards associated with EVR requirements.

In order to determine the impact of the program improvements implemented in the Two years since the initial vapor recovery field work was conducted for this audit, ARB staff recently revisited 72 GDF's in the district to perform TP-201.3. This was done as a means to gauge the impact of the implementation of the Phase I EVR requirements and the rule amendments. Each one of these facilities should have been subject to and passed TP-201.3 at least once in between the rounds of testing conducted by ARB. In the latest testing, 34 facilities (47%) passed TP-201.3. These included 23 vacuum-assist and 11 balance type facilities.

Although results of the testing do illustrate an improvement in the performance of the vapor recovery systems, the compliance rate with TP-201.3 is still only 47%, as compared to 14% in 2003. Table VI summarizes the results for the two sets of TP-201.3 testing. From the 2005 results, 38 (53%) facilities failed to meet the static pressure performance criteria, 22 of which could not be pressurized. These results are somewhat disappointing when considering the extent of the changes that have been put in place to the vapor recovery programs at the state and district levels to raise the in use performance of vapor recovery equipment.

Table VI

System Type	TEST PROCEDURE (TP) 201.3 RESULTS					
	2003			2005		
	Tested	Pass	Fail	Tested	Pass	Fail
Vacuum-assist	51	9	42	31	23	8
Balance	29	2	27	41	11	30

Particularly alarming is the continued poor performance of the GDF's equipped with balance systems to comply with the leak decay requirement. As summarized in Table VI, 30 of the 41 (73%) installations did not successfully complete TP-201.3. In two-

thirds of these failures, the facilities could not be pressurized. It should be noted that balance type systems configured with open vent pipes to the atmosphere have historically demonstrated the ability to achieve the required 95 percent control of vehicle refueling emissions. Although, with the implementation of Phase I EVR, these systems are no longer allowed to operate with open vent pipes. Consequently, the emissions impact associated with a balance installation failing to comply with TP-201.3 is considered minor. However, it is still crucial to maintain the leak integrity at balance sites to ensure that the optimal reductions of refueling emissions are realized. Additionally, since the district has a high number of balance sites (2400) the cumulative emissions across the region may be substantial. Furthermore, it is anticipated that the penetration of balance sites will increase to fulfill regulatory requirements. This indicates that significant concerns remain with a major control strategy for the district and as stated earlier, action must be taken to improve vapor recovery system performance.

Recommendations

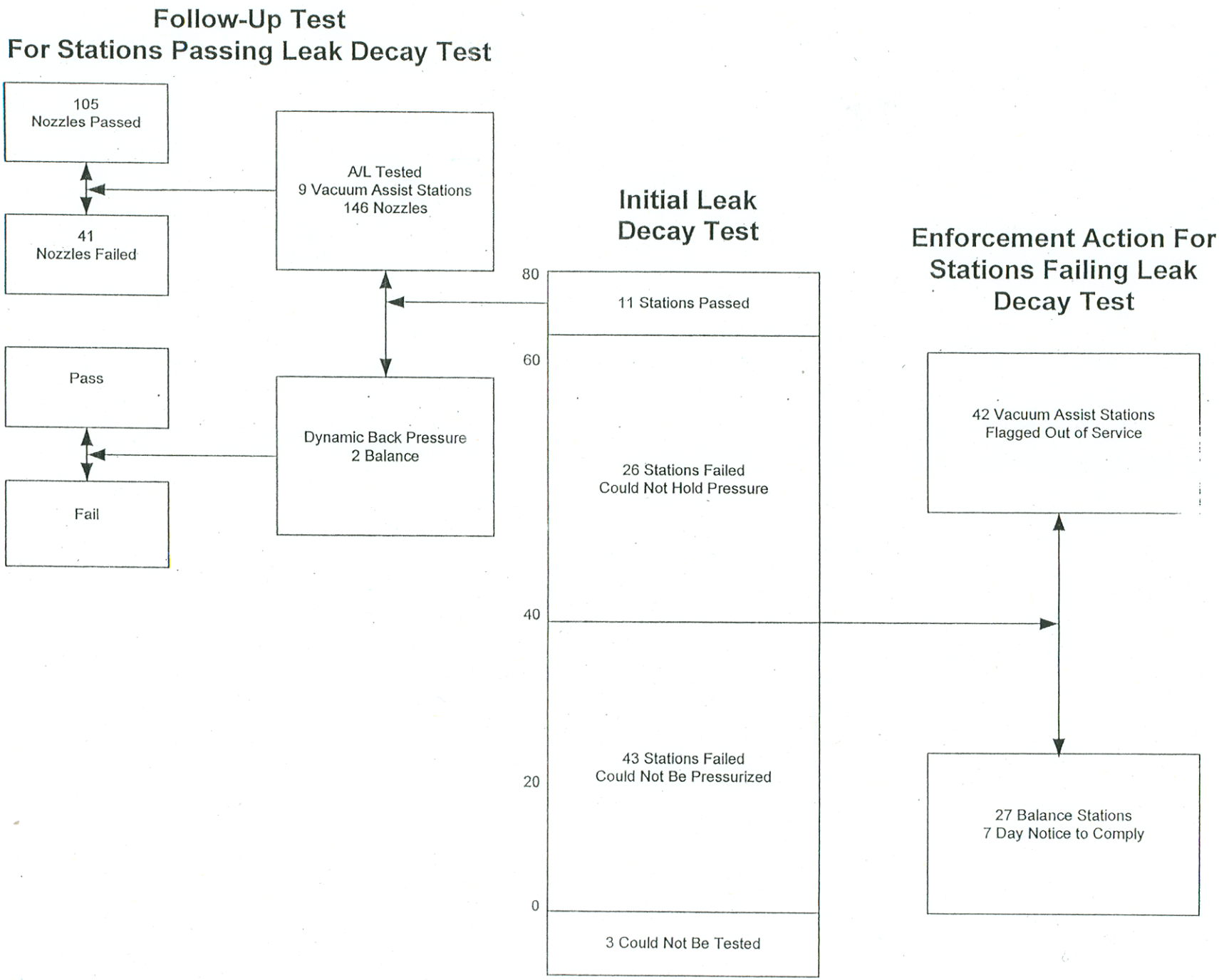
Significant Recommendations:

1. Although District Rule 4622 has been in place for almost two years prior to the most recent review of GDFs, a high number of stations still cannot comply with the static pressure performance requirement (TP-201.3). The District should consider adding more resources to the vapor recovery program. Currently, the District allocates 10.5 positions to the enforcement of their vapor recovery rules. In a district as geographically large as the San Joaquin Valley, to assure an improvement in compliance, the District should allocate more resources to the enforcement of their vapor recovery rules.

Other Suggestions to Improve Program Effectiveness:

None

San Joaquin Valley 2003 GDF Test Results



A.2.3 Source Testing Results

Source Testing was performed by ARB staff at five facilities. The results of the testing are summarized in Table VII.

Table VII

Facility Name	Emission Point Tested	Test Type	Results	Comments
St. Gobain, Madera	Stack from 75 MM Btu/hr Glass Melting Furnace #2	Abbreviated RATA for NOx and CO (4 runs conducted)	NOx: Allowed Relative Accuracy: 20% Actual: 4.2% CO: Allowed Relative Accuracy: 15% Actual: 0%	CEM Passed RATA CEM Passed RATA
Rio Bravo, Fresno	Stack from 352 MM Btu/hr Circulating Fluidized Bed Combustor	Abbreviated RATA for NOx and CO (4 runs conducted)	NOx: Allowed Relative Accuracy: 20% Actual: 15% CO: Allowed Relative Accuracy: 15% Actual: 0%	CEM Passed RATA CEM Passed RATA
Shell Oil, Bakersfield	209 MM Btu/hr Crude Oil Heater Unit 10-H1	Compliance Test (3, ½ hr runs)	NOx: Permit Limit: 30.0 ppm @ 3% O_2 Actual: 24.2 ppm @ 3% O2 CO: Permit Limit: 290 ppm @ 3% O_2 Actual: less than 50 ppm @ 3% O_2	In Compliance In Compliance
Guardian Industries, Kinsburg	Stack from 182 MM Btu/hr Float Glass Line	Abbreviated RATA for NOx and CO (2 runs conducted)	NOx: Allowed Relative Accuracy: +/-20% Actual: 11% SO_2: Allowed Relative Accuracy: +/-20% Actual: 9.5% O_2: Allowed Relative Accuracy: +/-20% Actual: -7.2%	CEM Passed RATA
Mendota Biomass Power Plant	Main Stack from Combustor	Abbreviated RATA for NOx and CO (2 runs conducted)	NOx: Allowed Relative Accuracy: +/-20% Actual: -2.6% CO: Concentration Permit: 400 ppm @ 3% O_2 Actual: 8.4 ppm @ 3% O_2	CEM Passed RATA

A.2.4 Observations from Joint Inspections and Diagnostics Testing

General findings for all areas (South, Central, North)

1. The District has sectioned each area into zones and specific inspectors are given facilities within their zones to inspect. Some inspectors may live in or near their zones so they can spend more of their time in the field conducting inspections. Inspectors can have increased productivity since they do not have to drive as far between facilities. The system of zones also helps the District organize the facilities in each region. This system works well for the District.

2. The District attempts to maximize inspector time in the field. Each inspector has a vehicle that often functions as the inspector's office (in the field). The District's policy document indicates that the inspectors should only come to the office when required to do so. Inspectors indicated they are required to come into the office at least once a week.

3. Each inspector has a laptop computer and a cell phone. Some inspectors can remotely access the District's database with the laptop computers. These were recent improvements by the District. In the past, inspectors were required to share computers.

4. The District inspectors have inspection forms for specific types of equipment including boilers, baghouses, internal combustion engines and other units. The forms are designed to accommodate several inspections in a check-off format. Some forms may be designed to have data from five or more years of annual inspections.

5. A large portion of the District's resources are being consumed by facilities under the Title V program. New Title V requirements for sources have created more paperwork, increased the complexity of permits, and increased the workload of inspectors.

6. The District does not inspect all its sources on an annual basis. During joint inspections, ARB staff found that some dry cleaning facilities had not been inspected for over 18 months. Dry cleaning facilities should be inspected every year because of the potential of emitting toxic air contaminants. The District's policy document states the standard compliance frequency is 12 months but also states that it can be less frequent with management approval. The District has an inspection frequency of 12, 18, 24 or 36 months for their sources. Larger sources have an increased field presence since they may have more breakdowns and complaints and inspectors may have to visit the facilities to reconcile them. The field presence at smaller and medium sources may be lower.

7. The District's permits have an equipment description on the first page of every permit. ARB staff believes that in some permits, especially when the description is more complex, clarity could be improved with a clearer item-by-item equipment listing.

8. For complaint handling on nights, weekends and holidays, the District has an "on-call" inspector. The on-call duty is rotated through the staff of inspectors. This system appears to work well for the District.

9. District inspectors (especially in the north & central regions) commented that permit engineers should more actively participate in joint inspections of their facilities.

10. The District currently uses the presence of perchloroethylene (PERC) odors in conjunction with an audible halogenated-hydrocarbon detector and soap solution to verify leaks. However, none of these methods can determine if the leaks are over the 50 ppm limit of Rule 7070 for dry cleaning operations. We recommend the District to use more modern equipment to verify PERC leaks in a consistent manner.

11. In interviews, the District indicated that only about a half dozen samples were taken the previous year for analysis of volatile organic compound (VOC) content. The District currently sends samples to the Bay Area AQMD for analysis. During the joint inspections, VOC materials were not sampled at any of the facilities. By the District's developing the capability to analyze its own samples or contracting with a local laboratory, the process of sending samples to the Bay Area will not be an impediment to sample collection.

12. The source contact for Delano Energy commented that his permit was too complicated with over 600 conditions and was more complicated and lengthy than any other biomass plant in the District.

Staff observations on miscellaneous issues are given below:

<u>Southern Region Inspection Findings</u>

1. The southern region is better equipped to test sources for compliance with emission limits.

2. In general, the southern region compliance staff more aggressively seeks enforcement action than the central and northern region compliance staff.

3. The District, especially the southern region office, has portable analyzers for checking compliance with emission limits for combustion related

sources. They also have the knowledge and equipment to calibrate, operate and conduct minor repairs of the units.

4. The southern region management (supervisors and region manager) was involved in the day to day activities of the inspections, had knowledge of the sources in the region and was responsive to the needs of inspectors.

Central Region Findings

1. As with other regions, ARB staff encountered a few vague permit conditions. For example, the permit for Angelica Health Care Services had a condition that would become enforceable after "implementation" of the equipment.

2. District inspectors in the central region felt that the engineers needed to participate in more joint inspections get a better understanding of writing enforceable permit conditions.

3. In the diagnostics testing of gasoline dispensing facilities, ARB staff observed that some Central Region staff acted more like a "test and repair" crew instead of just testing the station (test only) and acting on the results (pass or fail).

Northern Region Findings

1. Northern region inspectors indicated that they do not issue violations as readily as inspectors in the central region. ARB staff found that the northern region inspectors work to get their facilities in compliance, but may not issue NOVs or NTCs when a facility is not in compliance. Examples: not enough bags for baghouses at Regency Cabinets, lack of records at Hansen's Furniture, no NOV for a dry cleaner with strong PERC odors. The inspector had soap solution but did not use it.

2. As with the other regions, some of the permits have unenforceable conditions, especially ones with emission limits for equipment that is not source tested.

3. An Inspector commented that one of the main challenges they faced was the backlog of change orders in permit services. For example, an inspector will do a change order after a start up inspection to change an ATC to a PTO, and a year later the inspector still will not have the permit ready for the source's annual inspection.

4. Most of the northern inspectors did not write a summary report at the end of their inspections to give to the source. However, an inspector trained in the central region habitually wrote summary reports at the end of

inspections for sources. Some inspectors use the summary sheet to get facilities to change their practices without issuing an NTC or NOV.

5. Northern region management was supportive of inspectors and was involved in day-to-day activities of inspections.

A-3. Legal Action Program

The legal action program encompasses enforcement actions taken by the District after a facility is documented to be in violation of applicable rules and regulations. In particular, the program covers the mutual settlement of notices of violation issued to non-compliant sources and any civil actions that may follow unsuccessful mutual settlement attempts. The goal of the District's legal action program is to ensure that a facility returns to compliance before settlement, and that notices of violation are settled for penalties that are commensurate with the magnitude of the violation.

The District's legal action program was evaluated with respect to the adequacy of policies and procedures pertaining to the program, documentation requirements, and the overall effectiveness of the program. Topics considered under the program effectiveness section include the timely settlement of cases and the collection of penalty amounts sufficient to deter future non-compliance.

In general, the review showed that the District's legal action program appears to be operating properly. The District verifies that a source is returned to compliance before negotiating a violation settlement. The majority of violations are resolved through the mutual settlement program for penalties that are commensurate with the magnitude of the violation. Cases that cannot be closed through mutual settlement are referred to District Counsel for further legal action. Exceptional high profile cases may be referred directly to District Counsel. Mutual settlement for the three regions is handled by the Central Office.

ARB staff conducted interviews, reviewed applicable policies and guidelines, and used an electronic spreadsheet report provided by the District of NOVs issued in 2001 and 2002 to obtain these findings. In addition, staff sampled 179 closed mutual settlement files, including 131 stationary source case files. The stationary source sample files represented approximately 15% of closed stationary source cases, settled from NOVs issued in 2001 and 2002. Some cases included multiple NOVs. Tabulated figures are primarily based on the electronic spreadsheet report provided by the District.

Findings

<u>Policies and Procedures</u>

1. The District has a policy for the administration of its mutual settlement program. The District also has a penalty schedule, NOV guidelines, and guidelines for transfer of cases to District Counsel. These documents provide guidance for administering the legal action program, including the treatment of multiple day violations and repeat violations.

2. The District's mutual settlement policy document is still in draft format though dated from August 1994.

3. The penalty schedule specifies higher penalty tiers for repeat violators and uses this provision for most facilities with repeat violations.

4. The penalty guidance schedule recommends an initial dollar amount for settling violations and cites the eight elements of HSC section 42303. However, the District does not apply specific factors for all the 8 elements in calculating penalties on the mutual settlement worksheet. Reductions are typically generalized.

5. In 1999, the District adopted a size multiplier of 1 to 5 in computing penalties; the largest facilities are subject to a five-fold penalty increase. The District has used the multiplier fairly and consistently.

6. Penalties in the guidance schedule for some toxic sources are low; the first tier penalty for a perchloroethylene leak is $300.

7. The District does not have written protocols or memoranda of understanding with the local county prosecutors. District Counsel indicated in an interview that the Kern County District Attorney's Office has demonstrated good cooperation with the District and typically handles about six cases a year. The District has not pursued this cooperation with other county prosecutors.

Documentation Requirements

1. District headquarters in Fresno maintains NOV binders, mutual settlement case files, and the electronic database for all NOVs issued throughout the District. Case files are generally well organized and contain adequate documentation for legal action.

2. The District has a well-established mutual settlement letter program. A mutual settlement letter is issued for all violations that are not retracted or referred directly to District Counsel. The letter recommends a dollar amount and provides an opportunity for the responsible party to request a conference. The District does not provide a separate release letter for settled cases.

3. The NOV database contains adequate fields of information except the date of the return inspection to document compliance and a brief description of the reason that NOVs are dropped, voided, or result in no further action (NFA).

4. Approximately 3 percent of the records included in the electronic spreadsheet report of NOVs provided by the District were missing status codes. The status code indicates whether the facility is still in violation,

the NOV dropped, the case transferred to District Counsel, closed, put on hold, or is in the mutual settlement process.

Program Effectiveness

1. The District has increased penalty amounts since 1994. Most stationary source (non-GDF) penalties, which are directly emission related, are listed above $500 on the penalty schedule. The average settlement has increased from $723 to $1215. In 1999, the District adopted a size multiplier of 1 to 5 in computing penalties; the largest facilities are subject to a five-fold penalty increase. The District has used the multiplier fairly and consistently.

2. The District has an alternative settlement program for first time violators in GDF and burn cases. If the responsible party attends a District training class, a $150 credit is applied toward reducing or eliminating the penalty.

3. District reports show that 9 percent of cases were dropped or resulted in NFA during the two-year review period. This figure compares favorably with other districts recently reviewed.

4. However this 9 percent figure does not include the following. The spreadsheet report provided by the District indicates that about 2 percent of cases are recorded as settled without a monetary penalty. In addition, less than one percent of cases are placed on probation. If there are no repeat violations, these cases are ultimately dropped.

5. The District is effective in collecting penalties from mutual settlement cases, while fostering communication and cooperation with the responsible party throughout the process. The District collected $2,652,558 from NOVs issued in 2001 and 2002.

6. The Southern Region stationary sources accounted for most of the penalty dollars in 2001 and 2002, reflecting the presence of the larger facilities in this region and a higher number of repeat cases. The District uses a size multiplier of 1 to 5 in computing penalties; the largest facilities are subject to a five-fold penalty increase.

7. Penalties collected and recorded by early April 2003, from NOVs issued in 2001 and 2002, are categorized and tabulated in Table VIII. Table VIII also shows the average penalties and median settlements for five source categories.

Table VIII. Penalties Collected from NOVs Issued in 2001 and 2002

	North		Central		South		Total
	Settlements	Average Per Closed NOV (Median)	Settlements	Average Per Closed NOV (Median)	Settlements	Average Per Closed NOV (Median)	Settlements
Asb.	**$52,020**	$1,576 ($600)*	**$6,600**	$2,200 ($600)	**$37,300**	$1,622 ($400)	**$99,696**
Burn	**$65,332**	$375 ($300)	**$61,233**	$280 ($165)	**$52,954**	$430 ($337)	**$180,174**
Vapor	**$31,113**	$305 ($240)	**$88,376**	$259 ($180)	**$62,357**	$217 ($180)	**$182,430**
Stat.	**$206,013**	$1,296 ($600)	**$232,562**	$1,092 ($600)	**$1,702,013**	$3,692 ($1200)	**$2,200,078**
Other	**$9,910**	$762 ($600)	**$8,770**	$675 ($300)	**$35,985**	$1,799 ($600)	**$56,102**
Total	**$364,408**		**$397,541**		**$1,890,609**		**$2,652,558**

* Median penalty values are shown in parentheses.

As shown in Table VIII, there is not a large difference between average and median settlement values for the vapor (GDFs) and open/agricultural burn cases. For the stationary source category, there is a significant difference between the median and average settlement values. For example, in the southern region the median settlement for stationary sources is $1200 as compared to the average value of $3692. This difference should be expected because this category covers sources ranging from dry cleaners and coating shops to power plants and oil refineries. In the southern region 45 per cent of the NOVs in Table VIII settled for under $1000. Seven per cent of the NOVs settled in the range of $10,000 to $76,500. The difference between median and average values in the northern and central regions is not as pronounced (compared to southern region) because they do not have as many large sources.

8. For NOVs issued in 2001 and 2002, the average penalty per NOV for all categories was $1215. Of those NOVs issued in 2001 and 2002 that settled for a monetary amount, 173 out of 751 stationary source NOVs and 316 out of 441 burn NOVs settled under $500. 451 of 657 vapor NOVs settled for less than $250. Many of these NOVs were emission related. (Some burn and vapor case settlements were reduced by $150 due to the alternative settlement credit for training attendance.)

9. The District averaged 221 days from NOV issuance to settlement for calendar years 2001 and 2002. To ensure the effectiveness of the mutual settlement program, ARB staff recommends that the District strive to achieve a target of 90 days for average case settlement time. We

recognize that staffing constraints may have contributed to delays in case settlement. It is our understanding that the District has hired additional mutual settlement staff since the review period. This should expedite case settlement.

10. The Compliance Department transferred less than 10% of cases to the Legal Department during the review period. The District collected complete penalty payments for approximately one third of the cases transferred in 2001 and half of the cases transferred in 2002. The District obtained default judgments in about one tenth of the transferred cases for both years.

11. There is a time lag in the transfer of unresolved mutual settlement cases to District Counsel. The average time from the date of mailing of the initial mutual settlement letter to transfer date was 272 days for NOVs issued in 2001 and 2002.

12. A breakdown of settlement times by region and source category is shown in Table IX. Settlement times are displayed as the average number of days from NOV issuance to mutual settlement letter mailing and from mutual settlement letter mailing to final closure. According to staff interviews, the time needed to document return to compliance caused the longest delay in settling NOVs for stationary sources.

Table IX. Average Number of Days to Settle NOVs*

	North		Central		South	
	NOV to MSL**	**MSL to Settlement**	**NOV to MSL**	**MSL to Settlement**	**NOV to MSL**	**MSL to Settlement**
Asbestos	204	44	149	28	224	78
Burn	106	76	86	71	72	94
Stationary Sources	245	106	236	52	210	78
Vapor	201	53	103	62	106	50
Other	130	62	261	56	128	55

***Table IX includes only NOVs that were issued in 2001 and 2002, and that were closed by April 10, 2003.
**MSL – mutual settlement letter mailing

Recommendations

Significant Recommendations:

1. To ensure the effectiveness of the mutual settlement program, ARB staff recommends that the District strive to achieve a target of 90 days for average case settlement time.

Other Suggestions to Improve Program Effectiveness:

1. The District's mutual settlement policy document, dated August 1994, is still in draft format. The District should update and finalize the policy document.

2. The District should consider increasing the baseline penalty amount for perchloroethylene leaks in the penalty schedule.

A-4. Complaint Program

The District's complaint handling program governs the investigations of complaints received from the general public. Air pollution complaints received by the District are an essential source of information. Timely and attentive response to air pollution complaints is critical to ensure protection of public health and to maintain public trust. More than merely notification from the public that a perceived problem exists, the specific observations of a public complainant can provide valuable clues about the daily operations and compliance status of industrial sources. Complaints are normally related to injury, nuisance, or annoyance caused by some type of air contaminant. The District also receives complaints that are not necessarily affecting any particular person but are intended to inform the District that a source may be operating out of compliance with District rules and regulations.

The District's complaint program was evaluated with respect to the framework of best management practices to respond to complaints as described in the ARB/CAPCOA Complaint Resolution Protocol of October 2002 (Protocol). These include the receipt, evaluation, response, and resolution of air quality complaints and feedback to the complainant. The intent of the Protocol is to ensure timely and effective resolution of air pollution complaints and to inform the public of the process. As part of this commitment, ARB subscribes to an over-the-phone verbal translation service and has made that service available for use by the local air districts to translate complaints from languages other than English and to provide verbal feedback to the complainants. Overall, this review indicates that the District has a good complaint handling program.

Findings

1. ARB staff did a detailed review of five percent of the complaints received in calendar years 2001 and 2002. Based on the review, the District has a good program in place to receive, process, and investigate citizen complaints. Complainants can contact the District by dialing any of three dedicated toll-free telephone numbers. The toll-free numbers are found in the District's Internet web-site and the local telephone directory. Each dedicated toll free telephone number represents the number from one of the three regional offices (Modesto, Fresno, and Bakersfield).

2. The District has an after-hour complaint response program. When a complainant calls after hours, an after-hour message service pages the on-call inspector. The on-call inspector is then notified that a complaint has been received. The inspector then calls the message center to get the complainant's information. The inspector then responds to the complaint.

3. Complaints are being logged Monday through Friday. After-hour and weekend complaints are logged on the first normal business day at the District. Each complaint generates a complaint number and report.

4. Complainants are being informed of complaint status if the complainant leaves his/her name and telephone number.

5. The District received approximately 6200 complaints for calendar years 2001 and 2002. The type of complaints received by the District in 2001 and 2002 and their alleged origin are presented in Table X:

Table X

Complaint Type	Percent of Total	Complaint Origin
Odor	37	Facilities, residences, unknown
Smoke/burning	33	Residential, construction, facilities, agriculture, city parks, unknown
Dust	20	Construction, agriculture, facilities, residential, city parks, unknown
Fumes	5	Facilities, residences, unknown
Asbestos	3	Construction, residences, schools
Miscellaneous*	2	Residential, agriculture, facilities

* Burn piles staged closed to a resident's property line; a neighbor's garage loaded with paint and spray guns, or a facility operator purchased new non-permit equipment.

6. Almost all (99%) complaint reports received supervisory review.

7. The current District average for complaints investigated within 24 hours is 80 percent, compared to 70 percent in the 1994 review. 17 percent of the complaints were investigated beyond 24 hours. For about 2 percent of the complaints, it was not clear if an investigation was conducted or not. About 1 percent of the complaints were not investigated (due to District policy in reference to nuisances). This information is shown in Table XI.

Table XI

Complaint Findings	Percent Based on Review
Investigated within 24 hours	80
Investigated after 24 hours	17
Unclear when investigated	2
Not investigated	1

8. Approximately 51 percent of the complaint reports reviewed did not contain one or more of the following details.

   a. No date and/or time of investigation.

b. Alleged facility (permit or non-permit) complaint source was not investigated to determine District rule and/or permit condition violations.
c. No compliance or final determination made after investigation was conducted.
d. No comments from area inspector or follow-up.
e. Complaint was investigated beyond 24 hours (as late as 13 days from the time the District received a complaint).
f. Lack of enforcement on violations found (No NTC or NOV issued).
g. Complaint was not investigated.
h. No copy of Fire Department Incident Reports.
i. No supervisor review/signatures.
j. No name of complaint source (i.e., construction company, facility)
k. Not specific if complaint source of origin operator was contacted on-site or via telephone.
l. Complaint was not investigated.

Accomplishment

1. The District has a good program in place to receive, process, and investigate complaints, including an after hour complaint response program.

Recommendations

Significant Recommendations:

None

Other Suggestions to Improve Program Effectiveness:

1. All applicable elements of complaint reports should be filled in completely.

A-5. Equipment Breakdown Program

The breakdown program is an integral component of the District's compliance program. The District's breakdown rule protects a source from enforcement action by the District, if the source reports a legitimate breakdown condition. Pollutants can be emitted during a breakdown episode at higher concentrations than during controlled operation. Therefore, it is important that breakdown occurrences are minimized and are corrected quickly. The District's equipment breakdown program was evaluated with respect to receipt, investigation, and resolution of equipment breakdowns. The District received approximately 1600 breakdown reports during calendar years 2001 and 2002. Overall, the District's breakdown program is operating in a satisfactory manner. Our determination is based upon the detailed review of breakdown analysis reports and the fact that the District has a demonstrated system in place for receiving and resolving reported breakdowns. This includes identifying frequent breakdowns from the same equipment.

Findings

General Comments

1. A set of written policy and guidelines exist. The written policy and procedures were approved in November 1, 1994 and last revised on March 11, 1998. The District has improved in this area since the 1994 ARB review.

2. For the review period (calendar year 2001 and 2002), the Northern Region Office received 313 reports; Central Region Office received 449 reports and the Southern Region Office received 842 reports. The District received a total of 1604 equipment breakdown reports during the review period.

Receipt of Breakdowns

1. Breakdowns are reported by telephone or faxed to the District. The District advertises the telephone number and fax number in the local telephone books, handouts and on its web-site.

2. All breakdowns reported to the District are recorded in a breakdown log and database which includes: facility ID #; reported by; time reported; time facility discovered; time incident ended; District inspector who investigated; specific equipment; etc.

3. The District reviews all incoming breakdown reports.

4. Breakdown reports are reviewed and handled by the area inspector during regular business hours.

5. On weekends and after hours, the on-call inspector reviews and handles the breakdown report. The inspector telephones the source to determine if the breakdown is allowed under Rule 1100 and if they need to do an on-site investigation at the source.

6. Not all breakdown reports received by the District are relevant to the equipment breakdown program (i.e., equipment start-up, equipment shutdown, equipment maintenance, source testing).

7. The total number of reports that were found irrelevant to the District's equipment breakdown program but reported to the District was 289. Of these, the northern office received 31, the central office received 94, and the southern office received 164.

8. At the time of the review, ARB staff found a total of 82 breakdown reports with "no position" indicated in the database. District staff indicated these were breakdown reports that were completed but not turned in to update the breakdown database and or completed reports that were turned in but were not cleared in the database. These "no position" reports were found in all three region offices and broken down to 52 from the northern office; 25 from the central office and 5 from the southern office.

9. There were a total of 1071 breakdown reports that were granted breakdown relief. The northern office granted 224 breakdown relief; the central office granted 314 breakdown relief; and the southern office granted 533 breakdown relief.

10. There were a total of 162 breakdown reports that were denied relief. The northern office denied 6 reports; the central office denied 16 reports; and the southern office denied 140 reports. District policy calls for enforcement action to be taken against sources with excess emissions where breakdown relief is denied. Our review found documented examples where the District took enforcement action against sources where breakdown relief was denied. Table XII provides a summary of breakdown reports received during our study period and the action taken by District staff.

Table XII. Summary of 2001 and 2002 Breakdown Reports Received at the North, Central and South District Offices

Region Office	Breakdowns Accepted	Denied Relief	Should Not Have Called*	No Positions**	Total
North	224	6	31	52	313
Central	314	16	94	25	449
South	533	140	164	5	842
TOTAL	1071	162	289	82	1604

* The information reported to the District was found irrelevant to the District's equipment breakdown program and should not have been reported. ** These reports were found to be administrative issues (i.e., paperwork not cleared at the database, reports not turned in for closure.)

Investigation of Breakdowns

1. According to District Staff, the District attempts to investigate all breakdown requests within 24 hours of receipt unless they occur on weekends or are not a significant emergency breakdown.

2. About half of the breakdown investigations are conducted on-site.

3. Breakdowns that result from process upsets do not constitute a breakdown, and the District does not qualify process upsets as a breakdown.

4. The inspector fills out a Breakdown Investigation Report with all the information received at the District from the source. If an on-site investigation is conducted at the source, the inspector fills out and completes an Inspection / Investigation Summary report. The report is then reviewed by a District supervisor and signed.

5. When required, the District conducts a re-inspection to determine if the breakdown condition was corrected.

6. District staff indicated the breakdown source is required in their 10 days report to estimate the amount of excess emissions but not at the onset. However, they always ask if it is available.

7. The District has a procedure in place to identify frequent breakdowns from the same equipment.

8. District staff indicated they have several informal meetings with supervisors and inspectors with discussions on breakdown reports. The District does not incorporate excess emissions arising from breakdowns

into its emission inventory. However, District Staff indicated their Central Office Planning Group may be involved in incorporating excess emissions.

Recommendations

Significant Recommendations:

The District should quantify excess emissions arising from equipment breakdowns and incorporate them into their emission inventory.

Other Suggestions to Improve Program Effectiveness:

1. A review of District Rule 1100 requires sources to submit a written report within 10 days after the breakdown condition. CARB recommends this source report be submitted within 1 week or 7 days after the breakdown occurrence.

2. The District should amend its web-site to comply with District Rule 1100 by requiring breakdowns of CEM equipment to be reported by telephone or fax within one hour after detection instead of eight hours.

3. The District should consider updating their breakdown reports by including the date/time the breakdown was discovered by the source, the date/time the inspector investigated the breakdown, and whether the investigation was conducted on-site.

A-6. Continuous Emission Monitor Program

A comprehensive and efficient continuous emission monitor (CEM) program is an important tool for compliance verification and a significant component of a district's compliance program. CEM reports allow District staff to verify a source's compliance status on a continuous basis. The accuracy of CEMs is verified through relative accuracy test analysis (RATA) or source tests of CEM equipped units. To obtain these findings, ARB staff conducted interviews and reviewed CEM related documents such as permits to operate, quarterly CEM reports, CEM inspection reports, and CEM RATA tests.

Findings

1. The District has a modern system for retrieving emissions data from facilities equipped with continuous emission monitors (CEMs). The District's telemetry system was installed in 2001 and polls 70 CEM systems within the District. There are 14 facilities in the Northern Region, 20 facilities in the Central Region and 36 facilities in the Southern Region with CEMs. The District can generate a daily and monthly polling report showing the daily and hourly operating averages for each facility.

2. CEM requirements are placed on facilities in accordance with District rules. District Policy requires all CEMs to be on the polling system. Permit conditions require each facility to calibrate and maintain their CEMs and the inspectors enforce these permit condition requirements. The District inspects CEM systems during the annual inspection. Permit conditions specify the frequency of relative accuracy testing audits (RATAs) of CEMs. CEMs are tested at the prescribed frequency.

3. District policy calls for enforcement action to be taken against sources with excess emissions or those who fail source test protocols. Our review found documented examples where the District took enforcement action against those sources with excess emission reports, CEM downtime, or failed relative accuracy test audits/source tests.

4. Each CEM has an alarm system set at each pollutant's emission limit. The alarm system reads the telemetry system and notifies the District. The District investigates all excess emission reports (CEM Alarm Reports) over the phone, by facsimile or in the field. Most CEM Alarm Reports are associated with a breakdown report.

5. Facilities submit CEM Excess Emissions and Downtime Reports to the District on a quarterly basis and the District submits these reports to the U.S. EPA.

6. The District has a CEM Excess Emissions Reporting Form, but the Central and Northern Regions do not report CEM Excess Emissions to ARB within 5 working days as required by HSC section 42706.

Recommendations

Significant Recommendations:

1. The District should report CEM excess emissions from the Central and Northern Regions to ARB within five working days as required by HSC section 42706.

Other Suggestions to Improve Program Effectiveness:

None

A-7. Source Testing Program

An effective source testing program is necessary for a district's compliance program to function properly. Source testing of specific points in a process or its control devices is usually the only way to determine whether actual emissions are in compliance with a unit's allowed emission limits. Source testing is also used to verify the accuracy of continuous emission monitors. Source testing confirms that equipment can operate in a normal representative mode while complying with its permitted emission limits. ARB staff conducted interviews and sampled District files from the three regions to obtain these findings. In general, the District has a strong source testing program.

Findings

1. Permit Services determines what facilities are source tested and the frequency of testing is determined by permit conditions and the rules specific to the equipment being tested, e.g., internal combustion engines are tested every 24 months; boilers 12-36 months; and turbines every 12 months.

2. Each region has a dedicated staff person to track source tests, review protocols, and witness actual testing to the extent possible.

3. The Southern Region tracks source tests in three ring binders, on the Permit Administrative System (PAS) and with a Source Testing Data Base that gives this region the capability to know when the next source test is due. The Northern and Central Regions track source tests in three ring binders and on the PAS System but do not have the capability to know when the next test is due.

4. The District has a tracking system to ensure that source tests are performed at the frequency required by the facility permit.

5. The District takes appropriate enforcement action for failed source tests.

6. ARB Certified Contractors conduct source testing within the District. Facilities hire these contractors and notify the District 30 days before the test and provide a protocol 15 days prior to the test.

7. The District is developing their own source testing capabilities. The Southern Region has a source testing van and can test for CO, NOx and SO2. The van is equipped with two gas chromatographs (one for ambient sampling and one for grab sampling). The District does not have Method 5 equipment. The District wants to conduct parallel source testing with contractors and test problem units with the van. The Southern Region submitted their resumes and sample test reports to ARB for Source Testing Certification.

8. All three regions have portable gas analyzers for testing emissions from internal combustion units. These analyzers are used extensively in the Southern region and less often in the Central and Northern Regions for verifying compliance with permit limits. The Southern District issues NOVs for NOx exceedances greater than or equal to 125 percent of the emission limit and the Central and Northern Regions issue NOVs for emissions violations that are 150 percent of the emission limit.

9. The District leak tests perchloroethylene dry cleaning machines using their sense of smell and soap bubbles. The District needs to quantify these leaks with a hydrocarbon vapor analyzer.

Recommendations

Significant Recommendations:

None

Other Suggestions to Improve Program Effectiveness:

1. The Southern Region tracks source tests with a Source Testing Data Base that gives this region the capability to know when the next source test is due. We suggest that the Northern and Central Regions develop this capability also.

A-8. Asbestos Program

The District is responsible for enforcing the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Asbestos under the code of federal register 40 Part 61 Section 61.145(a), (b), and (c) and Section 61.150. The District has adopted the Asbestos NESHAP under their Rule 4002 National Emission Standards for Hazardous Air Pollutants and collects fees under Rule 3050 Asbestos Removal Fees. The District is also responsible for meeting the 105 Grant conditions by maintaining a system for tracking asbestos demolition and/or renovation notifications. Grant conditions require the District to submit notification data to U.S. EPA on a quarterly basis and to perform a minimum number of inspections to ensure compliance.

In each region, ARB staff reviewed notifications, inspection reports, notice of violations, and the system used to track and report notifications to U.S. EPA. Also, joint inspections were conducted and District staff was interviewed as part of the review process.

Findings

Training and Certification

1. All three regions have kept their asbestos certification and medical surveillance up to date.

2. All three regions have proper inspection gear.

3. U.S. EPA has a training class "Asbestos NESHAP Inspection and Safety Procedure Workshop." This class is fully funded by U.S. EPA. We recommend District asbestos inspectors attend the class to ensure they obtain updated information on asbestos issues.

Inspection Technique

ARB staff conducted three joint inspections with District staff, one in each region. The following comments are provided based on the joint inspections.

1. The Northern and Southern Regions conducted their inspections in accordance with the EPA Asbestos NESHAP inspector training course.

2. We identified several issues with the inspection protocols adopted by the Central region.

    - At one joint inspection where the site had a breach of containment and no one was present, the inspector failed to contact either the owner or the asbestos removal contractor to secure the site and to ensure that there were no emissions from inside containment to the outside air.

Also, some asbestos containing debris was found outside the containment. The inspector did not follow proper procedures to collect and document the sample.

- Inspection forms reviewed in the Central region do not document inspection activity and some inspection forms have no owner/operator name or basic information. A sample of a District inspection report from the Central region that is missing basic information is displayed on pages A-37 and A-38. Also, on pages A-39 and A-40 (for comparison) is an inspection report from the District's Southern region containing all the necessary information required to document inspection results.

- During the interview process, ARB staff was told that most of the inspections in the Central region are conducted either before or after the asbestos abatement. ARB and U.S. EPA recommends that asbestos inspections be conducted during regulated asbestos containing material removal operations.

As of March 01, 2005, the District has responded to the issues mentioned above by reassigning staff to the Asbestos program in the Central region. The new staff has been properly trained to ensure that the Central region inspects sources according to U.S. EPA's NESHAP protocol. Also, a joint training inspection was conducted with District, ARB, and U.S. EPA personnel to train District staff on proper inspection techniques.

Data Base Management (01/01/01 – 04/01/03)

The District reviews the asbestos notification forms to ensure completeness and accuracy. They also maintain a system that tracks all asbestos notifications. The District also submits quarterly notification related data to U.S. EPA on time. Table XIII provides a summary of the District's asbestos inspection and enforcement data for the respective study period.

Table XIII. Inspection Activity

	Northern Region	**Central Region**	**Southern Region**
Renovation/Demo-lition Notifications	687	1079	588
Inspections Conducted	576	1006	321
Sites Receiving Violations	38	Not provided by Region	24

The District settled 39 cases arising from Notices of Violations from 01/01/01 to 04/01/03. Asbestos cases may involve multiple Notices of Violations.

Consistency Among Regions

The District has a senior asbestos coordinator responsible for representing the District at meetings and workshops conducted by ARB and U.S. EPA to all delegated districts where statewide asbestos related issues are typically discussed twice a year. The senior asbestos coordinator also handles the Asbestos NESHAP enforcement in the Southern region (Bakersfield) only. Staff in the other two regions are responsible for enforcing the Asbestos NESHAP rule. The senior asbestos coordinator shares the asbestos issues and problems discussed during the asbestos NESHAP Workshop with the asbestos staff from the other regions. During the office interviews, we have determined that the senior asbestos coordinator has no direct control over the training and work procedures of other region staff. We recommend that for purposes of the asbestos program, staff from the other two regions should comply with the directions of the senior asbestos coordinator. This will improve work quality and bring uniformity to the District's asbestos program.

Enforcement Actions

Violations notices issued during inspections are settled for amounts comparable with other Districts.

Recommendations

Significant Recommendations:

1. The District should continue the improvement of the asbestos inspection protocols for the Central Region. Specifically, District inspectors should contact the owner or the asbestos removal contractor when there is a breach of containment, inspectors should follow proper sample collection and documentation procedures, and inspections should be conducted during regulated asbestos containing material removal operations.

2. The District's Asbestos Inspection forms in the Central region should be improved by documenting the inspection activity and including the owner/operator name.

Other Suggestions to Improve Program Effectiveness:

1. The asbestos coordinator for the Southern Region is also the senior asbestos coordinator responsible for representing the District at meetings and workshops for statewide asbestos related issues. Asbestos staff from the Northern and Central regions should follow the direction of the senior asbestos coordinator to improve the quality of work and bring uniformity to the District's asbestos program.

SAN JO[illegible]N VALLEY UNIFIED AIR POLLUTION [illegible]ROL DISTRICT
Asbes[illegible]s Demolition/Renovation/ Inspection [illegible]rm [10.11.00]

Site Name	Contact	Date 2-18-03
Address	City	Time
Owner	Address	City
Contractor	Contact	Phone
Address	City	Notice No.

Type of Inspection: Routine Complaint Surveillance Burned Bldg Training Burn

Suit up?: Yes No | PAPR SCBA Supplied Air Protective Suit | Inspector's Name:

INTERIOR INSPECTION

Material List Type	In Survey Y/N	Total Amount	Amount Disturbed	Asbestos Contain'g %	Thorough Removed Y/N	Friable Y/N	APCD Sample Y/N	Comments/Condition/Location
TSI								Re inspection = OK
Acoustic Plaster		20 SQ FT		1%	3/6/03	Y		RACM Removed
Wall Texture								
Acoustic Tile								
HVAC								
Flooring								

EXTERIOR INSPECTION

Material List Type	In Survey Y/N	Total Amount	Amount Disturbed	Asbestos Contain'g %	Thorough Removed Y/N	Friable Y/N	APCD Sample Y/N	Comments/Condition/Location
Roofing								
Paint								
Stucco								
Transite								
Window Putty								

3/18/03

WASTE DISPOSAL

	YES	NO	COMMENTS
k-tight wrap/container			
eled "asbestos"			
nerator name, location			3/03/03 - ok
ste adequately wet?			3/4/03 - ok
nsport vehicle marked?			
aste shipment records onsite?			

on site =

Additional Comments

3-3-03 AM - on site - set up
AM - removal in progress
3-4-03 AM - " -
3-4-03 PM Removal complete - clean up to pickup

n Compliance? Y / N

Sketch

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Asbestos Demolition/Renovation/ Inspection Form [11-20-01]

Site Name Student Center	Contact Maria Baker	Date 4/28/03
Address 435 College	City Modesto	Time 09:50
Owner YCCD	Address 435 College	City Modesto
Contractor Janus Corporation	Contact Mel Keuch	Phone (925) 969-9200
Address 1081 Shary Circle	City Concord	Notice No. 2003-095

Type of Inspection: (Routine) Complaint Surveillance Burned Bldg Training Burn

Suit up?: (Yes) No | PAPR SCBA Supplied Air Protective Suit | Inspector's Name: Leat Sexton

INTERIOR INSPECTION

Material List Type	In Survey Y/N	Total Amount	Amount Disturbed	Asbestos Containing %	Thorough Removed Y/N	Friable Y/N	APCD Sample Y/N	Comments/Condition/Location
Acoustic Plaster	N/A	3,168 ft	~ 1/2	?	in process	yes	no	I was accompanied by Ron
Wall Texture								Giannone, Brian Dedds &
Acoustic Tile								from CARB - Ahmad Najjar;
HVAC								Nestor Castillo. All individuals
Flooring								suited up and went into
								containment with all PPE

EXTERIOR INSPECTION

Material List Type	In Survey Y/N	Total Amount	Amount Disturbed	Asbestos Containing %	Thorough Removed Y/N	Friable Y/N	APCD Sample Y/N	Comments/Condition/Location
Roofing								
Paint								
Stucco								
Transite								
Window Putty								

WASTE DISPOSAL

	YES	NO	COMMENTS
Leak-tight wrap/container			no waste out of containment yet, all
Labeled "asbestos"			waste is adequately wet
Generator name, location	✓		will correct address
Waste adequately wet?	✓		
~~Transport vehicle marked?~~			
Waste shipment records onsite?	✓		manifest # 22019325 (will correct address)

Additional Comments

of workers: 10 plus supervisor

PPE: PAPR & tyvek

AHERA supervisor on-site: Raul Luevano

Certification #: CAK - 18253 Expiration Date: 1/18/04

Containment: good

Negative air machines: size: 2,000 cfm total #: 1 (3 more set-up) manometer: -0.027

Decontamination: 3 stage decon

Notification: ✓

Visible emissions: no

Water application: water hose and airless

power and water from the site

In Compliance?: (Y) / N

Sketch

Inspector: [signature] Title: A.Q.I.

A-9. Air Facility System Program

U.S. EPA Title V compliance and permit database for Stationary Sources is called the Air Facility System (AFS). AFS used to be called the Aerometric Information Retrieval System or by the acronym AIRS. This name change was officially announced at the 2003 AFS workshop held in Chicago, Illinois from July 8, 2003 through July 11, 2003. The requirements for AFS are governed by the Continuous Monitoring Strategy (CMS) policy. This policy requires the District to submit a CMS plan which states that the District will comply with the CMS policy and will submit the appropriate data on mega, major, and synthetic minor facilities to AFS. The data will include reporting of components of a Full Compliance Evaluation (FCE) quarterly and High Priority Violations (HPV) monthly. A FCE is comprised of site inspection(s), source test(s), and an annual Title V certification review. Each of these components must be entered into AFS before an FCE code can be entered. A HPV is a District's notice of violation (NOV), which meets the standards of a HPV. The standards are spelled out in Table A-5 of the USEPA's workbook titled "The timely and Appropriate (T&A) Enforcement Response to High Priority Violations (HPVs)" date June 23, 1999.

Findings

<u>Full Compliance Evaluations</u>

1. The District is substantially behind schedule in entering the FCE data into AFS. Approximately 25 percent of the codes have been entered into the AFS database. As of July 1, 2003 almost 90 percent of the FCE's should have been entered into AFS. The deadline for the District to complete a FCE for all major and synthetic minor sources is September 30, 2003.

2. Annual Title V certifications and source tests for pertinent AFS sources are not being updated into the AFS database. The District has received funding from U.S. EPA to upgrade their tracking database to resolve this problem. The problem still exists.

3. The District upgraded tracking database, funded by U.S. EPA, is scheduled for rollout in April 2005.

4. The District CMS target list does not match the list of sources in the AFS database. Both lists have overlap but each list has its own unique sources. The District and U.S. EPA were working to resolve this problem prior to the program review.

5. The source names, addresses and contacts of the sources in AFS do not match the source names, addresses and contacts contained in the District's NOV database.

High Priority Violations

1. Approximately 10 percent of the sources with a NOV in the District's NOV database are not properly identified as an AFS source.

2. NOV numbers are sequential but some numbers are missing. The reason for the missing or unused numbers is not in the District's NOV database.

3. The District is not putting all the HPVs into the AFS Database. The District issued 360 NOVs in calendar year 2002 to sources listed as AFS sources but less than 5 percent of the NOVs are making it into AFS database as HPVs. The District is divided into three regions: Northern, Central, and Southern. The regions had 45, 50 and 265 NOVs and only 0, 16, and 2 HPVs, respectively.

Quality Assurance

1. District AFS staff are not running Quality Assurance Reports to confirm data entry of FCE data and HPV data are making into AFS.

2. District AFS staff is not generating monthly HPV reports and quarterly FCE reports for management review.

Training

1. District AFS staff is not routinely attending the annual AFS workshops as required by 105 Grant conditions.

Resources

1. Only one staff person is working with the AFS Database. Time reports from the District show only one-third of staff's time spent on the FCE and HPV related items.

Recommendations

Significant Recommendations:

1. The District should enter the Full Compliance Evaluation (FCE) data into the Air Facility System (AFS) database.

2. The District should make sure the Continuous Monitoring Strategy (CMS) target list matches the list of sources in the AFS database. Both lists have overlap but each list has its own unique sources. The source names, addresses and contacts of the sources in AFS should also match the source names, addresses and contacts contained in the District's NOV

database. The District and U.S. EPA were working to resolve this problem prior to the program review.

3. The District's AFS sources in the NOV database should be properly identified as AFS sources.

4. The District should put all the HPVs into the AFS Database.

5. District AFS staff should run Quality Assurance Reports to confirm that data entry of Full Compliance Evaluation (FCE) data and HPV data are making it into AFS. Monthly HPV reports and quarterly FCE reports should be generated for management review.

6. The District AFS staff should routinely attend the annual AFS workshops as required by 105 Grant conditions. The District Management of AFS staff should periodically attend the annual AFS Workshops.

Other Suggestions to Improve Program Effectiveness:

None

A-10. Variance Program

The District's variance program was evaluated in order to determine its consistency with HSC requirements. To accomplish this task, ARB staff reviewed District files, interviewed District staff, and listened to audio tapes of variance hearings. This is the only District in the state that has three hearing boards, one per zone. During the study period of January 1, 2001 through January 1, 2003, there were a combined total of 184 variances granted by all three zones; 25 in the Northern Zone, 42 in the Central Zone and 117 in the Southern Zone. ARB staff reviewed and evaluated a total of 30 variance files (4 in the Northern Zone, 8 in the Central Zone and 18 in Southern Zone). Numerous audio tape recordings were evaluated in each zone.

Findings

1. Abatement orders that act as a variance do not always contain all the required findings for such an order (see HSC section 42452).

2. Our review found that the northern and southern zone hearing boards continue to ignore ARB's recommended procedure that hearing boards make the findings required by HSC section 42352 at the hearing. Instead, these two zones make the statement that the findings have been made in the staff report, or other similar statements, at the hearing. It is ARB's long standing direction to hearing boards that a review of the staff report and other information, which may include a discussion and exchange of information between the petitioner and the board members, is required, if only to determine that the facts, emissions, circumstances, and conclusions provided are accurate. It is essential that hearing procedures do not give the impression, or allow for, a variance to be considered in a pro forma or cursory manner by the very panel that is charged with an independent and impartial review of the matter. Also, abatement orders that act as a variance do not always contain all the required findings for such an order (see HSC section 42452).

3. The District has developed a user friendly petition form that is provided to persons who want to request a variance. The District's petition form is well drafted and contains useful fields to help the petitioner submit a complete variance package. These fields include elements such as: what actions the petitioner has taken since first discovering they are not in compliance, a requirement to show all calculations and to provide emissions factors used in estimating excess emissions, and a requirement to attach a health risk assessment and receptor modeling data if there are excessive hazardous or toxic emissions.

4. The District is consistently recommending (and the boards' imposing) enforceable interim emission limits and other requirements to limit and mitigate excess emissions from sources on variance.

5. The District staff consistently verifies that increments of progress and final compliance dates are met.

6. The District's written variance orders contain standard language which serves as a caution to sources that U.S. EPA does not recognize variances, which is important for a source to realize.

Recommendations

Significant Recommendations:

1. The Northern and Southern Zone Hearing Boards should conform to proper procedure when making the six specific required findings of HSC section 42352. These findings must be made at the hearing and addressed on the record. It is essential that hearing procedures do not give the impression, or allow for, a variance to be considered in a pro forma or cursory manner by the very panel that is charged with an independent and impartial review of the matter.

Other Suggestions to Improve Program Effectiveness:

None

A-11. Training and Safety Program

The District has established a formal training program for new and existing field staff. The purpose is to enable all of the field staff to adequately conduct inspections and discharge their job responsibilities.

Findings

1. Each new inspector will go through a one-year in-house training program, which is conducted by senior/supervisory inspection staff in each of the three regional offices, Modesto, Fresno and Bakersfield. New inspectors will shadow their training inspectors in the field to observe various inspection techniques until the new inspectors are comfortable to conduct their own inspections. Thereafter, new inspectors will attend post inspection follow up meetings with their training staff for clarification, questions and answers.

2. New inspectors are trained in specific areas of air pollution sources and processes. As their initial training and as expertise increases and expands, they will be trained in other areas of air pollution sources and processes based on progress and performance.

3. All new inspectors will attend the Uniform Air Quality Training Program (UAQTP) offered by ARB staff as soon as possible after hired by the District. The UAQTP is a weeklong series of 15 courses providing an introduction to air pollution control and enforcement techniques. Both the new and existing field staff will attend the annual Cross-Media Enforcement Symposium sponsored by the California Environmental Protection Agency as long as it is feasible in terms of time and finance.

4. The District maintains an electronic centralized “Training File” system in order to track all the District field staff training participation. Moreover, the District maintains its own continuing education program for its field staff by conducting regular meetings to focus on various important issues or tropics related to air pollution control.

5. The District institutes source specific training focusing on technical issues associated with each rule category. Field staff will attend in-house training when new District rules are adopted or when new amendments are made to existing District rules in order for all field inspectors to become familiar with the technical issues and compliance requirements of the new rules and amendments to the existing District rules.

6. The District ensures that the field staff attends the ARB’s Fundamental of Enforcement (FOE), a three-day course, which presents a basic overview of air pollution related topics and is a prerequisite to certifying as a visible

emission evaluator. The District maintains a centralized “Training File” system in order to track District staff’s completion of the FOE course; however, the same system does not track whether each District inspector’s certificate for visible emission evaluation is current. In addition, the District does not have any inspector who is currently certified for visible emission evaluation at nighttime.

7. The District provides training to its inspectors in CPR and First Aid every two years and driving training annually.

8. The District assigns one staff member to coordinate their hearing board members and hearing board clerks. The staff member involved in the variance process attends ARB’s Hearing Board Workshop.

9. The District has a general safety program that ensures the field staff attend ARB’s Inspector Safety Course at least once. In addition, the District conducts safety committee meetings on a quarterly basis.

10. The District provides the following safety equipment to field staff in order to minimize the possibility of a field staff being injured while performing an inspection.

    a. Hard Hat
    b. Respirator (if required)
    c. Hearing protection
    d. Safety Shoes
    e. Goggles/Safety Glasses
    f. Gloves, and
    g. Special Protection:
       -Nomex coveralls for refinery inspections, and
       -Coveralls for asbestos inspections

11. The District has a medical monitoring program that requires pre-employment and annual physical examinations to ensure that field staff are able to wear respirators when needed to carry our their job duties.

12. The District has a formal training program that must be completed by field staff before conducting National Emission Standards for Hazardous Air Pollutants (NESHAPS) inspections. Such training includes information on NESHAPS regulation, asbestos technical background issues and safety. The District inspectors are required to attend a three-day asbestos training course.

13. The District inspectors who perform NESHAP inspections have specialized training on the use of personal protective equipment and basic field safety prior to any field activity. The training includes information on

the selection of respiratory protection, suit up and decontamination procedures, and respiratory maintenance.

14. In conclusion, the District appears to meet the criteria of an adequate training and safety program for a district.

Recommendations

Significant Recommendations:

None

Other Suggestions to Improve Program Effectiveness:

None

A-12. Open/Agricultural Burning Program

Open burning can be a significant source of criteria pollutant emissions, whether from legally sanctioned open burning, agricultural burning, or wildland burning for fire prevention and forest management.

The District's open/agricultural burning program was evaluated for consistency with the requirements of the HSC, the Smoke Management Guidelines in Title 17 of the California Code of Regulations (CCR), and the ARB program evaluation criteria document. Documents reviewed for this evaluation included written policies, public information handouts, burn permits, various forms and correspondence.

Findings

General Comments

1. The District has a comprehensive Open Burning Policy document, developed in 1994 and revised in 2002, to provide guidance in applying Rule 4103, Open Burning. It outlines extensive information on burn permit requirements, burn authorizations, complaint and compliance inspection procedures, and includes a 21-page appendix which lists 51 situations and/or materials which may be regulated by the rule.

2. The District now has its own Meteorology section, which determines the daily burn decisions (in consultation with ARB meteorologists), operates the prescribed burn forecast system for the District, and conducts daily conference calls with weather forecasters and burners. The District Meteorology section also allocates burn acres daily for the 93 burn allocation zones in the District.

3. A District daily burn authorization program has been created and is centralized at the Fresno office. Burn operators take calls from all over the District, and enter the burn authorizations into the computer. The burn acres in the 93 allocation zones are authorized on a first-come, first-served basis. The daily burn report is faxed to the fire agencies every hour.

4. The District has a number of public info handouts: vineyard fact sheet, vegetable crop handout, vine, orchard removal burns, grape stake burn restrictions, the ban on yard burning brochure, a day-glow tag warning about burning illegal materials, and a hazard reduction burning pamphlet.

5. The District encourages orchard growers to chip the prunings, particularly in the case of removal of an entire orchard. There is a list kept of facilities that accept green waste, or have use for biomass.

Rule Effectiveness

1. The District open burn rules 4103, Open Burning, and 4106, Prescribed Burning and Hazard Reduction Burning, last revised in June 2001, mingle the nonagricultural and agricultural burning categories in the HSC. Definitions are included in both rules.

2. Rule 4103 lists activities that are exempt from no-burn day restrictions, including empty pesticide sacks, agricultural burning, raisin trays, and contraband materials.

Permitting/Emissions Tracking

1. The District has an extensive computerized system in place for issuing open and agricultural burning permits, authorizing individual burns, and keeping track of daily emissions.

2. The vast majority of growers in the District apply for their agricultural burn permits by phone. The permit is valid for one year and a renewal form is mailed out a month before expiration.

3. The District mails an agricultural burn permit form to the growers after he/she submits the permit application form or information, listing all of the burn locations, the crops and the acreage to be burned. The burn permit is a legal-sized two-sided form with the grower's name, address, and burn locations and information printed on the form. The remainder of the form lists the permit conditions, which are informative, extensive and contain the information required by state law.

4. The District encloses a two-page information form, plus two handouts on fire safety with the burn permit. The grower is directed to cut off and return the bottom of the form to the District, with the required permit fees. The District then returns the wallet-sized permit receipt, printed with a local and an 800 District phone number, and instructions to call prior to burning.

5. In calendar year 2002, 234 such permits were issued. The District is large, encompassing eight counties in the San Joaquin Valley. The valley's economy is based on agriculture, and traditionally agricultural waste, particularly orchard prunings, must be burned in the fall and winter when the air quality is poor. No-burn days may be declared for weeks at a time. Only two hundred acres may be burned on a no-burn day per county, and this limit is rarely approached.

   The reason given for "imminent and substantial economic loss" on the majority of the permits issued is to clear the almond orchard rows of

prunings in order for spray rigs, which apply fertilizer and pesticides, to move about freely. Spraying operations are scheduled far in advance, as the operators travel a circuit and must service all the orchards in the dormant season. A few open spaces are available in the orchard for pile burning, and the prunings are bucked to those few spaces row by row and burned.

The District office in Fresno issues all of the permits. The new permit is called the "Application to Exceed Daily Burn Emission Allocation," as there are no longer many no-burn days. Since the District instituted the Burn Allocation Program, some burning may be conducted in selected allocation zones on almost any day. The new permit also requires that there be no expected downwind impact or air quality exceedance, that the reason "imminent and substantial loss" threatens, and that some number of "insufficient emission allocation" days occurred prior to burning. A fee of $30 is required for this permit.

The grower calls the District to request to burn without an allocation, and District staff fills in the application form with the grower's answers. The grower is then given a confirmation number, which is necessary to conduct any open burning in the District on a given day. The District mails out the completed application form and an invoice for the $30 fee, and the grower has 15 days to sign the application and return it to the District with the fee money.

6. The District requires that persons and agencies conducting prescribed burning submit a smoke management plan to the District. The conditions and information required are consistent with title 17. The District-approved smoke management plan serves as the burn permit. As with the ARB, the Meteorology section provides burn day forecasts for large burns, and District staff works closely with the land managers executing these burns.

7. District staff meets with the land management agencies conducting prescribed burning on a quarterly basis. They are working on a new memorandum of understanding (MOU), as the old one has lapsed. The issue of wildland use fires, naturally ignited fires which may be allowed to burn over long periods, but which can produce increasing amounts of pollutants in times and in areas with worsening air quality, is the topic of major interest now.

8. The District has developed a permit form for pile burning, to be used for both hazard reduction burning, the vegetation cleared from 100 feet around structures, and prescribed burning, the burning of vegetation cleared from property beyond the 100 foot structure clearance. The District has made the permit conditions as strict as those for agricultural

burning, and has limited the ignition hours to between ten am and two pm. The permit is not valid during the summer burn ban season. Permit conditions warn that the burner will be held liable for suppression costs, and/or will be issued a Notice of Violation if the burn creates a smoke nuisance.

9. The District assesses fees for agricultural burning and prescribed burning. Agricultural burn permit fees are assessed by the number of burn locations listed on the permit: one is $22; two is $38; and three or more is $62.

10. Prescribed burn fees, based on acres, are calculated in one of two ways: for broadcast burning, the acreage burned is the number of blackened acres, and for pile burning, the acreage burned is the number of acres of a project treated by assembling burn piles. Broadcast burning is $5 per acre and pile burning is $3 per acre. By February 1, each agency or person using prescribed burning must report to the District the number of acres burned in the previous calendar year. By May 1, the District reports the fee owed, and by June 30, the burners are to pay the assessed fee.

Senate Bill 705 Designed to Ban Open Burning Beginning June 2005

1. To help the District meet the ambient air quality standards for ozone and particulate matter, the State Senate adopted SB 705. As of June 1, 2005, the burning of field crop wastes, most prunings, and weeds will be prohibited. At that time the District shall also adopt rules to regulate burning diseased crops, and rules establishing best management practices for weed control and maintenance.

2. A second action date is June 1, 2007, when orchard removal burning will be eliminated. A third date is June 1, 2010, when the burning of vineyard materials, vineyard removals, and “surface harvested” prunings (almond, walnut, pecan and grape prunings) will be eliminated.

Recommendations

Significant Recommendations:

None

Other Suggestions to Improve Program Effectiveness:

None

Appendix B – Permitting Program

San Joaquin Valley Air Pollution Control District
Program Review

Appendix B
Permitting Program
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B. PERMITTING PROGRAM EVALUATION

The districts adopt permitting regulations to govern the construction of new sources and modifications to existing sources that emit air contaminants within their jurisdiction. Sections 40702 and 42300 of the California Health and Safety Code (HSC) allow districts to adopt rules and regulations and establish such permitting programs. Additionally, these programs must ensure the attainment or maintenance of applicable ambient air quality standards, and according to section 42301 of the HSC, be at least as stringent as federal regulations (40 Code of Federal Regulations §51.160). In response to these requirements, the San Joaquin Valley Air Pollution Control District (District) has adopted rules within its "Regulation II – Permits."

The goal of the District's stationary-source regulatory program is to review new and modified sources of air pollution and provide mechanisms by which permits may be granted, without interfering with the maintenance of ambient air quality standards. The permitting process must also ensure that no project will be permitted unless the Air Pollution Control Officer (APCO) is satisfied that the project will be in compliance with all applicable rules and regulations.

At the time of the program review, the District employed about 70 permitting services staff including managers, supervisors, engineers, and specialists. Each of the three regions in the District has a permitting office administrated by a permit services manager. The District headquarters in the Central Region also has a technical services office. The three regional managers and the technical services manager report to the Director of Permit Services. The approximate number of permit engineers in each region included 9 in the Northern Region, 12 in the Central Region, 17 in the Southern Region, and 13 in Technical Services. The Northern Region, Central Region and Technical Services have a supervising engineer that supervises the permit engineers in each respective office. Supervision is divided among two supervising engineers in the Southern Region.

The District has about 7,000 permitted sources consisting of 21,000 separate permit units in its jurisdiction. Each year the District processes about 3,000 to 4,000 permit applications. The District has about 220 Title V facilities.

The primary objective of this review was to determine whether the District has been issuing permits in accordance with their regulations and with State law, but more importantly, to assist the District in identifying specific areas of improvement. In addition, the ARB staff reviewed the permits for the biomass facilities to determine the prevalence and limitations of using urban wood waste as fuel.

The methodology the ARB staff used consisted of a review of the District's permit files, a review of guidelines and policy documents, and interviews with District staff and management. The review of permit files focused on the quality of the engineering evaluations and the resulting operating permits issued to the facilities. Interviews covered areas such as general administration, permit processing, filing, and application intake, computer support, staff resources, and emission calculation procedures.

The ARB staff reviewed approximately 700 of 2,782 project applications for new units and modifications to existing units issued by the District, with a focus on the 2000 to early-2003 timeframe. A conscious effort was made to cover a broad spectrum of the District's permitting actions by reviewing files for different source types and sizes. In addition, the ARB staff reviewed the permits for the biomass facilities to determine the prevalence and limitations of using urban wood waste as fuel.

The ARB staff evaluated the District's permitting program with special emphasis on the following topics:

1) The adequacy and effectiveness of the District's permit administration, rules, permitting policies, permit conditions and engineering evaluations;
2) The determination of best available control technology (BACT);
3) Whether the District's rules and practices allow the use of best available retrofit control technology (BARCT) emission reductions to offset emission increases;
4) The consistency of District permitting actions; and
5) The prevalence of urban wood waste as fuel at biomass facilities, the District limitations of such use, and the enforceability of the associated District permits.

The ARB staff's Findings and Recommendations are included in chapters B-1 through B-7.

B-1. Permit Administration - General

Findings

Staff

1. The District has a pool of well-qualified and trained professionals for permit processing.

Half of the District's permitting workload is generated by projects in the Southern Region. The Northern Region and Southern Region mainly handle their own respective permitting workloads. At any given time, older applications or excess permitting workload may be shifted to regions with less workload. The Central Region handles all the Title V permitting, modeling, and toxics [Health Risk Assessments (HRAs)].

2. Management in the Central Region felt that the permitting staff level was adequate; however, management in the Northern Region and Southern Region indicated that they could use more permitting staff.

There were six vacant permitting positions in the Central Region, but no shortage of qualified applicants. Job offers for some of the positions were pending as of the time of the office portion of the review.

3. Compliance in the Central Region has a staff engineer that acts as a permit services advisor to help facilitate communication between compliance and permitting and to recommend updates to permitting policies.

4. According to District management, permitting staff conduct joint inspections with District inspectors for start-up inspections; however, ARB staff found that inspectors felt engineers did not get into the field often enough to facilitate the writing of enforceable permit conditions for their sources.

5. Northern Region management indicated that there has been an increase in the amount of workload due to more detailed review required for applications, but the amount of staff has not increased. The increase in the number of facilities triggering Title V has contributed to this.

Backlog and Streamlining Efforts

1. A major challenge facing the District is its backlog in spite of many permit streamlining efforts. The District has a significantly higher backlog level than the 250 backlogged permits it had as of the previous review in 1994. As of the 2003 office review, the backlog was 190-Northern Region, 158-Central Region, 539-Sourthern Region, and 887-total.

2. It is very likely that the District's workload will increase due to the possibility of regulating agricultural sources in the future. Because of the increased workload, the District's backlog could increase. According to some of the District's major sources, it takes six to seven months to get a permit for new or modified equipment.

3. The Certified Air Permitting Professionals (CAPP) program was originally created as an expedited permit program, but sources regulated by the District have indicated that the CAPP is not reducing their costs or improving the efficiency of permit issuance.

4. The District is making an effort to reduce the backlog. The District is giving first priority to backlogged projects. The District has a program titled Guidelines for Expedited Application Review (GEARs) that has staff (non-engineers) handling applications for projects such as gasoline dispensing facilities and abrasive blasting that are simple and can be boiler plated). This allows engineers to handle the most complex applications (i.e. those involving New Source Review).

5. The District has an expedited permit process. It is available upon request by the applicant if they meet the District's criteria (i.e. the source says it will lose money if their application is delayed). Overtime is given to engineers to do these projects and the applicants pay for the overtime.

6. The District has a Preliminary Review Worksheet to help facilitate the acquisition of information necessary to deem applications complete. Engineers use the worksheet as a checklist and flowchart to evaluate whether an application is complete.

Quality Control

1. Applications receive two levels of review:
   - The supervising engineer; and
   - The region manager.
   Public notice projects are also reviewed by the Permitting Division Chief.

2. Besides permitting, the Compliance Division in the Central Region reviews Authorities to Construct (ATC) Permits for enforceability.

Database and File System

1. The District has an abundance of forms, policies, and templates for permit processing on their computer database. The District also provided ARB staff with hard copies of compliance and permitting policies and procedures.

2. The District has an Intranet for permit processing that provides permit engineers with many of the necessary resources. With the system, engineers can access District policies, engineering evaluations, calculation procedures, forms, and templates. Evaluations from all the regions are organized and can be accessed in directory folders of different source categories in Microsoft Word.

3. The District provided ARB staff with listings of ATCs issued from the year 2000 to early-2003 on CDROM.

These listings were Excel spreadsheets and separate listings of new equipment and modifications were provided. The District was able to generate the listings from their database and, at ARB's request, narrowed the projects in the listing to those that did not involve gasoline dispensing facilities, charbroilers, and emergency engines. ARB staff reviewed about 700 project files for new and modified equipment.

4. The District's files were well organized and ARB staff had access to all the files. The files were organized by facility identification number. Within each facility file, the District had files for correspondence, breakdowns, inspection reports, and engineering evaluations. Each project for new equipment or modifications is tracked by a seven-digit project number. Each region of the District has its own filing system.

5. The District is developing an electronic filing system. As documents are converted from hard copy to an electronic filing system, the District should make sure all engineering evaluations are complete, stand-alone documents. The ARB staff found that many of the electronic files were missing necessary supporting appendices and the ARB staff could not locate these appendix files in the common network drive.

6. The District should ensure that all permitting staff place final electronic engineering evaluation documents in the District's common network drive for shared access. The ARB staff could not locate the relevant files in several cases.

Accomplishments

1. The District maintains high-quality information technology resources that include a comprehensive permit database, computer network, and Internet web site containing files related to all permitting actions. The District is in the process of converting all of its paper files to electronic documents.

Recommendations

Significant Recommendations:

1. The District should develop and carry out a plan to reduce its permit backlog. The District may need to add additional staff to support this effort.

Other Suggestions to Improve Program Effectiveness:

1. As documents are converted from hard copy to an electronic filing system, the District should make sure all engineering evaluations are complete, stand-alone documents. The ARB staff found that many of the electronic engineering evaluations were missing supporting appendices.

B-2. District New Source Review (NSR) Rule

Findings

Routine Replacement and Transfer of Location

1. District Rule 2201 exempts a "routine replacement" from Best Available Control Technology (BACT). The District's application of the routine replacement clause may allow a new emission unit to be installed at a stationary source without requiring BACT. The following examples illustrate this point.

Example
The ARB staff found an inconsistency in the treatment of replacements of emission units under the District's New Source Review rule. In one case, the replacement was considered a new emission unit subject to BACT. In another case, the replacement was considered a routine replacement and not subject to BACT. Specifically, Fresno Cogeneration Partners (Applications C-14-1-8, '-1-9, '-2-3, '-3-11, '-3-12, '-7-8, '-10-1, and '-10-2; Project #1030115) proposed to replace a Pratt & Whitney FT-4 gas turbine with either a Pratt & Whitney FT-8 gas turbine or a General Electric LM-2500+ gas turbine. The District's engineering evaluation stated that the replacement gas turbine was considered a new unit and subject to BACT. Conversely, Turlock Irrigation District (Application N-3299-2-3, Project #1030015) proposed the replacement of a General Electric LM-5000 gas turbine with a GE LM-6000 gas turbine. However, the engineering evaluation stated that the action was considered a routine replacement of an existing emission unit. The District then showed that the new turbine met the criteria outlined in Rule 2201 - New and Modified Stationary Source Review (Amended December 19, 2002) section 3.33 for routine replacements. Routine replacements are exempt from BACT per section 4.2.6.

ARB staff believes installation of a new turbine is considered a new emission unit, regardless of whether an existing turbine will be removed from service concurrently. Staff believes routine replacement considerations should be reserved for routine maintenance and repair of broken or worn components, not to the change out of an entire stand-alone emission unit. ARB staff estimates that if BACT was required for the Turlock turbine, an additional 6.39 tons per year of oxides of nitrogen (NOx) reductions could potentially have been gained based on a 2--parts per million, dry volume basis (ppmvd) at 15 percent (%) oxygen gas emission limit.

Example
In the application for Permit N-2429-16-0 (Project #1021553), Nuevo Energy Company requested an Authority to Construct (ATC) permit to install one 370 brake horsepower (bhp) reciprocating internal combustion engine (IC engine) as a "routine replacement" for three existing IC engines (Permits N-2429-1-4, '-4-4, and '-7-4). In the engineering evaluation, the District aggregated the three individually permitted and independently operated emission units to show that there was no increase in capacity or emissions.

Per District Rule 2201 - New and Modified Stationary Source Review (Amended December 19, 2002), a routine replacement is exempt from BACT and is not considered a modification when the action consists of a "replacement of a whole or partial emissions unit where the replacement part is the same as the original emissions unit in all respects except for the serial number." Further, section 3.33 of the rule defines a routine replacement "in whole or in part of any article, machine, equipment, or other contrivance with a valid District Permit to Operate…." ARB staff believes that the three existing IC engines each represent separate emission units. Staff also believes that the rule language does not support the aggregation of several emission units such that BACT and offsets are not required. If BACT was triggered, ARB staff estimates that additional NOx reductions of 1,206 pounds per year could have been achieved based on a 9-ppmvd at 15% O_2 BACT requirement.

Example

In the engineering evaluation for Project #1010776 for End of Trail Cabinet Co. (Applications N-4076-2-1 and '-3-1), high volume low pressure (HVLP) spray guns were listed as having a 75 percent transfer efficiency; generally, 65 percent transfer efficiency is used by most permitting agencies. The reference for the transfer efficiency is another District permit, not an independent or verifiable source. Additionally, the entire facility was undergoing a transfer of location. The evaluation cited District Rule 2201 - New and Modified Stationary Source Review (Amended June 15, 1995) section 4.1.1 as exempting the source from BACT because the calculated increase in permitted emissions (IPE) was less than 2 pounds per day. The IPE for the modification of an emission unit was calculated in accordance with section 6.3.1 of the rule by taking the difference in emissions before and after the modification. Because the applicant did not propose to change the type of control equipment or emission rates at the new site, the emissions before and after were deemed equivalent, and the net emissions change was determined to be zero. Therefore, BACT was not triggered.

ARB staff believes the calculation for IPE was performed incorrectly for a transfer of location. Staff believes the calculations should have been completed with respect to the new site only. Because there was no existing equipment at the new location, the emissions before the modification would be zero. Then, using values from the District's engineering evaluation, the IPE for VOC emissions would be in excess of 2 pounds per day and a BACT analysis would have been triggered. ARB staff understands that the June 2001 amendments to District Rule 2201 now require BACT for the relocation of an emission unit with emissions greater than 2 pounds per day.

BACT Exemption When Meeting Prohibitory Rule Requirement

2. District Rule 2201 exempts an emission unit from BACT at an existing facility if the installation or modification of an emission control technique is performed solely for the purpose of compliance with a District rule, subject to several emission-limiting conditions. Two examples of this follow.

Example

AG Formulators (Application C-1576-6-0, Project #990098) proposed to remove a boiler from service because the unit could not meet the emission standards required by District Rule 4305 - Boilers, Steam Generators, and Process Heaters. The boiler was originally permitted and rated at 11 million British Thermal Units per hour (MMBtu/hr). The replacement unit was rated at 12.55 MMBtu/hr. As part of the new application, the District recalculated the capacity of the old boiler to be 14.6 MMBtu/hr. The engineering evaluation did not include any statements explaining how the heat input was originally determined or why it was readjusted. The new unit was then erroneously exempted from BACT based on it being installed to comply with Rule 4305. The facility was not required to install the new boiler to comply with the rule. Rather, the existing boiler could have been shut down to meet the rule. As such, the installation of the new boiler was initiated due to the steam needs of the facility and not for sole compliance with Rule 4305. NOx emissions reductions of 1,030 pounds per year could be gained from a 12-ppmvd at 3% O_2 BACT requirement versus the 20-ppmvd level proposed by the applicant.

Example

The engineering evaluation for Oilseeds International Ltd. (Application C-903-2-0, Project #980836) stated: "The applicant proposes to replace an existing 8.36 MMBtu/hr Cleaver Brooks boiler equipped with a gas burner, with a new 8.36 MMBtu/hr Superior Mohawk boiler equipped with a low NOx burner and [flue gas recirculation (FGR)], in order to comply with Rule 4305 - Boilers, Steam Generators, and Process Heaters. The boiler is replaced with a new one because the tubes are pulling away from the bulkhead and the header has stress cracks from aging. No increase in emissions will result from this project…Note: The applicant proposed to retrofit the existing boiler with low NOx and FGR in project #970446. But since retrofitting the existing boiler is not possible because of the physical conditions of the boiler, the applicant proposed to replace the boiler. This ATC #C-903-2-0, supercedes ATC #C-903-1-1." ARB staff calculated the NOx emissions difference between the proposed limit (30 ppmvd at 3% O_2) versus the BACT limit (12 ppmvd at 3% O_2) at 1,787 pounds per year.

The ARB staff's concern was that the District could apply this exemption inappropriately and too broadly—resulting in the replacement of an entire emission unit without requiring BACT, even though the replacement is needed because the equipment is at the end of its useful life. It is ARB staff's understanding that District Rule 2201 has since been modified, and the current version exempting BACT for "the installation or modification of an emission control technique performed solely for the purpose of compliance with the requirements of District, State or Federal air pollution control laws…" does not apply to the replacement of an entire emission unit. ARB staff supports this interpretation, because staff believes that it would otherwise represent a lost opportunity for the District to get additional emission reductions when applications are handled in this manner.

Artificial Emission Reductions

3. ARB staff found a case where the District's calculation procedures allowed the generation of "paper" emission reductions by lowering an emission factor rather than producing an actual reduction in usage and/or throughput.

Example

Project #1001191, which included Applications S-1131-988-4, '-989-4, '-990-3, '-991-4, and '-992-3, consisted of a heavy oil production facility located in central Kern County. This operation utilized five identical capacity natural gas-fired steam generators to produce steam for injection into the oil reservoirs to assist in recovering the oil. At the time that the steam generators were permitted, the original owner committed to pave 0.14 miles of road per generator to contribute towards offsets. It was determined that 0.14 miles of paved road would reduce PM10 emissions by 1 pound per hour. At a rate of 0.14 miles of road paving per pound-hour, 24 pounds per day of particulate emissions per generator would be created for use as offsets.

The current owner applied for Authorities to Construct to eliminate the road paving requirements from the permitted steam generators. The District's engineering evaluation accounted for the potential emission increases by reducing each steam generator's PM10 emission factors. In order to eliminate the road paving requirement, each steam generator's permitted emission rate for particulates needed to be reduced by 24 pounds per day—equal to reducing the PM10 emission factor from 0.045 pounds per million British Thermal Unit (lb/MMBtu) to 0.029 lb/MMBtu. The engineering evaluation did not state whether the applicant justified the ability to meet the lower emission factor based on a source test. No other controls or changes in operation were suggested by the applicant or the District to compensate for the 24-pound per day increase in PM10 associated with the removal of 0.14 miles of paved roads per steam generator. The engineering evaluation recommended that Authorities to Construct be issued for the steam generators.

The Valley's air quality situation warrants a more rigorous approach by District staff during the Authority to Construct evaluation process to reduce the additional particulate emissions failed to be mitigated by the removal of the paving requirement.

Recommendations

Significant Recommendations:

1. The District should ensure that the replacement of an emission unit is treated consistently under the District's New Source Review rule. ARB staff found a case where the replacement of a turbine was considered a new unit and required to meet BACT. In a very similar project, the replacement of a turbine was considered a *routine replacement* of an existing emission unit and exempt from BACT in accordance with District

Rule 2201 section 4.2.6. ARB staff believes the installation of a new turbine should be considered a new emission unit, regardless of whether an existing turbine will be removed from service at the same time. The District should consider amending Rule 2201 to clarify that routine replacement should be reserved for routine maintenance and repair of broken or worn components, not for the complete replacement of an entire stand-alone emission unit.

2. The District should ensure that its calculation procedures do not generate "paper" emission reductions by lowering an emission factor rather than actually reducing usage and/or throughput. For example, ARB staff found a case where a source committed to pave roads to offset PM10 from natural gas-fired steam generators. A subsequent owner applied for an Authority to Construct to eliminate the road-paving requirement and reduce each steam generator's PM10 emission factors by an equivalent amount. Source test results were not provided to demonstrate that the lower emission factor could be met.

Other Suggestions to Improve Program Effectiveness:

1. District Rule 2201 exempts an emission unit from BACT if the installation or modification of an emission control technique is performed solely for the purpose of compliance with a District rule, subject to several emission-limiting conditions. ARB staff recommends that the District reassess its practice of allowing the replacement of an entire emission unit without BACT under this provision. ARB staff believes that the replacement of an entire emission unit does not fit the spirit of the rule specifying installation or modification of an emission control technique, particularly when the equipment is at the end of its useful life and cannot be retrofitted.

B-3. District Permitting Policies

Findings

1. The District has a useful and fairly extensive list of permitting policies. However, all of the relevant permitting policies are not available on the District's web site. Also, some of the policies available through the District's web site are out-of-date. While some policies may be retained for historical purposes, the policies are not labeled as such and may cause some confusion.

The District maintains an extensive list of written permitting policies. These policies provide guidance to permitting staff in its three regions and help ensure that permitting actions are consistent. Currently, the District has about 98 written policies. 33 of these policies are administrative in nature and do not need to be out for public consumption. At the time of the program review, 45 policies were posted on the District's web site for public access. ARB staff identified 20 other policies relevant to permitting issues that should also have been posted on the Internet. Examples of these policies include Offset Requirements, Calculation of SSPE, and Wellhead Stuffing Box Emission Factors. Details of Permitting Policy Statistics are on Pages B-19 and 20.

ARB staff noted that several permitting policies available through the District's web site and through internal documents reference incorrect rule sections, contain rule terminology that is now obsolete, and specify outdated office procedures. For example, District *Policy APR 1305: Best Available Control Technology (BACT) Policy* (November, 11, 1999) contains a definition for BACT which is not the same as the definition in District Rule 2201 - New and Modified Stationary Source Review (Amended December 19, 2002). As discussed in *Section B-4* of this report, the interest rate used for calculating an equivalent annual cost is out of date.

In addition, two District policies, *APR 1210: Identical Replacements* (April 29, 1996) and APR 1215: *Functionally Identical Replacements* (December 20, 1994), provide guidance pertaining to the usage of the terms "identical replacements" and "functionally identical replacements" in the District's New Source Review (NSR) rule. These terms are no longer used in District Rule 2201 - New and Modified Stationary Source Review (Amended December 19, 2002).

District *Policy APR 1510: Public Noticing Requirements* (June 21, 1993) provides guidance for section 5.1.3 of District Rule 2201 pertaining to public noticing requirements. Section 5.1.3 of the current version of Rule 2201 pertains to application completeness and specifically requires the Air Pollution Control Officer (APCO) to notify the applicant upon determination that an application is complete.

Lastly, District *Policy APR 1310: Office Procedures for Implementing BACT Policy* (April 18, 1995) specifies the method of communication between offices to be by facsimile

(fax). This is a slow and outdated communication method of sharing electronic files and is in conflict with the District's goal of attaining a paperless office.

The ARB staff understands that maintaining old policies may be useful in establishing a historical record of the District's permitting actions. However, for the purpose of clarity, the ARB staff suggests that these old policies be archived. In addition, the ARB staff believes the District would greatly benefit from regular examinations and updates to its permitting policies. An opportune time for these updates may occur when rule amendments are adopted, so policies reflect the most current rule interpretation.

2. A District policy that differs from the corresponding rule should be addressed as part of the rulemaking process.

District *Policy APR 1305: Best Available Control Technology (BACT) Policy* (November 9, 1999) defines a "small emitter" as any facility with annual emissions less than two tons per year or maximum daily emissions below 30 pounds per day of VOC, PM10, and SOx; 40 pounds per day of NOx; and 220 pounds per day of CO (see also Table I). As stated in the policy, "unless proposed by the applicant, technologically feasible and cost effective control that is more effective than the achieved-in-practice option shall not be required for a small emitter. A small emitter shall be required to use the most effective control technology or equipment that has been achieved-in-practice, including achieved-in-practice alternate basic equipment and process for new equipment." Because the tons per year and pounds per day limits are mutually exclusive, a facility could have annual NOx and VOC emissions of up to 7.3 and 5.5 tons per year (tpy), respectively, and still be considered a small emitter.

Table I. District Small Emitter Thresholds

Pollutant	Daily Limit	Annual Limit Based on Daily Restriction
VOC, PM10, Sox	30 lb/day	5.5 tpy
NOx	40 lb/day	7.3 tpy
CO	220 lb/day	40.2 tpy

This policy is in direct conflict with the definition of BACT as defined in District Rule 2201 - New and Modified Stationary Source Review (Amended December 19, 2002) section 3.9, where BACT is defined as the most stringent emission limitation or control technique of the following:

- Achieved in practice for such category and class of source;
- Contained in any State Implementation Plan approved by the United States Environmental Protection Agency for such category and class of source. A specific limitation or control technique shall not apply if the owner of the proposed emissions unit demonstrates to the satisfaction of the APCO that such a limitation or control technique is not presently available; or
- Contained in an applicable federal New Source Performance Standard; or

- Any other emission limitation or control technique, including process and equipment changes of basic or control equipment, found by the APCO to be cost effective and technologically feasible for such class or category of sources or for a specific source."

The ARB staff reviewed Rule 2201 and did not find a reference to the term "small emitter" or a specific exemption from BACT requirements for small emitters. The ARB staff found some files that illustrate the potential lost opportunity for further emission reductions by applying less stringent requirements to small emitters.

Ice Cream Partners replaced a 10.46 MMBtu/hr dual fuel-fired boiler with a new 19.9 MMBtu/hr natural gas-fired boiler equipped with low NOx burners and FGR (Application S-879-5-0, Project #1001447). The new boiler was not considered a functionally identical replacement, because there was an increase in the boiler rating. Therefore, BACT was required for NOx, VOC, and PM10. The applicable BACT Guideline 1.1.1 listed achieved in practice BACT for NOx as 20.0 ppmv at 3% O_2 and use of natural gas with LPG or propane backup as BACT for VOC and PM10. Technologically feasible NOx levels of 9.0 and 15.0 ppmv at 3% O_2 were not evaluated, because the facility is a small emitter. Current NOx BACT for this class and category of source in the South Coast AQMD is ≤12 ppmv at 3% O_2 based on NOx emission levels achieved at various facilities. A 12-ppmv NOx limit would have yielded an additional 1,583 pounds per year of NOx emissions reductions. The same small emitter consideration was applied at Unifirst Corporation (Application N-4212-2-0, Project #1020684) for a new 10.46 MMBtu/hr natural gas-fired boiler equipped with low NOx burners. Similarly, an achieved in practice BACT level of 20.0 ppmv at 3% O_2 was required for NOx. A 12-ppmv NOx requirement would have produced another 300 pounds per year of reductions.

Project #1011421 for SCE Electric Company involved the modification of an existing 82 bhp propane-fired IC engine generator equipped with PCV and a three-way catalyst from emergency to full time use (Application C-1174-7-1). Because the facility is a small emitter, only achieved in practice BACT was required. The requirements of the applicable BACT Guideline 3.3.2 (4th quarter 2001) were satisfied by use of PCV, O_2 monitor and weekly adjustments, and a three-way catalyst. Associated emission levels were 1.1 g/bhp-hr NOx, 2.1 g/bhp-hr CO, and 0.43 g/bhp-hr VOC. The ARB's DG Guidance (approved on November 15, 2001) recommended BACT emission levels for fossil fuel-fired IC engines of 0.15 g/bhp-hr NOx, 0.6 g/bhp-hr CO, and 0.15 g/bhp-hr VOC. These limits reflect the most stringent levels achieved in practice based on annual source tests ranging from 1997 to 2001. Another 1,495 pounds per year of NOx emissions reductions would have been gained with a 0.15 g/bhp-hr NOx limit.

3. The District's policy defining "zero" may allow some facilities to avoid offsets.

District *Policy APR 1115: Calculation of Daily Increase in Permitted Emissions (IPE) Definition of Zero in Determining IPE* (December 17, 1993) states that the "contribution

from emissions units with maximum daily IPE [increase in permitted emissions] or PE [potential to emit] below 0.5 pounds per day (based on the maximum daily emissions) must be set to zero. In other words, emissions units with an IPE or PE of less than 0.5 pounds per day will not contribute to the…quantity of offsets needed." The District's rationale for defining zero is the "lack of accuracy in determining very small emission rates, and the difficulties in having to obtain minute amounts of offsets." However, in these cases, the pollutant contribution could be as much as 182 pounds per year per emission unit. The policy poses a more significant air quality concern from a programmatic standpoint, as individual contributions are aggregated at facilities throughout the District with multiple small emission points. To illustrate this, the ARB staff found some permitting actions where the District had set the pollutant contribution from multiple emission units to zero at a single stationary source. Four examples follow.

Example

At the Dos Palos Cooperative Gin (Application N-1233-1-2, Project #1000031), several pieces of ginning equipment and one new 8 MMBtu/hr propane-fired heater were to be installed. Five existing propane-fired heaters excluded from the original permit were also to be added. According to District definition, each heater was considered a separate emission unit. For each existing heater, the volatile organic compound (VOC) and sulfur oxides (SOx) daily emissions were less than 0.5 pounds per day, so each was set to zero. For the new heater, SOx daily emissions were less than 0.5 pounds per day, so the PE was set to zero. If daily emissions were not set to zero, the total post-project VOC and SOx emissions from the six heater burners combined would be 3.0 pounds per day (versus 1.1) and 1.4 pounds per day (versus 0), respectively. Per District policy, pollutants from each emission unit less than 0.5 pounds per day were not included in the offset calculations (in this case, each of the five existing burners)—specifically, the District calculated annual VOC emissions of 106 pounds per year (versus 370 pounds per year) and daily SOx emissions of 0 pounds per day (versus 1.4 pounds per day).

In addition, the District did not follow its *Policy APR 1105: Use of Significant Figures* (July 16, 1992) in determining the appropriate level of rounding for the engineering calculations in Project #1000031. For SOx, daily emissions should have been rounded to the tenth place in accordance with the policy. However, SOx daily emissions of 0.46 pounds per day were rounded to 0.4 pounds per day and erroneously set to zero.

Example

A modification at Interlake Material Handling (Application N-422-6-3, Project #1020338) involved the replacement of an existing burner system (three burners at 3.8 MMBtu/hr) with a new burner system (one burner at 3.4 MMBtu/hr and one burner at 3.8 MMBtu/hr) serving a metal parts/products power spray washer. According to District definition, each burner was considered a separate emission unit. The VOC and SOx daily emissions for both new burners were less than 0.5 pounds per day, so each was set to zero. Per District policy, pollutants from each emission unit less than 0.5 pounds per day were not included in the calculation for offset purposes. If daily emissions were not set to zero, the total post-project VOC and SOx emissions from both burners would be

0.9 pounds per day and 0.5 pounds per day, respectively. Annual emissions would amount to 329 pounds per year VOC and 183 pounds per year SOx.

A similar rounding error was made in the Interlake Material Handling file. For VOC, daily emissions should have been rounded to the tenth place. However, VOC emissions of 0.48 pounds per day were characterized as being less than 0.5 pounds per day and subsequently set to zero.

Example

In the permit for Art's Custom Cabinet Inc. (Application C-3975-1-4, Project #1020364), devices emitting less than 0.5 pounds per day were set to zero in accordance with Policy APR 1115. The woodworking operation was considered a single permit unit controlled by two baghouses. The controlled PM10 emissions from the DCE UMA 450 baghouse were calculated at 0.6 pounds per day and emissions from the Torit-Donaldson 90 were 0.2 pounds per day. The Torit-Donaldson baghouse emissions were zeroed per the policy. Since the woodworking operation was considered one permit unit, the emissions should have been combined for a total of 0.8 pounds per day PM10—a 52 pounds per year increase in emissions.

Example

At Brooks Product Inc. (Application N-142-4-1, Project #99062), District staff applied control efficiencies adjusting for moisture content that had already been accounted for in the equations used to calculate emissions from the transfer of aggregate. In other words, there appeared to be "double counting" of control factors. This double counting resulted in emissions less than 0.5 pounds per day, which were subsequently zeroed out. After removing the assumed control efficiency, ARB staff calculated the emissions to be 1.3 pounds per day.

ARB staff expressed concern with the District's zero-rounding policy in the April 1996 program review report. Given the District's air quality status, the ARB staff again recommends a more conservative approach with respect to this policy. This approach would forego rounding at intermediate steps (i.e., emissions unit level) and only "zero out" limits if the *total* emissions are less than 0.5 pounds per day. The ARB staff believes this approach to be reasonable from an operational standpoint—particularly at a facility where a single process line is comprised of many individual emission units operating in tandem, or at a facility where several emission units operate independently but are all required to complete a single product. (To address this comment after ARB staff's visit, the District issued Policy APR 1130 on October 21, 2003, which supercedes Policy APR 1115. The policy now applies to a permit unit rather than individual emission units.)

Recommendations

Significant Recommendations:

1. All permitting policies should be updated to reflect the most current rule interpretation and made available to the industry and other oversight agencies through the District's web site or as a published document. Further, policies which are material to the interpretation of a rule should not be drafted without public review or input.

2. We strongly suggest that the District should ensure that its policies serve to clarify rule requirements and do not establish guidance that alters an approved regulation.

3. The District should discontinue Policy SSP 1705 for Dormant Emissions Units. The policy allows an emission unit that cannot meet emission limits to cease operating and be designated dormant in lieu of modifying to meet the emission limits or surrendering the permit. When commencing operation again, the emission unit must meet the applicable emission limits. A Dormant Emissions Unit cannot meet the emissions standards contained in the District's rules and therefore should not receive a Permit to Operate. Any such unit should be subject to New Source Review as a new emission unit.

4. The District should discontinue its policy to require only achieved-in-practice BACT for sources deemed "small emitters" in accordance with District Policy APR 1305. The policy is not consistent with the definition of BACT as defined in District Rule 2201 and could result in the application of a substandard control method if the District's BACT Clearinghouse is not up-to-date.

Other Suggestions to Improve Program Effectiveness:

1. ARB staff found that some of the policies available through the District's web site are out-of-date (e.g., Policies APR 1120, APR 1210, APR 1215). To the extent that old policies are retained for historical purposes, ARB staff recommends that the District label the policies as such to avoid confusion.

2. The District should post all its policies relevant to permitting issues on its web site.

3. Given the District's air quality status, the District should take a more conservative approach with respect to Policy APR 1115 (<0.5 pounds per day is set to zero). This approach would forego rounding at intermediate steps (i.e., emissions unit level) and only "zero out" limits if the total

emissions are less than 0.5 pounds. (To address this comment after ARB staff's visit, the District issued Policy APR 1130 on October 21, 2003, which supercedes Policy APR 1115. The policy now applies to a permit unit rather than individual emission units.)

San Joaquin Permitting Policy Statistics

Total number of policies: 98

Total number of policies on the web: 45

Additional policies that should be on the web: 15

1. APR 1405 Offset Requirements
2. APR 1410 Calculation of SSPE
3. APR 1415 Offsets for PM10; SOx; CO
4. APR 1120 Determining Control Efficiency (CE)
5. ADM 1030 Confidential Information
6. ADM 1110 SBA Application Completeness Checklist
7. APR 1720 SOx Emission Factor for Combustion of PUC Quality Natural Gas
8. APR 1910 TBACT for New & Modified Diesel IC Engines
9. SSP 1405 Stationary Source Designation (for Concrete Batch plants): Describes when aggregate and asphalt facilities can be considered one source or two
10. SSP 1815 Irrigation District Engines: Describes whether these ICEs are subject to permits
11. SSP 1910 Wellhead Stuffing Box Emission Factors
12. SSP 2205 Tank Inspection and Maintenance: Part V of policy describes that sources subject to Rule 4623 (voluntary inspection and maintenance and tank interior cleaning program) may trigger Rule 2201 because their cleaning of the tank is a modification, but modification may be exempt from BACT if rule requirements (4.2.3.1 – 4.2.3.4) are met.
13. APR 1840 Reporting ERC Costs: Reports that AB 3785 requires District to record cost information of offset transactions which is public record and the District will publish this annually.

ARB does not have all the policies listed below. These were listed in the District policy binder table of contents (3/19/03 issue) and/or the updated policy listing (4/18/03 issue)

14. APR 1725 Averaging Periods for Emission Limits: This policy is not listed in the policy binder (Maybe this is a new policy since the binder date is 3/19/03 but the other list provided ARB is dated 4/8/03)
15. APR 1815 ERCs from Early BARCT: Only the third page of the policy is in the binder

Additional policies that may benefit the public by being on the web: 5

1. ADM 1230 Rule 2020 Section 4.2 and 5.0 Clarification: Explanation of exempt equipment (when applicant claims emissions less than 2 lbs/24hrs.) and interpretation of “uncontrolled emissions”
2. ADM 1410 Schedules 5 (Tanks) and 11 (Fuel Dispensing): Billing information

3. ADM 1415 Schedules 7 (Resource Recovery) and 8 (Electric Generation): Billing information
4. ADM 1420 Schedule 12 (Waste Disposal): Billing information
5. APR 1310 Updating BACT Clearinghouse: (Especially section on when top down analysis is required. The permit staff and BACT coordinator responsibilities in this policy may not need to be provided to public)

Administrative policies that do not need to be on the web: 33

Examples:

1. ADM 1025 Organizing File Folders
2. ADM 1035 Staff Meetings
3. ADM 1040 Activity Codes for Timesheets
4. ADM 1265 Letter Signature Format

B-4. Best Available Control Technology Determinations

Findings

1. When making a best available control technology (BACT) determination, most districts in California are required to consider more stringent control technologies than those that are achieved in practice. The more stringent controls must be both technologically feasible and cost effective. The District's BACT cost-effectiveness thresholds are well below other districts with similar air quality status. As a result, more stringent emission limits and/or pollution control techniques identified in the District's BACT Clearinghouse may not be required due to cost considerations.

The District's 1996 action plan, drafted in response to the ARB's last program review, acknowledged that the cost-effectiveness thresholds had not been reexamined since 1989 and stated that the District had started a process to reevaluate the figures and adopt revised thresholds that more accurately represent current economic and technological factors. To this day, the District continues to utilize the same cost values. A comparison of ozone precursor (NOx and VOC) cost-effectiveness thresholds at other districts reveals that the San Joaquin Valley's thresholds are nearly two to four times lower (see Table II).

Table II. California Air District BACT Cost-Effectiveness Thresholds

District		NOx [per ton]	CO [per ton]	VOC [per ton]	PM10 [per ton]	SOx [per ton]
San Joaquin Valley		$9,700	$300	$5,000	$5,700	$3,900
Bay Area		$17,500	n/d	$17,500	$5,300	$18,300
South Coast		$18,300 ($19,059) [a]	$380 ($396) [a]	$19,400 ($20,204) [a]	$4,300 ($4,478) [a]	$9,700 ($10,102) [a]
Ventura		$18,000	$1,000	$18,000	$10,000	$10,000
San Diego,	Small source (<15 tpy)	$13,200	n/d	$7,480 [b]	n/d	n/d
	Large source (>15 tpy)	$18,000	n/d	$10,200 [b]	n/d	n/d

[a] District is proposing to update maximum cost-effectiveness criteria to these values.
[b] Proposed revision to the district's New Source Review rule would increase thresholds to $13,200 (small source) and $18,000 (large source).

Five examples where the District used cost considerations to eliminate more stringent technologically feasible control technologies are described below. In these permitting actions, the costs of additional controls exceeded the District's thresholds but were below the thresholds in other districts.

Example

The file for Golden Valley Grape Juice and Wine (Applications C-3280-2-0 and '-3-0, Project #1010807) involved the installation of two new 8.4 MMBtu/hr natural gas-fired boilers equipped with low NOx burners and FGR. The applicant proposed a NOx emission concentration of 20 parts per million by volume (ppmv) at 3% O_2 as BACT. The applicable District BACT Guideline 1.1.1 listed several technologically feasible control options that could reduce NOx emissions to 9 ppmv at 3% O_2. As part of the top-down BACT analysis, the District evaluated the cost of retrofitting to 15 ppmv at 3% O_2 with a new burner. Based on the annual fuel limit requested, a 180 pound per year per boiler reduction in NOx emissions could be gained from retrofitting from the proposed BACT level to 15 ppmv. The 15-ppmv level was eliminated from consideration because the District deemed it was not cost effective at $15,067 per ton of NOx reduced. As the 15-ppmv level was not cost effective, the District did not further evaluate the 9-ppmv option.

Example

Project #1010958 for the County of Kings Public Works involved the conversion of an existing 2,848 bhp diesel IC engine generator set from emergency to limited use (Application C-724-8-1). The applicant proposed a NOx emission rate of 5.187 grams per brake horsepower-hour (g/bhp-hr) as BACT. The applicable District BACT Guideline 3.2.2 listed 1.0 g/bhp-hr NOx with selective catalytic reduction (SCR) as technologically feasible. Estimated annual NOx emissions reduction from SCR was calculated to be 8.5 tons per year. As part of the top-down BACT analysis, the District determined that SCR was not cost effective at $12,145 per ton of NOx reduced, and the control option was eliminated from consideration.

Example

In the evaluation for Application S-160-19-0 at O.H. Kruse (Project #991071), the applicant proposed to install a new 20.4 MMBtu/hr natural gas-fired boiler equipped with low NOx burners at a dairy/poultry/livestock feed manufacturing plant. A NOx emission concentration of 15 ppmv at 3% O_2 was proposed to meet BACT. The applicable District BACT Guideline 1.1.1 listed technologically feasible controls that could reduce NOx emissions to 9 ppmv at 3% O_2 (equivalent to 1,260 pounds per year reduction). As part of the top-down BACT analysis, the District evaluated the cost of retrofitting to 9 ppmv at 3% O_2 with a new burner. The 9-ppmv level was deemed not cost effective at $14,600 per ton and eliminated from further consideration.

Example

OXY USA Inc. (Applications S-1326-290-0 and '-291-0, Project #1020107) proposed the installation of a 62.5 MMBtu/hr natural gas-fired steam generator with a NOx limit of 14 ppmv at 3% O_2. According to District BACT Policy APR 1305, "a new cost effectiveness analysis is not required if cost effective analysis for the specific piece of equipment or operation was conducted by the District within 12 months preceding the date an application is received." The District based the BACT cost-effectiveness analysis on a previous evaluation that resulted in NOx cost-effectiveness of $15,941 per ton. Because the cost effectiveness of SCR was greater than the NOx cost-effectiveness

threshold of $9,700 per ton, SCR was not required. NOx emissions reductions of 1.68 tons per year could be gained from retrofitting with SCR to meet 9 ppmv at 3% O_2.

Example

At Alecia's Furniture Refinishing (Application S-3669-1, Project #1000270), a wood-coating operation was exempt from BACT because the cost of the control would have been $6,679 per ton VOC reduced, which was in excess of the District's $5,000 per ton cost-effectiveness threshold. In the South Coast Air Quality Management District (South Coast AQMD) or the Bay Area Air Quality Management District, this would have been accepted as a cost-effective control. The maximum emissions were estimated to be 33 pounds per day VOC. With the 95-percent control of carbon adsorption, the emissions would have been 1.6 pounds per day VOC—a reduction of 31.4 pounds per day or 4 tons per year. The current controls are VOC coatings less than 5.7 pounds per gallon, high volume low pressure (HVLP) spray guns, and an enclosed gun cleaner.

2. The District's BACT policy may allow the use of outdated BACT determinations for classes and categories already covered in the District's BACT Clearinghouse.

District *Policy APR 1305: Best Available Control Technology (BACT) Policy* (November 11, 1999) states that "BACT determinations are to be based upon the control technologies and methods for the same or similar source categories, listed in the District's BACT Clearinghouse for the calendar quarter during which the application is deemed complete." Even if better control technologies are known to exist, the District may not require them to be applied because they are not listed in the BACT Clearinghouse. ARB staff understands the permit streamlining advantages of having the BACT Clearinghouse. However, when the control technology search is limited in this manner, the BACT requirement becomes highly dependent on whether the Clearinghouse has kept pace with the latest emission control advances. The ARB staff found several permits where the limiting nature of the District's policy resulted in substandard control technologies being accepted as BACT.

Project #1001457 involved the installation of a new 23-megawatt (MW) natural gas-fired turbine generator equipped with dry low-NOx combustors (DLN) in simple-cycle configuration (Application C-14-9-0). Annual operating hours were limited to less than 877 hours per year. The applicant proposed a NOx emission concentration of ≤15 ppmv at 15% O_2 as BACT. At the time the application was deemed complete (December 20, 2000), the applicable District BACT Guideline 3.4.4 had not been updated since October 2, 1997. The District's engineering evaluation acknowledged that new technologies (e.g., SCR and SCONOx™) had since been introduced and the guideline should be updated. Therefore, the District included a separate top-down BACT analysis to concurrently update Guideline 3.4.4. However, the engineering evaluation stated that per District policy, "the BACT determination for NOx and VOC emissions, will be based upon the control technologies and methods listed on the District's BACT Clearinghouse that was in effect during which the application was deemed complete. Therefore, Fresno Cogeneration Partners will only have to show

compliance with the technologies listed on the current BACT guideline." In accordance with the 1997 guideline, NOx emissions of 15 ppmv were accepted as BACT for this project. Table III (page B-30) illustrates the difference in the BACT requirements in the 1997 and updated 2001 versions of Guideline 3.4.4. According to the District's updated BACT, the most stringent technologically feasible NOx control method could achieve emissions of 2.5 ppmvd at 15% O_2, a 6.14 tons per year difference from what was required in this project.

The file (Project #1020746) for Visalia Wastewater Treatment required out-of-date NOx and carbon monoxide (CO) BACT levels for a new 554 bhp lean-burn digester gas-fired IC engine generator (Application S-984-13-0). The applicant proposed the following emission levels as BACT, consistent with District BACT Guideline 3.3.9: 1.0 g/bhp-hr NOx and 2.7 g/bhp-hr CO. Guideline 3.3.9 was later rescinded (as of October 1, 2002) and superceded by Guideline 3.3.13, which reflects the BACT recommendations in the ARB's *Guidance for the Permitting of Electrical Generation Technologies* (DG Guidance): 0.6 g/bhp-hr NOx and 2.5 g/bhp-hr CO. The ARB adopted the DG Guidance on November 15, 2001. A final version was issued in July 2002; however, it did not include changes to the recommended BACT emission levels for reciprocating IC engines. Even though the District BACT Clearinghouse was not updated until October 2002, a thorough top-down BACT analysis should have included an assessment of the DG Guidance levels, because the document was available at the time the project application was deemed complete (July 23, 2002). The ARB DG Guidance represents a compilation of permitted emission levels required by various regulatory agencies throughout the United States and the actual emission levels demonstrated by these units in the field. NOx emissions reductions of 2.1 tons per year could have been gained from meeting the 0.6 g/bhp-hr NOx standard rather than the District Guideline.

North of the River Municipal Water District (Application C-688-4-0, Project #1010492) proposed to install a new 376 bhp rich-burn natural gas/LPG-fired IC engine generator equipped with positive crankcase ventilation (PCV), O_2 controller, and a three-way catalyst to provide alternate means of running an electric water pump for up to 1,000 hours per year. BACT was required for NOx and VOC. The District applied BACT Guideline 3.2.6 and required the following as BACT: 25 ppmv at 15% O_2 NOx and 35 ppmv at 15% O_2 VOC. The South Coast AQMD's BACT requirement for this class and category of source has been 9 ppmv at 15% O_2 NOx and 25 ppmv at 15% O_2 VOC since 1998. The difference in NOx emissions between the District's BACT requirement and the South Coast AQMD's requirement is 172 pounds per year. This project illustrates the importance of a thorough, up-to-date BACT analysis in minimizing emission impacts. The applicant proposed to install the IC engine because the facility had signed up to participate in a voluntary demand reduction program with the local utility. The intent of demand reduction programs is to offer a reduced electric rate to customers who agree to reduce electricity during times of high demand (i.e., peak periods). The project's well pump is normally powered by an electric motor, so the new IC engine provides an alternate means of running the pump when the facility's power is curtailed by the local utility. Peak periods generally occur during warm summer days,

coincident with high air conditioner use, which are also the worst times for ozone formation.

Under Project #1021069 (deemed complete August 12, 2002), the Harris Ranch Beef Company proposed to install a new 19.950 MMBtu/hr boiler equipped with low NOx burners and FGR (Applications C-616-3-2, '-9-0). BACT was required for NOx, VOC, and PM10. For VOC and PM10, BACT for this type of source is generally use of gaseous fuel and good combustion practices, which were required. The District deemed that their achieved in practice level of 20 ppmv at 3% O_2 was BACT for NOx after eliminating other technologies capable of producing NOx emissions in the 9 to 15 ppmv range due to cost considerations. The South Coast AQMD's BACT requirement for this class and category of source has been ≤12 ppmv at 3% O_2 since October 20, 2000. As part of the BACT determination process for NOx for natural gas- or propane-fired boilers rated <20 MMBtu/hr, the South Coast AQMD reviewed source tests on recently-permitted boilers that could meet 12 ppmv at 3% O_2 (see Table IV page B-31). The South Coast AQMD determined that since the 12-ppmv limit was exceeded in only a small minority of these tests (7 of 40 tests), the data supported the 12-ppmv limit. This limit was determined to be achieved in practice, and therefore declared BACT for this class and category of source. The 12-ppmv NOx BACT level would have resulted in an additional 1,626 pounds per year of NOx emissions reductions.

Another District project for Maxco Supply Company, Inc. (Application C-4004-3-0, Project #1020705), further confirms the availability of technology to meet NOx emissions ≤12 ppmv at 3% O_2 for this class and category of boiler. The project involved installation of a new 19.985 MMBtu/hr boiler equipped with low NOx burners and FGR. The applicant proposed NOx emissions of 12 ppmv at 3% O_2 as guaranteed by the manufacturer. This project was deemed complete approximately two months before the Harris Ranch project.

In the file for Project #1021348 at Pacific Choice Brands, the District used an outdated BACT guideline contrary to its own policy. The project involved the installation of a new 197 bhp natural gas-fired IC engine generator equipped with PCV, O_2 controller, and three-way catalyst for full time use at a food processing facility (Application C-906-9-0). BACT was only required for NOx emissions. The District applied BACT Guideline 3.3.2 from 4th quarter 1998 (even though this application was deemed complete on October 8, 2002). Guideline 3.3.2 identified only an achieved-in-practice BACT level of 25 ppmv at 15% O_2 and no other technologically feasible options. The District accepted this as BACT and disregarded BACT Guideline 3.3.12, which had already superceded Guideline 3.3.2 on October 1, 2002. Guideline 3.3.12 reflected the BACT recommendations contained in the ARB's DG Guidance, which was approved by the ARB on November 15, 2001. The ARB DG Guidance recommends a NOx BACT emission level of 9 ppmv at 15% O_2 for this class and category of source. The 9-ppmv NOx BACT level would have resulted in an additional 738 pounds per year of NOx emissions reductions.

3. The District's BACT policy limits the application of controls for small emitters of toxic air contaminants to those that are "achieved in practice."

ARB staff also found that District *Policy APR 1305* is being used inappropriately at sources that emit toxic air contaminants (TACs). District Policy APR 1305 only addresses the five criteria pollutants in determining a small emitter and does not and should not be used to limit toxic best available control technology (T-BACT). In effect, this practice confines the application of emission limits or controls to those that are achieved in practice for small emitters of TAC emissions. For example, Commercial Electro Plating (Application C-1340-1-1, Project #1000490) proposed an increase in amp-hours on a chromic acid tank. Hexavalent chromium emissions resulted in a health risk assessment score of greater than 1 in a million, so T-BACT was triggered. The District's engineering evaluation stated that Option 1 [a chrome dome emission elimination device (EED), Merlin Cover with 99.9% control] was technologically feasible, but not achieved in practice. The engineering evaluation concluded that because the source was a small emitter, only achieved-in-practice BACT was required. Therefore, an EED cover was not required.

4. The District could improve its in-house procedures for updating its BACT Clearinghouse.

District *Policy APR 1305: Best Available Control Technology (BACT) Policy* (November 9, 1999) states that the District will actively update its Clearinghouse and publish an updated version each quarter. In addition, District *Policy APR 1310: Office Procedures for Implementing BACT Policy* (April 18, 1995) outlines District staff responsibilities for implementing these updates. Specifically, Section III.5 of Policy APR 1310 states that permit processing staff responsibilities include notifying "the BACT Coordinator by fax whenever an ATC requiring a technologically feasible BACT is implemented so that the technology may be moved to the achieved-in-practice category." According to the District's BACT Coordinator, this procedure is not consistently implemented, because it relies on the permitting staff to remember that a particular Authority to Construct established a technologically feasible BACT requirement.

Although the District *does* publish an updated Clearinghouse each quarter, the majority of the changes consist of adding new guidelines. There does not appear to be a consistent effort to update existing guidelines unless a source cannot meet an established BACT requirement. Of the 300+ individual guidelines in the District's BACT Clearinghouse, over 50 percent are more than three years old (pre-2000). Routine assessments are necessary to ensure control technologies previously identified as technologically feasible are upgraded to the achieved in practice classification after equipment is placed into operation and demonstrates consistent compliance.

5. The terms "business type" and "class or category of source" should not be automatically interchangeable.

District *Policy APR 1305: Best Available Control Technology (BACT) Policy* (November 9, 1999) outlines the conditions that must be met for a control technology to be deemed

achieved in practice. The criteria includes a requirement that the "type of business where the emissions units are utilized must be the same." Similar language was contained in the December 1993 version of the BACT policy, which ARB staff commented on in the April 1996 program review report. It appears that the same criterion has been carried over to the most current BACT policy. The ARB staff disagrees that business type, in itself, warrants establishing a different class or category of source.

The California Air Pollution Control Officers Association (CAPCOA)/ARB *Guidance on Achieved in Practice BACT Determinations* (January 11, 2001) outlines general criteria that may be used by districts when establishing achieved in practice BACT requirements. To determine whether an emission unit belongs to a class or category of source for which a control technology has been achieved in practice, the guidelines state that the following criteria should be considered:

- source size (e.g., rating or capacity);
- capacity factor (e.g., seasonal vs. full time); and
- unique operational/technological issues.

"Business type" is not listed as a key criterion and should not be used to exclude a control technology without technical justification. According to the guidelines, similar basic equipment should only constitute different classes or categories of source if "operational or technological needs with demonstrable impact on effectiveness or reliability…that are essential to successful operation of an emission unit…cannot be overcome by other reasonable measures…" In other words, a boiler located at a commercial laundry plant should be treated the same as a similarly sized boiler at a hospital, unless unique operational conditions or technical difficulties justify alternative emission levels.

6. The interest rate used for BACT cost-effectiveness analyses is outdated.

District *Policy APR 1305: Best Available Control Technology (BACT) Policy* (November 9, 1999) establishes the formula to calculate the equivalent annual cost from a capital cost using a recovery factor. This amount is then used to determine if a technologically feasible alternative control technology is cost effective. The formula uses a default 10 percent annual interest rate. According to Harlan Wood, CFP, (Registered Principal, CA Ins. Lic. #0725955) of Planned Solutions, Inc., a 10 percent rate of return greatly exceeds any return on investments nowadays. The ARB currently uses a rate of 5 percent (on a real time basis) for cost-effectiveness analysis.

Recommendations

Significant Recommendations:

1. BACT cost-effectiveness thresholds for other districts with similar air quality status are higher than the District's thresholds. The District should

reevaluate and update its BACT cost-effectiveness thresholds. In this manner, control technologies that are considered technologically feasible and cost effective for a class or category of source will be more frequently achieved in practice, and therefore will be required to be installed.

2. The District should revise Policy APR 1305 to allow control technology searches beyond its own BACT Clearinghouse for emission sources covered in the Clearinghouse. Under the current policy, "BACT determinations are to be based upon the control technologies and methods…listed in the District's BACT Clearinghouse for the calendar quarter during which the application is deemed complete." Conducting a broader technology search would help District staff become more aware of technology advancements in other jurisdictions, encourage the advancement of emission controls, and promote consistency statewide. ARB staff recommends that the District include links to other available control technology databases on its BACT Clearinghouse web site.

3. The District should amend its Policy APR 1305 which requires that the "type of business where the emissions units are utilized must be the same" in determining whether a BACT control technology is achieved in practice for a given class or category of source. CAPCOA/ARB Guidance on Achieved in Practice BACT Determinations does not include business type as part of the criteria for achieved-in-practice BACT determinations. ARB staff believes that business type, in itself, does not warrant establishment of a different class or category of source unless unique operational or technical issues justify alternative emission levels.

4. ARB staff recommends that the District reexamine its in-house procedures for updating existing BACT determinations contained in its BACT Clearinghouse. While a centralized repository for BACT determinations is a useful permit-streamlining tool, routine assessments are necessary to ensure control technologies previously identified as *technologically feasible* are upgraded to the *achieved-in-practice* classification. District Policy APR 1310 instructs permit processing staff to notify the BACT Coordinator whenever an Authority to Construct requiring a technologically feasible control method is implemented; however District staff indicated that this procedure is not consistently implemented. The District publishes an updated Clearinghouse each quarter, but the majority of the changes appear to consist of adding new guidelines rather than updating existing ones. ARB staff suggests incorporating some type of "flag" or identifier within the permit database to identify the Authority to Construct as a technologically feasible BACT application.

5. The District should update the interest rate used for BACT cost-effectiveness analyses to reflect current economic conditions.

Other Suggestions to Improve Program Effectiveness:

None

Table III. Summary of Requirements in District BACT Guideline 3.4.4 for Limited Use Gas-Fired Turbines ≤26 MW

	Last Updated October 2, 1997		Last Updated April 5, 2001	
Pollutant	Achieved in Practice or Contained in SIP	Technologically Feasible	Achieved in Practice or Contained in SIP	Technologically Feasible
VOC	PUC quality natural gas with fuel oil #2 as backup	Oxidation catalyst to achieve 71% control	PUC quality natural gas with fuel oil #2 as backup	1. 90% control efficiency (SCONOx, or equal) 2. 71% control efficiency (Oxidation catalyst, or equal)
NOx	Water injection system with a minimum emission concentration of 42 ppmvd @ 15% O_2	Dry low NOx burners	42 ppmvd @ 15% O_2 (Water injection system, or equal)	1. 2.5 ppmv NOx @ 15% O_2 (SCR, SCONOx, or equal) 2. 15 ppmv @ 15% O_2 (Dry low NOx Combustors, or equal) 3. 25 ppmv @ 15% O_2 (Dry low NOx Combustors, or equal)
PM10	Natural gas, air intake filter, and a lube oil coalescer with a maximum lube vent exhaust visible emissions of 0% opacity Natural gas, air intake filter, and a lube vent high efficiency particulate filter with a maximum lube vent exhaust visible emissions of 0% opacity Natural gas, air intake filter, and a lube vent routed to the turbine or exhaust for oxidation with a maximum lube vent exhaust visible emissions of 0% opacity		Natural gas, air intake filter, and a maximum lube vent exhaust visible emissions of 0% opacity with either • a lube oil coalescer, • a lube vent high efficiency particulate filter, or • a lube vent routed to the turbine or exhaust for oxidation	
CO			PUC quality natural gas	1. 90% control efficiency (SCONOx, or equal) 2. 71% control efficiency (Oxidation catalyst, or equal)
SOx			PUC quality natural gas	

Table IV. Source Test Results for Boilers with Ultra Low-NOx Burners

Boiler Mfr.	Burner Mfr.	Boiler Rating, Type [MMBtu/hr]	Facility Name, Location	Permit Date	Permit NOx Limit	Operating History	Test Date	NOx Results [ppm]	Test Conditions
Superior	ACT	16.4, FT	(Adohr Farms) Heritage Foods, Riverside	11/5/99	9	Apr-00	7/27/00 12/1/00	10.2-12.4 9.4-14.9	Hi Lo Avg Norm/Unc
Superior	ACT	10.5, WT	Beverage Concepts, Rancho Santa Margarita	6/21/00	12		11/3/00	11.1-11.2	Hi Lo Avg
Superior	ACT	5.0, WT	Gar Labs, Riverside	5/4/00	12	9/25/00	11/2/00	10.6-11.1	Hi Lo Avg
Superior	ACT	6.3, FT	L&N Uniform, Santa Ana	4/6/00	12	Jul-00	8/28/00	10.0-10.5	Hi Lo Avg
Johnston	Alzeta	20.3	California Box, Santa Fe Springs	3/16/00	12	8/2/00	10/27/00	3.4-4.3	Hi Lo Avg
CB	Alzeta	20.9, FT	Hi-Country, Corona	12/16/99	9	Apr-00	8/28/00	6.7 and 6.2 (two boilers)	Hi Lo Avg
Donlee	Alzeta	28.8, WT	Nation Wide, various	4/7/00	9	5/1/00	7/7/00	4.5-6.7	Hi Lo Avg
CB	Alzeta	6.0, WT	San Bernardino Co., San Bernardino	2/15/00	12	Apr-00	8/23/00 10/24/00	6.3-7.6 9.4	Hi Lo Avg Norm/Unc
Clayton	Clayton	12.6, WT	Packaging Ad., Los Angeles	12/8/99	12	Pre May-99	5/19/99 7/11/00 8/25/00	9.9-11.1 14.8-20.1 17.5	Hi Lo Avg Hi Lo Avg Normal
Clayton	Clayton	4.3, WT	SCHI, Santa Monica	12/1/99	12	unknown	9/5/00	#1: 6.2-8.4 #2: 5.8-11.6	Hi Lo
QuikWater	Eclipse	2.8	QuikWater, OK				8/11/00	5.7-8.5	Hi Lo Avg
QuikWater	Eclipse	3.8	QuikWater, OK				8/10/00	5.8-7.7	Hi Lo Avg
QuikWater	Eclipse	5.0	QuikWater, OK				8/8/00	5.4-7.1	Hi Lo Avg
Superior	Ind. Comb.	16.8, FT	Bumble Bee, Santa Fe Springs	3/10/00	12	Apr-00	7/7/00 8/10/00 12/5/00	≤12 16.5 9.0-11.7	Hi Lo Avg Norm/Unc Hi Lo Norm
Miura	Miura	8.15, WT	Dae Shin USA, Inc.	4/18/00	12	Aug-00	8/28/00	#1: 9-10	Hi Lo
Miura	Miura	8.2, WT	Maruchan, Irvine	4/18/00	12	Aug-00	10/28/99	#7: 7.6-8.1 #8: 5.7-6.3	Hi Lo
				9/9/99	15	Pre Oct-99	9/22/00	#7: 14.2 #8: 13.1	Norm/Unc
							9/25/00	#7: 10.2 #8: 9.3	Normal
Miura	Miura	8.2, WT	Maruchan, Irvine	2/11/00	12		12/30/99	7.0-7.9	Hi Lo
Parker	Parker	3.6, WT	Lakeshore Towers, Irvine	12/21/99	12	Jun-00	7/28/00 9/29/00	5.9-10.1 6.8-9.2	Hi Lo Avg Hi Lo Avg
Parker	Parker	6.3, WT	Minimed Tech, Sylmar	2/8/00	12	10/5/00	12/8/00	#1: 7.5-8.2 #2: 9.7-10.8 #3: 4.5-8.6	Hi Lo Norm Hi Lo Norm Hi Lo Norm
Parker	Parker	3.0, WT	Salvation Army, Long Beach	1/11/00	12	Pre Mar-00	3/9/00	7.4-11.8	Hi Lo Avg
Parker	Parker	3.0, WT	Walt Disney Co., Burbank	3/10/00	12	Apr-00	8/25/00	#1: 3.3-9.6 #2: 9.6-10.9	Hi Lo Avg

WT = water tube, FT = fire tube; *Hi Lo Avg* means three steady-state tests at maximum, minimum, and average loads; *Normal* means scheduled test(s) done under normal, modulating operating conditions; *Norm/Unc* means unannounced test(s) done under normal, modulating operating conditions; *Hi Lo* means two steady-state tests at high and low load; *Hi Lo Norm* means steady-state tests at maximum and minimum loads and another test under normal, modulating conditions

B-5. Biomass Facilities

There have been concerns raised that biomass plants in the Valley are burning more urban wood waste—imported from the South Coast Air Basin—at the expense of local agricultural biomass. ARB staff reviewed the District permits for the biomass plants to determine the prevalence of use of urban wood waste as fuel at biomass facilities, the District limitations of such use, and the enforceability of the associated District permits. The scope of the permit evaluation did not include the compliance history of the permittees.

ARB staff reviewed nine biomass permits. For most of these facilities, the initial offsets were provided by burning agricultural biomass in the boilers that had been historically burned in the field. That is, the difference in emissions from open-field burning versus burning in the boilers provided the offsets for the plant to be built. The offset credit is calculated using "A Procedure Relating to the Determination of Agricultural/Forestry Waste Emission Offset Credits," developed through a CAPCOA/ARB/U.S. EPA Agricultural Waste Committee, and adopted by the ARB on November 9, 1989. Therefore, most of the biomass facilities have permit conditions that require them to burn a minimum of agricultural biomass to meet their offset commitments. After the minimum is consumed, the balance of the fuel may come from a variety of sources—including urban wood waste.

Our review did not find specific issues with the facility permits regarding conditions relating to the use of agricultural biomass versus other fuel. Of the nine permits issued to biomass plants, only one prohibited the use of urban wood waste as fuel (Nordman of California, Permit #C-869-1-0). Nordman is limited to pumace, sawdust, walnut shells, and pistachio shells as fuel to its gasifiers. Of the remaining eight biomass permits, the conditions placed in the permits related to burning wood waste varied.

Three biomass facilities were inspected as part of the District review and were found to be substantially in compliance. One facility had a visible emissions exceedance (over 5% opacity) at a conveyor transfer point. The second facility received a notice to comply for missing records related to internal combustion engine repairs and maintenance. The third facility was in full compliance.

<u>Madera Power (Permit #C-799-7) – Title V</u>

The most comprehensive and enforceable biomass permit issued by the District to a biomass facility was issued to Madera Power (Permit #C-799-7). The permit specifically identifies the agricultural fuels that are eligible for offset credits, the calculation method for offset credits, the associated daily and annual recordkeeping requirements, and the quarterly fuel-usage reporting requirements. These conditions allow District enforcement staff to determine if the plant is burning at least the minimum amount of agricultural biomass to meet offset requirements.

Furthermore, the limitations on burning urban wood waste are clear and enforceable. For example:

- Urban wood waste (construction, demolition, and landfill-derived wood wastes) is approved as fuel as long as there is less than 1% by weight of plastic, rubber and other non-wood combustibles (other than dirt or ash).
- No fuel shall be chemically treated, painted, or oil stained.
- If urban wood wastes have been burned during the 365-day period prior to October 31 of any year, fuel testing shall be conducted by December 31 of that year.
- Fuel testing shall be conducted as follows: one truckload of urban wood waste fuel shall be weighed, dumped, and all contaminants shall be sorted from the fuel, identified and weighed. The report for this test shall be forwarded to the District by January 1 (one month after fuel testing deadline).
- The District shall be contacted and notified of the proposed date of any fuel testing.
- In addition to the scheduled annual fuel testing, testing shall also be performed on urban wood waste on-site within 24 hours of any such request from District staff.
- In accordance with the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (amended June 1993), the facility shall be source tested while fired on the maximum proposed mix of urban wood waste for the following: full set of metals, PAHs, dioxins, furans, formaldehyde, acetaldehyde, PCBs and POM. The ratio of urban wood waste to other fuel combusted during the toxics testing will become the maximum ratio allowed for all subsequent combustion, unless otherwise revised under future Authorities to Construct.

These conditions assure that the contents of urban wood waste are inspected on a routine basis; District personnel have the opportunity to witness the fuel testing and request additional testing; and the toxics emitted from burning urban wood waste are quantified and their health risks are determined.

<u>Rio Bravo Fresno (Permit #S-1820-1-12) – Title V</u>

This permit specifically identifies the agricultural fuels that are eligible for offset credits, the calculation method for offset credits, the associated daily and annual recordkeeping requirements, and the quarterly fuel-usage reporting requirements.

The permit allows for "construction wood waste" and "urban wood waste" to be burned as fuel; however, it does not define these terms, nor does it limit the amount of plastics and other prohibited materials in the wood waste stream. The permit requires that the mass ratio of creditable biomass fuel to total biomass fuel not be less than 0.48, which means that urban wood waste, which is one of the noncreditable fuels, can make up half of the fuel stream of the biomass boiler. Furthermore, there are no provisions for testing the urban wood waste stream for prohibited materials or requiring source testing for "Toxic Hot Spots" purposes at the highest proposed urban wood waste throughputs.

Mendota Biomass Power, LTD (Permit #C-825-5-8) – Title V

This permit specifically identifies the agricultural fuels that are eligible for offset credits, the calculation method for offset credits, the associated daily and annual recordkeeping requirements, and the quarterly fuel-usage reporting requirements.

The permit allows "clean unpainted urban wood waste and "unpainted paper waste" to be burned as fuel; however, it does not define these terms, nor does it limit the amount of plastics and other prohibited materials in the wood waste stream. There is no limit to the amount of urban wood waste that can be burned as long as the agricultural biomass requirements have been met. There are no provisions for testing the urban wood waste stream for prohibited materials or requiring source testing for "Toxic Hot Spots" purposes at the highest proposed urban wood waste throughputs.

AES Delano Inc. (Permits #S-75-6-15 and #S-75-11-12) – Title V

These permits specifically identify the agricultural fuels that are eligible for offset credits, the calculation method for offset credits, the associated daily and annual recordkeeping requirements, and the quarterly fuel-usage reporting requirements.

These permits also allow wood waste to be burned, and they define wood waste to include "clean, chipped wood products, plywood, wood products manufacturing wood products, construction and demolition wood materials, and wood pallets, crates and boxes." Furthermore, the permits state: "Contamination of the biomass fuel, as delivered to the boiler, shall not exceed 0.04% by weight plastics or 0.62% by weight total of the following materials: metals, plastics, paper, painted wood, particle board, wood treated with preservatives, and non-wood roofing materials (except asbestos)."

To enforce the contamination limits, the permits say that the District can request a 25-ton representative sample of biomass in the reclaim pile to be sorted by category, according to the contamination limits in the permit, and the results submitted to the District within 30 days after collection. There are no source-testing requirements for "Toxic Hot Spots" purposes at the highest proposed urban wood waste throughputs, as in the above Madera Power permit (#C-799-7).

Sierra Power Corporation (Permit #S-834-3-4)

This facility is not a major source requiring a Title V permit. This permit allows "clean, dry construction wood waste" to be burned as fuel, as well as agricultural biomass. Although "clean, dry construction wood waste" is not defined, the permit states: "No plastic, rubber, tar paper, asphalt shingles, plaster, metals, painted or chemically treated wood products or wastes shall be burned in the combustor." Finally, the permit states: "A daily record of the quantities and types of agricultural fuels burned in the combustor shall be maintained and submitted to the District quarterly."

There is no minimum amount of agricultural biomass required to be burned at this facility. Additional documentation in the permit file indicates that traditional offsets were used in the original permitting of this facility in 1988; agricultural offset credits were not applied. Furthermore, there is no limit to the amount of urban wood waste that can be burned as long as the boiler does not exceed its annual emissions limitations. There are no provisions for testing the urban wood waste stream for prohibited materials.

Dinuba Energy (Permit #S-285-2-2)

This facility is not a major source requiring a Title V permit. There is no minimum amount of agricultural biomass required to be burned at this facility. This permit allows "only natural gas and wood fuels" to be burned in the boiler. The definition of "wood" includes "wood waste," which is further defined as "clean, chipped wood products, plywood, wood products manufacturing wood materials, construction and demolition wood materials, and wood pallets, crates and boxes." The permit further states: "Contamination of the wood fuel, as delivered to the boiler, shall not exceed 1.0% by weight total of the following materials: metals, plastics, paper, painted wood, particle board, wood treated with preservatives, and roofing materials. None of the contaminants allowed by this condition shall contain asbestos."

To enforce the contamination limits, the permit requires that the facility must sort "a District-selected 5 ton representative sample of wood fuel within 60 days of startup and, thereafter, as requested by the District compliance division." At a minimum, the facility must sample the wood fuel for metals and asbestos quarterly, pursuant to a District-approved test plan, and submit the results to the District within 30 days of testing.

Auberry Energy, Inc. (Permit #C-1700-1-1)

This facility is not a major source requiring a Title V permit. There is no minimum amount of agricultural biomass required to be burned at this facility. This permit limits the amount of No. 2 fuel oil consumed to 2,000 gallons per year and allows biomass to be burned, including "clean urban wood waste." The permit states: "Clean urban wood waste may contain rocks, dirt, concrete, and other non-combustible materials in an amount not to exceed 5% of the total weight of the fuel (including wood ash) on a dry basis." Furthermore: "Clean urban wood waste shall be considered free of non-wood combustible materials if less than 1% of a representative sample of the fuel on a dry basis are materials other than non-combustibles or wood….Clean plywood, particle board, and oriented-strand board shall be considered clean urban wood waste….Clean urban wood waste is defined as wood from construction/demolition projects and which is free of non-wood combustible materials."

To enforce the contamination limits, the permit requires that the facility test a minimum of five pounds of wood fuel—collected by the District or a third-party testing laboratory—at least twice a year and as "deemed necessary by the District."

Recommendations

Significant Recommendations:

1. The District should consider using the permit issued to Madera Power (Permit C-799-7) as a template for modifying the other Title V permits for biomass facilities upon renewal. These permits should contain an explicit definition of urban wood waste, a limit on contaminants in the wood waste, a periodic testing of the fuel stream for contaminants, and source-test requirements when significant changes in fuel composition occur. For minor (non-Title V) biomass facilities, the recommendations should also apply, except that source-testing requirements may be less stringent.

Other Suggestions to Improve Program Effectiveness:

None

B-6. Adequacy of Permit Conditions

Findings

1. The District does not annually review the enforceability of all its conditions in each permit as required by Health and Safety Code Section 42301 (e). The District reviews its permits every 5 years upon expiration and reviews and updates permits impacted by rule revisions. The District could satisfy State law requiring annual permit review by linking permit review to the annual inspection.

2. Some conditions are in the form of specific emission limits that can neither be verified during a field inspection nor can practically be source tested by the facility. These emission limits can only be verified by combining actual facility conditions (throughput, material type) with the emission factors used in the original engineering evaluation. Examples of such permit conditions are given below:

   - Emissions from the material handling operation – including receiving, unloading, and conveying to silos, batch mixers, and scales – shall not exceed 0.0038 lb PM10/ton material. (Certainteed Corporation)
   - Emissions of particulate matter from the concrete batch plant shall not exceed 34 pounds per day. (Calmat of Fresno)

   Examples of readily verifiable permit conditions as surrogates to ensure compliance with emission limits would be material throughput, visible emissions, covered hoppers, operational water sprays, and correct operation of control equipment such as cyclones and baghouses.

3. For all permit conditions, the District references the applicable District rule. On its computer system the District indicates if each permit condition is federally enforceable.

4. The District's permits have an equipment description on the first page of every permit. In some permits, especially when the description is more complex, clarity may be improved with a clearer item-by-item equipment listing instead of a paragraph of text describing the equipment.

Equipment units that are sources of emissions can be grouped in an equipment list separate from abatement equipment. This way the sources and control equipment in each permit can be more easily identified. [For example Bay Area permits use an equipment list where equipment sources are listed with a sequential S-# designation and abatement equipment is listed with a sequential A-# designation].

5. The clarity of the District's more complicated permits can be improved.

Specific types of conditions such as those for record keeping, source testing or abatement equipment could be grouped. This could make the permits more usable to the source and inspector. Before inspections of more complex facilities, for example, staff had to categorize which permit conditions were record keeping conditions and source testing conditions, in order to know what records to request from the source and in order to know which conditions would be verified by source test. Industry regulated by the District also commented that conditions should be grouped together.

6. Most of the District's permit conditions that limited the activity or throughput of a source had limits that were in readily verifiable units. However, ARB staff encountered conditions that relied on annual limits to verify compliance instead of a shorter (i.e. daily) limit, which can assure more continuous compliance. (Example: Emerzian Woodworking C-1967-4-0 condition #8 limits adhesive use to 2080 gal/year, a daily gallon limit could be better)

7. Most of the permits reviewed by ARB staff included record-keeping conditions to help verify continuous compliance. However, some parameters on permits lacked specific parameters for verification. For example, Robinson's sheet (C-4028-1-0) had record keeping required for the plasma arc cutting, but did not include record-keeping for the maximum 1.35 inches of water column for the HEPA filter.

8. Some permits had conditions that did not necessarily apply to the source.

One of the two District chrome plating permits reviewed had conditions limiting visible emission to 20% opacity or Ringelmann 1. (See Commercial Electro Plating C-3140-1-2 which is a decorative chrome facility). A permit for a printing and degreasing operation (Lustre Cal Nameplate N-4445-1-0: screen printing, N-4445-2-0: degreasing operation) also had a VE condition.

9. Staff found inconsistencies in permit conditions involving baghouses.

American Transit Mix, C-3353-2-1, requires a baghouse be equipped with a magnahelic pressure gauge, but it does not require a pressure drop range, or record-keeping specifically for monitoring any change in the pressure drop. Another condition for baghouses required that the cleaning frequency and duration be adjusted to optimize control efficiency, but this condition is unenforceable. An inspector will have no way to evaluate if the optimum frequency and duration has been reached and if the source had been using the optimum level since the previous inspection. Conditions for baghouses seem to be inconsistent in that some facilities are required to keep 10% extra bags, but others are not.

10. The San Joaquin Valley permits lack a condition giving U.S. EPA, ARB, and District personnel entry into a facility. This language could be written into the permit.

11. The District's permit conditions for internal combustion engines for different facilities may be inconsistent in requiring positive crankcase ventilation (PCV). During joint inspections, ARB staff found that some engines required PCV, but others did not. The District should examine if PCV is regulated equally among its facilities. (For example, CA Water Service 2378-3-0 has Diesel ICE with PCV condition.)

12. Due to concerns raised that San Joaquin Valley biomass plants are burning more urban wood waste imported from outside the District, ARB staff reviewed District permits to determine the prevalence of urban wood waste as fuel, limitations of such use, and the enforceability of the associated District permits. ARB staff found that most biomass plants have permit conditions that require them to burn a minimum of agricultural biomass to meet offset credit commitments. After the minimum is consumed, the balance of the fuel may come from a variety of sources. The most comprehensive and enforceable biomass permit issued by the District was for Madera Power (Permit C-799-7).

Recommendations

Significant Recommendations:

1. The District should improve the clarity of its permits, especially for more complex facilities. Permits should have a clearer item-by-item equipment listing. The District should consider grouping specific types of conditions in its permits such as those for record-keeping, source testing or abatement.

Other Suggestions to Improve Program Effectiveness:

1. The District should annually review the enforceability of all its conditions in each permit as required by HSC section 42301 (e). The District reviews its permit every five years upon expiration and reviews and updates permits impacted by rule revisions. The District could satisfy state law requiring annual permit review by linking the permit review to annual inspection.

2. The District should consider adding a condition giving U.S. EPA, ARB, and District personnel entry into a facility. This language could be written into the permit.

B-7. Organization and Adequacy of Permit Evaluations

Findings

1. The District's engineering evaluations follow a detailed format that covers all the necessary elements of a complete engineering evaluation.

The formatting in the District's evaluations include the Proposal (I), Applicable Rules (II), Project Location (III), Process Description (IV), Equipment Listing (V), Emission Control Technology Evaluation (VI), Calculations (VII), Compliance (VIII), Recommendations (IX), and Appendices. The appendices include BACT analysis, health risk assessments, permits to operate and other information. The proposal section of each evaluation usually provides a good description of the project.

2. It appears that the District relies solely on the applicant's statement rather than checking school boundary maps to verify that each project is compliant with HSC section 42301.6, which requires a public notice if the proposed source or modification is within 1000 feet from the outer boundary of a school site. (It is ARB staff's understanding that District Policy APR 1010 was updated in January 2004. The policy now specifically directs District staff to verify whether equipment will be located within 1,000 feet of a K-12 school and to state this in the engineering evaluation.)

The engineering evaluation for Pacific Choice Brands (Application C-906-4-2, Project #1010347) stated: "The applicant states the source is not located within 1,000 feet of the outer boundary of any K-12 school; therefore, a school notice pursuant to HSC section 42301.6 is not required."

Similar language was included in the engineering evaluation for the California Department of Corrections, Corcoran, CA (Application C-214-31-0, Project #960578) which stated: "The Applicant states that the facility is not within 1,000 feet of the outer boundary of a school site, so the public noticing requirement of California Health and Safety Code 42301.6 does not apply."

Because it is the District's responsibility to determine whether a project will comply with all applicable rules and regulations, the ARB staff believes it would be good engineering practice for the District staff to verify that the applicant's claims are accurate and include a brief statement confirming such in the engineering evaluation. Verification that an emission unit is not located within 1,000 feet of a school could be accomplished by a quick review of local area maps. ARB staff understands that an updated version of Policy APR 1010 - Application Review Format was issued on January 26, 2004. The policy now specifically directs District staff to "Verify whether or not the equipment is or will be located within 1,000 feet of the nearest outer boundary of a K-12 school. State this in the EE [engineering evaluation]."

3. For its calculations, the District often presents tables of emissions with comparisons to trigger levels for BACT, offsets, major sources and public notice. Sample or complete calculations showing how emissions were determined are usually provided. Most of the District's evaluations show the assumptions made by permit engineers.

4. The District should consider streamlining some of its evaluations as a means to help reduce its backlog.

Some evaluations contain extra information that may not be necessary for specific projects adding to the volume and complexity of the evaluation and reducing clarity. District stakeholders also commented that they felt that there was too much "engineering" done in the evaluations. For example, a project involving a new chrome plating tank does not need a discussion on complying with District's visible emission rule, BACT trigger levels for CO, etc. Only a TBACT discussion is necessary. Detailed tables of emissions evaluating whether offsets and public notice are triggered with the respective trigger levels may not be necessary when the emissions from the new equipment or modification would obviously not trigger them.

5. Some of the District's engineering evaluations contain contradictory statements and inconsistencies between stated and calculated operating hours. Some of these errors may be attributed to "cut-and-paste" mistakes when past engineering evaluations were used as templates.

ARB staff found numerous Authority to Construct engineering evaluations that cited the 1991-adopted version or the 1995-amended version of the New Source Review (NSR) rule when more recent versions have been adopted and should have been cited and used.

Archie Crippen Recycling (Applications C-53-4-0 and '-5-0, Project #970066) applied for two Authorities to Construct for 500-bhp and 350-bhp diesel-fueled IC engines used to power equipment at a concrete recycling operation. In the engineering evaluation, the potential to emit for VOC emissions from each engine was calculated to be 2.3 and 6.9 pounds per day, respectively. However, the annual VOC emissions for purposes of offsets and major source determinations were characterized as being zero (in tables in sections VII.F.2 and VII.H). These annual emissions were inconsistent with the 500 hours per year operational limit proposed by the applicant and District Policy APR 1115, which states that values calculated at less than 0.5 pounds per day shall be equal to zero.

An application filed by Stanislaus Food Products Company (Applications N-1680-1-6, '-2-6, '-3-8, and '-4-6; Project #1020497) concerned the replacement of existing boilers with ultra-low-NOx burners. The application stated: "The facility typically operates 24 hours per day, 7 days per week, and 16 weeks per year." It then stated: "It is assumed that the unit's annual emissions are evenly distributed throughout the year as follows: ΔPE (lb/qtr) = [PE2 (lb/yr) – PE1 (lb/yr)] ÷ 4 qtr/yr," which is inconsistent with a seasonal

operation. It is ARB staff's understanding that the quarterly calculation was included to show the values that would be entered into the District's internal emission profile database and do not directly correlate to a particular rule requirement. However, if the emission profile database is used for air quality assessment and planning purposes, ARB staff suggests that emissions be assigned to the quarter(s) in which they actually are expected to occur.

The engineering evaluation for Dunlop Almond Hulling (Application N-2101-1-3, Project #1011801) contained inconsistent determination of the number of annual operating days. The Authority to Construct engineering evaluation said that the maximum operating schedule proposed by the permit applicant was 70 days per year, yet the emissions calculation used 75 days per year.

The engineering evaluation for SK Foods (Application C-1163-1-4, '-2-4, and '-7-0; Project #1020252) showed an increase in potential to emit for NOx emissions greater than 2 pounds per day so the BACT threshold was exceeded and BACT was required. However, a subsequent portion of the evaluation stated that BACT was triggered for VOC only, with no mention or analysis of BACT for NOx. In addition, annual post-project emissions were provided in pounds per day rather than in pounds per year. And lastly, an annual specific limiting condition was determined by limiting the hours of operation, yet there was no permit condition requiring installation of an hour meter, which would be necessary to determine that the operating hours limit was not exceeded.

While not a matter of District policy, these examples show that consistency and accuracy need to be maintained when completing and reviewing the Authority to Construct evaluation in order to avoid confusion and inaccuracy.

6. The ARB staff found instances where previous District requirements were weakened through removal of permit conditions as part of a project to modify existing equipment.

In the project for Vintage Petroleum, Inc. (Applications N-370-1-2 and '-2-2, Project #990773), the engineering evaluation stated: "The applicant received ERC's for the replacement of existing engines with these engines. One of the conditions attached to the issuance of the ERC's was that a CEMS would be utilized on each of these engines such that the validity of the ERC's could be continually demonstrated. Subsequently, as part of Northern Region Project #950618, the CEMS requirement was dropped and replaced with several other conditions including annual source testing. Annual source testing will continue to be required." No technological reasons were provided to show that a CEMS was infeasible. A CEMS represents a more rigorous monitoring requirement than is achieved through enhanced maintenance, periodic NOx readings with a portable analyzer, and annual source testing.

Lepreno Foods (Applications N-474-2-3, '-3-3, and '-4-3; Project #1010462) requested to modify the source-testing frequency for three existing 33.0 MMBtu/hr boilers. Each

boiler was permitted to source test *annually* due to conditions imposed from banking ERCs in accordance with section 5.6 of Rule 2301 (Emission Reduction Credit Banking). At the time the ERC certificate was issued, annual source testing was determined to be the method the source would use to ensure that the ERCs banked were real, surplus, permanent, quantifiable, and enforceable. Under this project, the District determined that if past source test results indicated NOx, and CO emissions of less than or equal to 90 percent of the permit limits, then verification of the validity of the ERCs by the source testing frequency specified in Rule 4305 would be acceptable. District Rule 4305 (Boilers, Steam Generators, and Process Heaters; Amended December 19, 1996) required compliance testing at least once every 12 months, and after demonstrating compliance on two consecutive annual source tests, allowed the units to be tested not less than once every 36 months.

7. The ARB staff found a case where the District applied cost values from different basic equipment types to cost out of a technologically feasible BACT control.

Tempo Plastics Company (Application S-995-5-0, Project #960359) proposed to replace a 7.8 MMBtu/hr turbine with a 9.0 MMBtu/hr cogeneration unit. The BACT cost-effectiveness analysis was based on data obtained from Lone Star Gas Liquids Processing Inc. Project #950676 for a 10.28 MMBtu/hr boiler. The District assumed the cost data for installation of SCR on a boiler was comparable to placing SCR on a turbine. The District BACT cost-effectiveness analysis determined that the final price of $10,048 per ton NOx reduced was not cost effective to install SCR. Instead, the analysis concluded that a 31-ppmv low-NOx combustor was the most effective control strategy remaining after eliminating SCR for cost reasons.

8. Staff found District engineering evaluations containing permissible emission estimates that do not correspond to the permitted equipment.

Permits for Modesto Irrigation District (Applications N-2052-1-3 and '-2-3, Project #1011894) contain conditions that the facility must obtain an Authority to Construct permit from the District before its annual operating hours exceed 877 hours in order to demonstrate how compliance would be achieved. The origin of the 877-hour limit is District Rule 4703 - Stationary Gas Turbines. In accordance with section 4.2, turbines that are limited by permit condition to operate no more than 877 hours per year have less stringent NOx emission requirements. However, in this project, old permit conditions were not updated—the permits still allow approximately 900 hours per year of operation at the maximum hourly fuel rating and more hours if operating below the maximum rating. Annual fuel usage should have been reduced, as it corresponds to the maximum emissions allowed. Since the unit cannot exceed 877 hours without substantial reduction in required NOx ppmv levels, the maximum emissions should be based on 877 hours worth of fuel at the allowable emission rate.

Supreme Specialties (Application N-2923-3-4, Project #1000143) installed control equipment and low-NOx burners with FGR on a natural gas-fired boiler. Section VI of

the engineering evaluation states that the "applicant is proposing to install a low NOx burner with FGR to the existing natural gas fired boiler to reduce the NOx emissions from the generator." However, the higher permitted NOx emission rate and annual emission limit were retained. In addition, VOC emissions increased 3.9 pounds per day. According to the BACT analysis, as the source is a "small emitter," the only VOC control requirement was that the natural gas boiler use natural gas.

Recommendations

Significant Recommendations:

1. The District should ensure that existing permit conditions imposed to satisfy the requirements of a District rule are not weakened through a subsequent permitting action to modify the emission unit. For example, ARB staff found a case where a source received emission reduction credits (ERCs) for the replacement of natural gas-fired engines. One of the conditions of the ERCs was that a continuous emission monitoring system (CEMS) would be required to continually demonstrate the validity of the ERCs. In a subsequent permitting action, the CEMS requirement was removed and replaced with annual source testing.

Other Suggestions to Improve Program Effectiveness

1. ARB staff recommends that the District verify that a source is not located within 1,000 feet of a school using school boundary maps rather than relying solely on the applicant's statement. It is ARB staff's understanding that District Policy APR 1010 was updated in January 2004. The policy now specifically directs District staff to verify whether equipment will be located within 1,000 feet of a K-12 school and to state this in the engineering evaluation.

2. ARB staff found several cases where District engineering evaluations contained contradictory statements and inconsistencies between stated and calculated operating hours. Some of these errors may be attributed to "cut-and-paste" mistakes when previous engineering evaluations were used as templates. ARB staff supports the use of templates for the purposes of permit streamlining. However, when these templates are utilized, ARB staff recommends that the District staff exercise more care in reviewing its evaluations.

3. ARB staff recommends that the District take every reasonable effort to obtain cost values from the same type of basic equipment when conducting a BACT cost-effectiveness analysis. ARB staff found a case where the District applied the cost for installation of selective catalytic reduction on a boiler to a turbine.

Appendix C – Rule Development Program

C. RULE DEVELOPMENT PROGRAM

The Rule Development Program (RDP) is administered by the District's Planning Division. The RDP has several important functions including development of BARCT rules for NOx and VOCs, publication of the District rule book (except Permits, Fees, and Toxics), and development of industrial based control measures for attainment plans. There are currently 10 positions in the RDP: supervisor, supervising engineer, senior engineer, 3 engineers, and 4 staff level specialists. A project lead works with a team including permitting and compliance staff to prepare a draft which is reviewed by the supervisor.

The District's rule development program was reviewed with respect to the quality of existing rules (at the time of the review in March 2003) and the mechanism and procedures followed by the District for adopting new rules or making amendments to existing rules.

The District has a process for rules to be reviewed for enforceability, clarity, and BARCT/RACT consistency. Enforcement, planning, and legal staff can provide input to the rule development and amendment process. Staff reports are prepared for each new or amended rule scheduled for adoption. The District gives adequate consideration to the planning and conduct of public workshops. Based on our review, there is a good public process in place for the rule development program.

An extensive analysis of the District's existing prohibitory rules (March 2003 version) was performed as part of the review process. The rule's emission limits, exemptions, monitoring and recordkeeping requirements were compared to other districts' rules in the State with similar air quality status and to BARCT and "All Feasible Measures" determinations. Emission Inventories, rule development history and special case practicability were not taken into account. These elements are usually reviewed and covered during the district's rule development process.

In addition, in late 2003 and early 2004, staff from the District, Sacramento Metropolitan AQMD, Bay Area AQMD, and ARB conducted an extensive review of 10 major rule categories. For each rule category, each of the appropriate district rule or rules were compared to the most stringent rule in California, as determined by the ARB. The rule categories compared included boilers, turbines, stationary internal combustion engines, adhesives, solvent cleaning, degreasing, vehicle refinishing, valves and flanges, organic liquid storage, can and coil coatings, and graphic arts. For each category examined, staff prepared a detailed comparison of each rule element, including emission limits, applicability, exemptions, and inspection requirements. In general, there were a few areas where there was a potential for further emission reductions, but no major deficiencies were identified. Where a potential for further emission reductions was identified, each district committed to evaluating and updating the rules as appropriate.

Findings

1. At the time of the rule analysis, ARB staff identified rules that could technically have more stringent emission limits (of the 61 rules reviewed, about 34 could technically have more stringent emission limits). A complete analysis of 61 prohibitory rules reviewed by ARB staff has been shared with District staff. Refer to pages C-12 to C-15 for a complete listing of rules reviewed by ARB staff. Examples of District rules (existing at the time of review as of March 2003) which should be more stringent are listed below with a brief analysis. We should note that the District has acknowledged the scope for rule improvement. The District has done extensive work, since our rule analysis, in updating many of its rule emission limits especially for boilers, turbines, and internal combustion engines, and we commend the District for this effort.

NOx

I. Rule 4703, Stationary Gas Turbines, amended 4/25/02 - The 42 ppm Tier I limit in Rule 4703 for turbines rated between 2.9 and 10 megawatts is not as effective as the ARB's Determination of Reasonable Available Control Technology and Best Available Retrofit Control Technology for the Control of Oxides of Nitrogen from Stationary Gas Turbines, dated May 18, 1992 (Determination) limit of 25 ppm. Currently, seven districts have adopted turbine rules with a more stringent 25 ppm emission limit. The Tier II standards will not alleviate this discrepancy between the 42 ppm Tier I standard and the 25 ppm Determination limit for turbines in this size range when dry low NOx (DLN) kits are not commercially available.

Rule 4703 has a Tier II limit of 35 ppm for turbines 10 MWs and less if a DLN system is not commercially available as of April 30, 2003. The Determination and seven district rules (Ventura County, Antelope Valley, Sacramento County, Yolo Solano, South Coast, Placer County, and San Diego County) require turbines rated at less than 10 MW to meet a 25 ppm NOx limit regardless whether a DLN is commercially available or not. There are currently 33 electrical generation turbines in the state rated at less than 10 MWs with permitted emission limits less than or equal to 25 ppm. Nine of these turbines are located in the San Joaquin Valley Unified Air Pollution Control District.

II. Rule 4405, NOx Emissions From Existing Steam Generators Used in Thermally Enhanced Oil Recovery – Central/Western Kern County Fields, amended 12/17/92 - allows a limit of 110 to 140 ppm NOx (based on size) for gas fueled and 150 to 290 ppm for liquid fueled steam generators. This is high compared to a limit of 30 ppm NOx for gaseous fuel and 40 ppm NOx for liquid fuel for similar equipment which does not benefit from the grandfathering provision of Rule 4405.

III. Rule 4701, Internal Combustion Engines, amended 12/19/02 (District amended Rule 4701 on 8/21/03; District amended Rule 4702 on 6/16/05, which regulates emissions from internal combustion engines including those used in agricultural operations) - The emission limits in this rule are not as stringent as those listed in the ARB Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Stationary Spark-Ignited Internal Combustion Engines, November 2001 (Determination). The following table summarizes the differences in the NOx limits between Rule 4701 and the Determination:

NOx EMISSION LIMITS COMPARISON

Engine Type	Rule 4701 NOx Limit	BARCT NOx Limits
GENERAL		
Rich Burn	50 ppm or 90% reduction	25 ppm or 96% reduction
Lean Burn	75 ppm or 85% reduction	65 ppm or 90% reduction
Lean Burn, 2-Stroke, 100 horsepower	75 ppm or 85% reduction	200 ppm
Waste Gas-fueled	125 ppm or 80% reduction 50 ppm/90% if rich burn	65 ppm/90% if lean burn
PUBLIC WATER DISTRICTS		
Rich Burn	90 ppm or 80% reduction	25 ppm or 96% reduction
Lean Burn	150 ppm or 70% reduction	65 ppm or 90% reduction
Lean Burn, 2-Stroke, < 100 horsepower	150 ppm or 70% reduction	200 ppm
CYCLICALLY-LOADED ENGINE		
Rich Burn	300 ppm	300 ppm

A review of source test data and the cost effectiveness analysis contained in the Determination indicates that these recommended limits might be met cost effectively. The Determination is available for downloading at the following Internet address: http://www.arb.ca.gov/ractbarc/ractbarc.htm.

The rule allows 300 ppm NOx for oil field engines. Also the 1,000 hours of use in any one calendar being considered a low use engine is higher than other districts and higher than that of the 200 hours specified in the Determination.

IV. Rule 4354, Glass Melting Furnaces, amended 2/21/02 (District held the most recent rule amendment workshop on 5/17/05) - Rule 4354 specifies emissions limits of 4.0 pounds of NOx per ton of glass pulled for container glass or

fiberglass and 7.0 pounds of NOx per ton of glass pulled for flat glass. These limits exceed those achieved in currently operational plants and do not represent all feasible measures. Based on currently available technology, emissions limits of about 3.0 pounds NO_x per ton of glass pulled for container glass and about 5.0 pounds NO_x per ton of glass pulled for flat glass are achievable.

V. Rule 4352, Solid Fuel Fired Boilers, Steam Generators, and Process Heaters, amended 10/19/95 (The most recent workshop to amend this rule was held on 7/13/04) - The Rule 4352 limit of 0.20 lb/MMBtu for solid fuels other than municipal waste and biomass exceeds the Determination limit of 0.052 by a factor of 4. The Rule 4352 limit of 0.35 lb/MMBtu for biomass exceeds the Placer County APCD Rule 233 limit for biomass of 0.150 lb/MMBtu). The Rule 4352 limit of 200 ppm (equivalent to 0.260 lb/MMBtu) for municipal solid waste exceeds BACT determinations which are as low as 0.023, 0.039, and 0.105 lb/MMBtu for wood, coal, and biomass respectively.

VI. Rule 4311, Flares, adopted 6/20/02 - Limits are identical to the limits found in Santa Barbara County Rule 359, Flares and Thermal Oxidizers, adopted 6/28/94. Rule 4311 limits are higher than the emission limits of 0.06 lb/MMBtu in San Luis Obispo County APCD Rule 426, Ventura County APCD Rule 74.17, Ventura County APCD Rule 74.17.1, and BACT determinations.

VII. Rule 4902, Residential Water Heaters, adopted 6/17/93 - Exempts natural gas–fired water heaters used exclusively to heat swimming pools and hot tubs. Two districts, as listed below, do not exempt swimming pool and hot tub heaters.

South Coast AQMD Rule 1121, Control of Nitrogen Oxides from Residential Type, Natural Gas-Fired Water Heaters, amended 12/10/99

Ventura County APCD Rule 74.11, Natural Gas-Fired Residential Water Heaters – Control of NOx, adopted 4/9/85

VOC

VIII. Rule 4451, Valves, Pressure Relief Valves, Flanges, Threaded Connections and Process Drains at Petroleum Refineries and Chemical Plants, amended 12/17/92 (Since our review, District amended Rule 4451 on 4/20/05), and Rule 4452, Pump and Compressor Seals at Petroleum Refineries and Chemical Plants, amended 12/17/92 (Also amended on 4/20/05) - The State RACT/BARCT and other districts' rules establish lower leak thresholds, require operators to conduct more frequent inspections of components, and provide shorter periods to repair leaking components than currently allowed in Rules 4451 and 4452.

IX. Rule 4602, Motor Vehicle and Mobile Equipment Coating Operations, amended 12/20/2001 - does not reflect currently available technology per Air Resources Board's Determination of Reasonably Available Control Technology and Best

Available Retrofit Control Technology for Automotive Refinishing Operations, South Coast AQMD Rule 1151, Bay Area AQMD Rule 8-45, Sacramento Metro AQMD Rule 459, and San Luis Obispo County APCD Rule 423.

X. Rule 4401, Steam-Enhanced Crude Oil Production Well Vents, amended 1/15/98 - Unlike SJV Rule 4401, SCAQMD Rule 1148, Thermally Enhanced Oil Recovery Wells does not have relaxed limits for small cyclic operations. SCAQMD Rule 1148 also has fewer exemptions than SJV Rule 4401.

Both SCAQMD Rule 1173, Control of Volatile Organic Compound Leaks and Releases From Components at Petroleum Facilities and Chemical Plants and the Determination of Reasonably Available Control Technology for the Control of Fugitive Emissions of Volatile Organic Compounds from Oil and Gas Production and Processing Facilities, Refineries, Chemical Plants, and Pipeline Transfer Stations, published by ARB December 8, 1993 (RACT Determination) include inspection requirements. There are no inspection requirements in SJV Rule 4401.

XI. Rule 4403, Components Serving Light Crude Oil or Gases at Light Crude Oil and Gases Production Facilities and Components at Natural Gas Processing Facilities, amended 2/16/95 (District amended Rule 4403 on 4/20/05) - South Coast AQMD amended their fugitive VOC emissions rule (Rule 1173) applicable to oil and gas production fields and natural gas processing plants in late 2002. Rule 4403 is less stringent than SCAQMD Rule 1173. Potential rule improvements include lowering the gaseous leak threshold (10,000 ppm), eliminating some existing exemptions, improving the existing inspection and repair programs by increasing the frequency of inspection, and shortening the repair period for leaking components and replacing frequently leaking components with leak-less hardware technology.

XII. Rule 4402, Crude Oil Production Sumps, amended 12/17/92 - SJV Rule 4402 is less stringent than SCAQMD Rule 1176 VOC Emissions from Wastewater Systems (amended 9/13/96) in the following ways:

- There is no concentration limit for vapors emanating from sumps.
- The gap allowance for a rigid floating cover is 1 inch between wall and cover.
- Fixed-roof covers do not require hook up to a closed vent system vented to an air pollution control device.
- No control requirements for drains opening to sumps.
- Small producer exemptions.

XIII. Rule 4453, Refinery Vacuum Producing Devices or Systems, amended 12/17/92 - Allows for any control method with a 90 percent efficiency, including non-combustion methods, and does not restrict the sulfur content of the gas that is recovered as fuel gas.

SCAQMD Rule 465, Refinery Vacuum-Producing Devices or Systems, requires that all refinery vacuum-produced gases be collected and added to the fuel gas system or be burned in a permitted combustion device. Since SCAQMD has a sulfur limit for combustion in permitted devices and since combustion is much more than 90 percent efficient, this ensures that all the gas is treated for H2S removal and essentially all the VOC is removed.

XIV. Rule 4454, Refinery Process Unit Turnaround, amended 12/17/92 – Does not reflect the most effective process turnaround practices. Rule 4454 could be more stringent by requiring depressurization procedures which minimize venting of VOCs to the atmosphere such as requiring purging to expel essentially all the VOCs from the process units before opening up the units to the atmosphere.

XV. Rule 4404, Heavy Oil Test Station – Kern County, amended 12/17/92 - SJV does not have a fugitives oil production rule for heavy liquid streams. Rule 4404 is less stringent than SBAPCD Rule 331 and SCAQMD Rule 1173.

XVI. Rule 4682, Polystyrene Foam, Polyethylene, And Polypropylene Manufacturing, amended 6/14/94 - does not reflect the most effective district rules or commercially available technology. Requiring capture and control of emissions from all manufacturing processes, through and including storage of the final product for a minimum time period, could reduce VOC emissions. The amount of reduction could be significant and would depend on the foam type, blowing agents, manufacturing process, and the fugitive emissions not currently captured and destroyed under existing SJV definition of "Controllable VOC Emission Sources" (controllable).

XVII. Rule 4684, Polyester Resin Operations, amended 12/17/92 - is less stringent than ARB's RACT/BARCT determination for "Polyester Resin Operations." Rule 4684, Section 4.0 exempts any polyester resin operation from the provisions of Rule 4684 (except recordkeeping requirements of section 6.1) provided the volume of polyester resin materials used are less than 20 gallons per month. This exemption would be more stringent if it applied only to touch-up and repairs.

XVIII. Rule 4652, Coatings and Ink Manufacturing, amended 12/17/92 - does not meet State RACT/BARCT or "all feasible measures" requirements or determinations. Rule 4652 might include specific language, similar to the provisions in Bay Area Rule 35, to control emissions of VOCs during equipment cleaning, wipe cleaning, solvent use and disposal. Rule 4652 could include test methods to determine the VOC content of solvents or VOC emissions resulting from their operations to ensure compliance with these new provisions.

XIX. Rule 4604, Can and Coil Coating Operations, amended 12/20/01 (Since our review, District amended this rule on 1/15/04) - VOC limits do not reflect the most stringent requirements for the following coatings: sheet coat and overvarnish

three-piece can interior body spray and exterior body spray. More stringent VOC limits are found in San Diego County APCD Rule 67.4.

XX. Rule 4603, Surface Coating of Metal Parts and Products, amended 12/20/01 – does not have the most stringent requirements for extreme performance coatings and pretreatment wash primers. More stringent VOC limits are found in South Coast AQMD and Ventura County APCD rules.

XXI. Rule 4653, Adhesives, amended 12/20/01 - does not reflect the most effective commercially available technology. Low VOC technologies may be appropriate. Applicability could include sealants.

XXII. Rule 4661, Organic Solvents, amended 5/16/02 - has current emission limit for processes that use photo chemically reactive solvents of 40 lbs/day (or approximately 1,200 lbs/mo). SCAQMD Rule 442 contains an emission limit of 833 lbs/mo from all VOC-containing materials.

XXIII. Rule 4662, Organic Solvent Degreasing Operations, amended 12/20/01 - could be improved by eliminating exemptions for small degreasers. Additional emissions reductions could also be realized by lowering VOC limit for solvents used in cold cleaners. Also, equipment-operating requirements should be re-instated for cold cleaners using low VOC solvents.

XXIV. Rule 4663, Organic Solvent Cleaning Storage and Disposal, amended 12/20/01 - could be improved by eliminating the exemption that allows facilities to exceed VOC limits if they use less than 55 gallons of solvent per rolling 12-month period. An alternative approach would be to allow the exemption only in cases where compliant solvents are not available. Ventura County APCD Rule 74.6 contains an exemption for "Facility-wide use of less than 1 gallon per week of non-compliant solvent where compliant solvents are not available."

XXV. Rule 4408, Glycol Dehydration Systems, adopted 12/19/02 - Although Rule 4408 is based on the Ventura County rule; it is less stringent in terms of leaks and exemptions. VCAPCD Rule 71.5 has just one definition for gas leak rates: 10,000 ppm, as methane. Also, Ventura's rule does not have a low flow exemption.

SOx

XXVI. Rule 4801, Sulfur Compounds, amended 12/17/92 - Allows a sulfur dioxide concentration at the point of discharge of 0.2 percent by volume (2000 ppm). Other district rules:

Santa Barbara County APCD Rule 309 – Specific Contaminants, Adopted 10/23/78
South Coast AQMD Rule 468 – Sulfur Recovery Units, Adopted 10/8/76

South Coast AQMD Rule 1101 – Secondary Lead Smelters/Sulfur Oxides, Adopted 10/7/77

require that concentrations of sulfur dioxide shall not exceed 200 ppm at the point of discharge calculated on a dry basis averaged over 15 consecutive minutes.

Fugitive Dust – PM10

Note: the following comments refer to Regulation VIII, amended 11/15/01. Since the time of the review, Regulation VIII was amended on 8/19/04, except for Rules 8071 and 8081 were last amended on 9/16/04.

XXVII. Rule 8011, General Requirements, amended 11/15/01. Under the 2003 PM10 Plan, the District is proposing adding in Rule 8011 a visible plume distance limit of 100 feet, and requiring that visible dust emissions not travel beyond the property line. With these changes, Rule 8011 will meet BACM requirements.

XXVIII. Rule 8021, Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities, amended 11/15/01. The District is proposing revisions to Rule 8021 identified in their 2003 PM10 Plan to meet the BACM requirements for controlling fugitive dust emissions. When adopted, Rule 8021 will meet the BACM requirements. To further strengthen the rule, we recommend maintain a moisture content of 12 percent on all earthmoving activities as required in South Coast AQMD Rule 403.

XXIX. Rule 8031, Bulk Materials, amended 11/15/01. Rule 8031 does not meet BACM requirements as written. The District is proposing revisions to the rule to meet the BACM requirements under the District's 2003 PM10 Plan.

XXX. Rule 8041, Carryout and Trackout, amended 11/15/01. The District is proposing revisions to Rule 8041 under their 2003 PM10 Plan consistent with the BACM requirements. Rule 8041 could be further strengthening by eliminating the exemption for operations less than 150 VMT. SCAQMD Rule 403 requires trackout removal immediately and applies to all activities.

XXXI. Rule 8051, Open Areas, amended 11/15/01. The District is proposing revisions to Rule 8051 under their 2003 PM10 Plan consistent with the BACM requirements. The rule could be more effective if the District further reduce the 3 acres threshold in non-urban areas. SCAQMD Rule 403 has no minimal level for non-residential.

XXXII. Rule 8061, Paved and Unpaved Roads, amended 11/15/2001. The rule currently does not meet best available control measure (BACM) requirements. The District is proposing to amend the rule under their 2003 PM10 Plan. With the adoption of the proposed changes listed under the PM10 Plan, Rule 8061 will

meet the BACM requirements. However, the rule can be further strengthened with the following recommendations:

Eliminate the low-end 500 average daily vehicle travel for the shoulder stabilization requirement for paved roads – requires that all paved roads have a minimum of 4 feet of stabilized shoulder.

Eliminate the vehicle trip per day limit on new unpaved roads - requires the owner/operator of an unpaved road to limit VDE to 20% opacity regardless of vehicle trips per day.

XXXIII. Rule 8071, Unpaved Vehicle/Equipment Traffic Areas, amended 11/15/01. Rule 8071 does not meet the BACM requirements. The District is proposing changes to Rule 8071 under their 2003 PM10 Plan. When these changes are adopted, Rule 8071 will meet the BACM requirements.

XXXIV. Rule 8081, Agricultural Sources, amended 11/15/01. Under the District's 2003 PM10 Plan. Changes are being proposed for Rule 8081. When these changes are adopted by the District, Rule 8081 will meet the BACM requirements. For rule effectiveness, we further recommend that the District include a requirement to limit tilling/mulching operations under high wind conditions, and establish a requirement for disturbed surfaces for livestock and feedlots. South Coast addresses these requirements in their rule.

Findings (continued)

2. We found that there are certain industrial source categories (such as boilers, engines, and turbines) that are covered by many rules. Having many rules for the same source category leads to confusion and difficulty in implementing the rule.

3, The District may not have sufficient resources to accommodate future workloads. Developing control measures takes away time from current rule development activity (RDP has a dual function as noted in Item 1 above).

4. The District has developed an effective formal procedure for the development of new rules and amendments to existing rules. The District RDP is based on "Rule Development Procedures" approved by the District Board in 1992. This document is somewhat out of date regarding teleconferencing and electronic procedures, but the RDP has its own procedures so there is no firm plan to update the 1992 document.

5. The District's rule development procedure provides a process for the District's rules to be reviewed for enforceability, clarity, and BARCT/RACT consistency. This procedure also provides a mechanism by which enforcement, planning, and legal staff can provide input to the rule development and amendment process.

6. The District's rule development procedure requires that a staff report be developed for each new or amended rule scheduled for adoption. The staff reports are generally very well done. The District has a public process in place for the rule development program.

7. The District gives adequate consideration to the planning and conduct of public workshops. The time of workshops is selected so that at least one in 3 workshops is conducted in the evening. The venue is based on where the operators are located e.g., oilfields and refineries are in Kern County only. There may be several days of workshops if sources are widespread.

8. The District actively works with the Citizen Advisory Committee and the California Group of Industry. The Citizen Advisory Committee (CAC) and California Group of Industry (CAGI), a coalition of businesses, are the watchdogs for the District. The District meets with these groups monthly, updates them on District's processes, and encourages them to present their concerns at public workshops.

Recommendations

Significant Recommendations:

1. The District should continue to review its rules to ensure it has implemented the most effective standards commensurate with its air quality challenges.

2. The District should repeal superseded rules for those source categories that are covered by many rules such as boilers, engines, and turbines.

Other Suggestions to Improve Program Effectiveness:

1. The District should consider updating its 1992 Rule Development Procedures (RDP) document regarding teleconferencing and electronic procedures.

2. The District should conduct rule effectiveness studies on a routine basis. There is currently no program to conduct rule effectiveness studies.

3. The District should develop rule implementation guidance documents for complex rules to ensure consistency in rule interpretation and enforcement. Guidance documents would be helpful in cases where the District has numerous rules for the same source category (such as boilers or internal combustion engines).

4. The District should consider acquiring sufficient resources to accommodate future workloads for its RDP.

5. The District should ensure that the Citizens Advisory Committee (CAC) can function to its full potential as a vehicle for rule development. The CAC membership should be balanced and include designees from industry, environmental groups, and government.

Listing of District Rules Reviewed by ARB Staff

Detailed Rule Analyses of San Joaquin Valley
Air Pollution Control District Rules

Rule 4101, Visible Emissions

Rule 4103, Open Burning

Rule 4106, Prescribed Burning and Hazard Reduction Burning

Rule 4201, Particulate Matter Emission Rate

Rule 4202, Particulate Matter Concentration

Rule 4203, Particulate Matter Emissions from Incineration
of Combustible Refuse

Rule 4301, Fuel Burning Equipment

Rule 4302, Incineration Burning

Rule 4303, Orchard Heaters

Rule 4304, Equipment Tuning Procedure for Boilers,
Steam Generators, and Process Heaters

Rule 4305, Boilers, Steam Generators, and Process Heaters

Rule 4306, Boilers, Steam Generators, and Process Heaters

Rule 4311, Flares

Rule 4313, Lime Kilns

Rule 4351, Boilers, Steam Generators, and Process
Heaters – Reasonably Available Control Technology

Rule 4352, Solid Fuel Fired Boilers, Steam Generators
and Process Heaters

Rule 4354, Glass Melting Furnaces

Rule 4401, Steam-Enhanced Crude Oil Production Well Vents

Rule 4402, Crude Oil Production Sumps

Rule 4403, Components Serving Light Crude Oil or Gases at Light Crude Oil and Gas Production Facilities and Components at Natural Gas Processing Facilities

Rule 4404, Heavy Oil Test Station – Kern County

Rule 4406, Sulfur Compounds from Oil Field Steam Generators

Rule 4407, In-Situ Combustion Well Vents

Rule 4408, Glycol Dehydration Systems

Rule 4451, Valves, Pressure Relief Valves, Flanges, Threaded Connections and Process Drains at Petroleum Refineries and Chemical Plants

Rule 4452, Pump and Compressor Seals at Petroleum Refineries and Chemical Plants

Rule 4453, Refinery Vacuum Producing Devices or Systems

Rule 4454, Refinery Process Unit Turnaround

Rule 4501, Alternate Compliance for Best Available Retrofit Control Technology

Rule 4601, Architectural Coatings

Rule 4602, Motor Vehicle and Mobile Equipment Coating Operations

Rule 4603, Surface Coating of Metal Parts and Products

Rule 4604, Can and Coil Coating Operations

Rule 4605, Aerospace Assembly and Component Manufacturing Operations

Coating Rules

Rule 4610, Glass Coating Operations

Rule 4621, Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants

Rule 4622, Gasoline Transfer into Motor Vehicle Fuel Tanks

Rule 4623, Storage of Organic Liquids

Rule 4625, Wastewater Separators

Rule 4641, Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations

Rule 4642, Solid Waste Disposal Sites

Rule 4652, Coatings and Ink Manufacturing

Rule 4653, Adhesives

Dry Cleaning ATCM Comparison

Rule 4681 Rubber Tire Manufacturing

Rule 4682, Polystyrene Foam, Polyethylene, and Polypropylene Manufacturing

Rule 4684, Polyester Resin Operations

Rule 4691, Vegetable Oil Processing Operations

Rule 4692, Commercial Charbroiling

Rule 4693, Bakery Ovens

Rule 4701, Internal Combustion Engines

Rule 4703, Stationary Gas Turbines

Rule 4801, Sulfur Compounds

Rule 7070, ATCM Comparison

Rule 8011, General Requirements

Rule 8021, Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities

Rule 8031, Bulk Materials

Rule 8041, Carryout and Trackout

Rule 8051, Open Areas

Rule 8061, Paved and Unpaved Roads

Rule 8071, Unpaved Vehicle/Equipment Traffic Areas

Rule 8081, Agricultural Sources

Appendix D – Portable Equipment Program

D. PORTABLE EQUIPMENT PROGRAM

The District has had an active portable equipment registration program for approximately ten years, since Rule 2280 was adopted on October 20, 1994. Rule 2280 contains all the emission requirements and administrative requirements for the program. All the applications are processed in the Central region, and before final registration is issued, a compliance inspection of the portable unit is performed. These inspection assignments are handled by a coordinator in the central region. This coordinator also handles notifications and inspection assignments for ARB registered units. Currently there are approximately 584 units in the District registration program. For this program evaluation, we reviewed 10 files containing 10 engines and 2 equipment units in order to evaluate engineering and compliance procedures. In addition, we conducted three joint inspections (one per region) with District staff and reviewed 10 previously completed inspection reports to evaluate the inspection procedures for ARB registered units.

Findings

Overall Policies & Procedures

1. The District does not recognize the existence of certified nonroad engines in their portable equipment registration program. Federal law (40 CFR Part 85) preclude states from enforcing any standards or requirements to control emissions from nonroad engines. Rule 2280 has emission control requirements that the District is improperly imposing on certified engines.

Registration Documents

1. Many registrations list two emission units in the equipment description. It is usually an engine with an associated unit that produces PM10 such as a tub grinder. The emissions from the associated unit are not quantified, and the operating limitations on the registration only pertain to the engine. Rule 2280 contains requirements for equipment units such as 150 lbs/day of PM10. The listed registrations do not contain any conditions regarding this emission limit, nor do they contain any emission control requirements for the grinder such as water sprays. Examples found: P-3033-3-0, P-3456-1-0, P-3592-1-0 & P-2833-2-0.

2. Requirements appear on the operating conditions that are not consistent with Rule 2280. NOx limits are listed that are more stringent and some that are less stringent than the rule requires. Limits on conditions that are more stringent than the rule are not legally enforceable. Where less stringent NOx limits were found, the timing has been retarded and is listed in the conditions. One registration listed timing retard when it was not required. It is improper to impose an additional requirement that is not

listed in the rule. Examples found: P-3033-3-0, P-3458-1-0, P-4009-1-0, and P-3564-2-0.

3. On at least one registration (P-3958-1-0), an inappropriate component is listed in the equipment description. The Komatsu loader is a separate unit that is self-propelled and should not be considered part of the plant and therefore, should not be listed on the equipment description of registration.

4. Equipment descriptions on some final registrations do not list engine serial number. This reduces the enforceability of that registration. It allows the operator to swap out similar engines. Example found: P-3592-1-0

5. Calculation of daily and annual limit appears in Engineering Evaluation, but the limits do not appear on registration. For an abrasive blasting unit, throughput limits are calculated based on 150 lb/day and 10 tpy regulation limits, but the throughput limits don't appear on registration conditions. This makes the limits less enforceable. Example found: P-3558-2-0.

Engineering Evaluations

1. There are several incorrect references of diesel engine and equipment unit emission factors in the Engineering Evaluations (EE). District staff should recognize the source of emission factors and correctly reference them in the EE. Examples found: P-3033-3-0, P-3462-6-0, P-3958-1-0, P-2833-2-0

2. Several EE's list allowable annual operating time as >8,760 hours in a year, which does not make sense. Engineering procedures should be revised so that a comment is included with the calculation stating that an annual limitation is not necessary based on the calculation. Examples found: P-3462-6-0, P-3458-1-0, P-3558-1-0

3. On at least one rock crushing plant (P-3958-1-0), and one engine (P-3592-1-0), the emission calculations are incorrect. For the crushing plant, the calculation table assumes that 25% of the material will be re-crushed and re-screened. From the diagram of the plant, it is clear that this does not happen, so it is improper to calculate emissions for this. The engine has timing retarded 4 degrees, but the uncontrolled emission factor from AP-42 is used, resulting in an overestimation of emissions.

4. In some cases, there is inadequate documentation of compliance with the emission requirements. An engine is subject to 4 degree timing retard, yet no timing retard certification form is located in the file. However, the registration was issued with the timing retarded condition. Examples: P-3592-1-0 & P-4009-1-0.

5. There is no documentation of manufacturer's emission factors. The values listed on the application form were used. Documentation of emission factors must accompany the application unless default values are used. Example found: P-4009-1-0.

Review of District's Inspection Reports

1. There was no inspection report in at least one file (P-3033-3-0), even though it has been implemented into the final registration. This is simply an omission of paperwork in the file. Each file should be complete.

2. The Inspection report for P-3592-1-0 lists incorrect applicable rules. The Report lists Rules 4101, 4102 and 4701 as applicable for this engine. The registered engine is not subject to these rules. Only 2280 and 4801 apply, as listed in the Engineering Evaluation.

3. The Inspection report for P-4009-1-0 mentions emission test to verify emissions, but there is no documentation in the file.

4. The Inspector did not check for serial number on registration P-3592-1-0.

Rule 2280

1. Welding units are exempt from permits in Rule 2020, section 6.10; however, the applicability section of Rule 2280 lists welding units as eligible for registration. This is inconsistent.

Inspection Program for ARB units

1. The Inspection report (dated 1/16/02) for crushing plant P-3958-1-0 indicates that the engine powering the plant is registered with ARB #108039. There is no ARB inspection form for this unit submitted. Further checking revealed that this plant has been subsequently registered with ARB (issued 2/11/03), but nothing in the file indicated this change.

2. The District does not routinely inspect ARB registered portable equipment or consistently enter inspection reports into the ARB database.

3. No inspection reports have been entered into the ARB database via the Internet since 5/30/02.

4. The District has not been charging inspection fees of $75 per unit, as allowed by the statewide regulation.

5. Inspection staff has used portable analyzers for inspections to verify NOx and CO emissions for certified engines. On certified engines, there is no

emission limit stated on the registration, so this test is inappropriate. In addition, the portable analyzer test is not adequate to verify emission compliance since the engine originally was tested and certified in a multi-mode situation.

Recommendations

Significant Recommendations:

1. The District should recognize the existence of certified nonroad engines in their portable equipment registration program, and therefore should not impose any emission standards from Rule 2280 on these engines. 40 CFR Part 85 precludes states from enforcing any standards or requirements to control emissions from nonroad engines.

2. The District should inspect ARB registered portable equipment and enter inspection reports into the ARB database via the Internet.

Other Suggestions to Improve Program Effectiveness:

1. When the District's registrations list two emission units in the equipment description, such as an engine and tub grinder, the District should quantify the emissions and state operating limitations for both the associated unit and the engine in the operating conditions.

2. The District should state requirements in the operating conditions that are consistent with the NOx limits in Rule 2280.

3. Equipment descriptions on final registrations should list the engine serial number.

4. The District should place calculated daily and annual operating limitations from the engineering evaluation into the operating conditions of the registration.

5. The District should verify that references to diesel engine and equipment unit emission factors in the engineering evaluations are correct. Files should have adequate documentation of compliance with emission requirements. Documentation of emission factors must accompany an application unless default values are used.

6. The District should revise engineering evaluations that list allowable annual operating time greater than 8,760 hours in a year to include a statement that an annual limitation is not necessary based on the calculation. The District should make sure that emission calculations are correct.

Appendix E – Hot Spots Program

E. HOT SPOTS PROGRAM

The Air Toxics "Hot Spots" Program requires stationary sources to report the types and quantities of certain substances their facilities routinely release into the air in their district. The goals of the Air Toxics "Hot Spots" Program are to collect emission data, identify the number of facilities having localized impacts, ascertain health risks, notify nearby residents of significant risks, and reduce the risk from high-risk facilities. ARB staff included this program as part of the San Joaquin Valley Program Review.

Findings

1. During the program review, ARB staff identified several Phase III (less than 10 tons per year) facilities that had not completed inventory requirements. The District has recently completed these reports and plans to submit the emission inventories to ARB. The District and ARB staff have committed to work more closely to track the status of facilities in the “Hot Spots” program.

2. The District’s emissions inventory database contained the essential components necessary to quickly and accurately calculate a facility prioritization score.

3. The District has never assessed a monetary penalty for a facility that has not complied with the “Hot Spots” Program, nor has the District revoked any permits from facilities for not complying with the reporting requirements.

4. The California Emission Inventory Development and Reporting System (CEIDARS) 2001 emissions inventory shows that approximately 12% of the toxic emissions at facilities were updated since 1996. The District has recently provided inventory updates for more than 50% of the toxics facilities for the year 2002, which is a significant improvement.

5. For several facilities in the 2001 database, it was unclear why the status (prioritization score) of a facility changed in the “Hot Spots” program. However, once a facility was deemed high priority, it was immediately notified of health risk assessment (HRA) requirements.

6. The District has completed the evaluation of all Phase I (>25 tons per year of PM, NOx, or SOx) and Phase II (>10 tons per year) facilities.

7. The District’s Emission Inventory Management System (EIMS) database contained the essential inventory components necessary to complete a facility prioritization.

8. The District received health risk assessments (HRAs) in a timely manner. In most cases, where a facility did not meet a specified timeframe, the District followed up with the facility to ensure completion of the HRA.

9. The District reviewed the modeling, and, following the Office of Environmental Health Hazard Assessment (OEHHA) review, approved HRAs in a timely manner. Upon approval of the HRA, the District immediately determined whether the facility was significant and informed the facility of the significance level and the requirements for public notification. Most facilities successfully reduced their risk below the significance level as part of their public notification.

10. Since the inception of the "Hot Spots" Program, the District has conducted public notification for 14 facilities. The District worked extensively with the facility and public throughout the public notification process. The District worked expeditiously to meet most timeframes as specified in their public notification procedures. Some facilities have conducted more than one public notification.

11. In cases where a facility poses a significant risk and no receptors presently exist within the impacted area, the District notifies landowners and land-use agencies of the potential significance.

12. The District has adopted a Board-approved policy which specifies trigger levels at which a risk reduction audit and plan (RRAP) will be required. For cancer risk the trigger level is 100 in a million. For non-cancer chronic and acute health impacts a hazard index greater than 5 is the trigger level for RRAP. No facilities have been required to complete a RRAP.

13. The District has approximately 1,500 industrywide facilities made up of gas stations, dry cleaners, autobody shops, and printers. Most of these facilities have been inventoried and prioritized. Public notification has not yet been completed for any industrywide facilities (note: this has not been completed for any district with potential significant risk industrywide facilities).

14. The District publishes an Annual "Hot Spots" Report but in the past has not included information about the status of facilities in the "Hot Spots" program. Based on conversations during the audit, the District began to include this type of information in their 2002 report and posted a PDF version on their web site. The District should provide a link to previous annual reports on their web site where all of the most recent reports can easily be reviewed by the public.

Recommendations

Significant Recommendations:

1. The District should complete inventory reports for the last remaining facilities in the “Hot Spots” program.

2. For several facilities in the 2001 database, it was unclear why the status (prioritization score) of a facility changed in the “Hot Spots” program. ARB staff found that the District’s electronic records were often incomplete and paper files were not consistently documented. The District contends that sufficient documentation exists regarding each change in a facility’s status and how that affects their prioritization. The District should include a list of all facilities and their status (prioritization score and risk) in their annual “Hot Spots” report. The District should describe any change in a facility’s prioritization score or health risk assessment in their annual “Hot Spots” report, and when possible, update the emission inventory to reflect the change in status. This will allow ARB and the public to track how emissions and risk have changed for each facility in the “Hot Spots” program. The District has begun to include this type of information in their annual “Hot Spots” report, which is a significant improvement.

3. The District should complete the screening health risk assessments for industrywide facilities and, when necessary, require public notification for facilities with a risk above the notification threshold. It should be noted that no other District with potential significant risk industrywide facilities has completed this program requirement.

Other Suggestions to Improve Program Effectiveness:

1. The “Hot Spots” program only requires facility inventory updates every four years from only some facilities. If possible, and even though it may not be required for all facilities, the District should strive to provide more frequent toxics emissions updates to ensure that ARB efforts to adopt ATCMs, SIPs, and other control measures are supported by the most recent toxics data available.

2. The District should assess penalties for facilities that have not complied with the “Hot Spots” Program.

3. The District should strive to include stack parameters for their point sources in their facility emission inventory submittals. ARB staff recognizes the resources required to collect this data, and in some cases unclear reporting guidelines, and is helping the District prioritize their efforts at submitting more complete emission release (stack) data.

4. The District has exempted a number of new facilities from “Hot Spots” reporting requirements under HSC 44344.5 section (b). New facilities exempted from reporting requirements that meet the requirements in HSC 44344.5 section (b) should be identified in the Annual Status Report. The cancer risk score should be included if the facility risk is greater than 1 per million.

Appendix F – Emissions Inventory Program

F. EMISSIONS INVENTORY PROGRAM

Two primary areas of the emission inventory program were examined, the inventory development and data submittals. With regards to inventory development, the District has provided criteria emissions updates for facilities that emit greater than 10 tons of any criteria pollutant. For those area source categories it has updated, the District has submitted data to the ARB with detailed and clear methodologies. The District has also developed a comprehensive growth data set for use in emissions forecasting.

Findings

Inventory Development

1. There are 1,078 facilities that emit criteria pollutants in the 2001 database. The District has significantly improved their criteria pollutant emission inventory for stationary sources that emit greater than 10 tons per year of any criteria pollutant. However, only two of the top seven facilities emitting the most criteria pollutants had toxic emissions data in CEIDARS, and both inventories were approximately 10 years old. Toxics inventories have recently been updated for more than 50% of the facilities for the 2002 database, which is a significant improvement. The District should continue this progress and confirm that all toxics data that must be reported by facilities has been provided to ARB.

2. The District has implemented the most current ARB emission inventory database structure (CEIDARS 2.5).

3. For those area source categories it has updated, the District has provided ARB with detailed and clear methodologies. However, in the 2001 database year, area source updates were provided for only 10% of the district responsibility area source categories. The District is working to update the remaining important area source estimates and methodologies. The District recognizes that a systematic review of all source categories it is responsible for is necessary. The District has also committed to posting their area source methodologies on their web site.

4. The District has developed and implemented a comprehensive growth rule data set that is being used to support emissions forecasting. However, additional resources should be devoted to review of control factors, especially for those source categories of significance in SIP development.

Data Submittals

1. The District has improved the data exchange process between the District and ARB with electronic databases and automated inventory calculations.

2. Until recently, the District did not provide ARB with merged criteria and toxics submittals, resulting in doublecounting of facilities in the CEIDARS database. Review of the 2001 database indicated that criteria and toxics emissions were not merged however as part of their 2002 submittal to ARB, the District did provide merged facility data.

3. Based on the 2001 inventory, the Toxic Release Inventory (TRI) database, and correspondence with District staff, a number of facilities in the 2001 database were determined to be either closed, newly constructed or had never been inventoried. The District therefore was requested to provide a list of all facilities with their status, indicating whether they are new or closed. The District has subsequently agreed to submit emission inventory data as a complete replacement. That is, any new District data would replace old data which prevents ARB staff from carrying forward old data from a previous inventory year. Starting in September 2003, the District has submitted complete replacement data reflecting the changes in the emission inventory. ARB staff is now able to compare data between the two databases to clarify new and old facilities.

4. Based on the 2001 database year, there are currently 271 SIC/SCC combinations that are not in the CEIDARS category table. Because of these invalid combinations, emissions from these sources are assigned under miscellaneous categories in the Almanac and other reports developed by the ARB. The District has recently implemented a process to restrict the use of only valid SCCs whenever an SIC is assigned. This procedure prevents the use of invalid SIC/SCC combinations and alerts the District when a new SIC/SCC combination is introduced. This information is then forwarded to the ARB for review and, if the combinations are found to be appropriate, will be included in the category table. This is a significant improvement to the emission inventory database, but requires additional coordination between the District and ARB staff.

Recommendations

Significant Recommendations:

1. Until recently, the District has provided toxics emissions updates to ARB for only a small number of facilities. For example, in the 2001 database, toxics data were reported for only two of the top seven emitters of criteria pollutants. Toxics inventories have recently been updated for more than 50% of the facilities in the 2002 database year although a number of facilities in the AB2588 program are still missing toxics data. The District is encouraged to continue their improvements in the reporting of facility toxics data and to provide toxics updates for all AB2588 facilities where data are missing.

2. Although the District has recently reviewed and updated several area source categories of importance to SIP development, the majority of area source categories that are district responsibility have not been updated recently. According to a longstanding agreement between ARB and the districts, 1/3 of all district area source categories should be updated every year such that all area source categories are updated every three years. As part of their 2001 inventory submittal to ARB, the District provided updated area source emissions for approximately 10% of the district responsibility area source categories. The District should review and update the remaining area source categories as soon as possible and provide ARB with the updated emission estimates. The District is also asked to reconcile these estimates with their point source data. It would be helpful if the District posts their area source methodologies on their website.

3. The District has recently begun providing ARB with merged criteria and toxics data for facilities. ARB encourages the District to continue providing merged submittals as it prevents double counting of facilities in the CEIDARS database.

Other Suggestions to Improve Program Effectiveness:

None

Appendix G – Carl Moyer Program

G. CARL MOYER PROGRAM

The Carl Moyer Memorial Air Quality Attainment Program (Carl Moyer Program) is a voluntary incentive program designed to increase the replacement of older, higher-emitting diesel engines to improve air quality. ARB distributes the funds to participating Districts for local implementation and maintains monitoring, management and statewide reporting responsibilities. Following the Carl Moyer Program Guidelines and local policies and procedures, the Districts award and manage these incentive contracts for funds that are made directly with the engine owners.

As part of this program review, ARB staff reviewed files, interviewed District staff, and made site visits to view engines and equipment. ARB's review and findings pertaining to the Carl Moyer Program indicate the District has made many improvements to their implementation of the Carl Moyer Program since program start-up (FY1998-99). The focus of this review is FYs 2000-01 and 2001-02. ARB continues to see progress in implementation over time, with District staff receptive to suggestions for programmatic changes.

Findings

1. During the office portion of the review, ARB staff had the opportunity to use the files and two databases the District maintains for each funded project. While locating the files and the information within them did not present any problems, at the time of the program evaluation, the information in the databases and hard copy files were not consistent. The District needs to assure the quality of the data, including cross checking the information in the databases, and institute procedures for updating the databases whenever there are changes to the projects.

2. The District's written policy is to notify applicants of the completeness of their application within ten days of receipt of their application. At the time of the audit, the District was not always in compliance with its written policy.

3. At the time of the program evaluation, the grant recipients' applications appeared to be used as working documents, with handwritten changes made throughout. These changes rarely included annotations of who, when or why the changes were made. The application should be a stand-alone document of exactly what the grant recipient requested. A separate calculation form (with dates and initials) should be used to correct applicant errors; calculate emissions benefits and cost effectiveness; and, justify changes (e.g. modification to project life). A calculation form should also be used when there are changes in the completion of the project (see finding immediately below).

4. At the time of the audit, in a number of instances, the District's post-inspection monitoring visit revealed that projects were not completed as outlined in the District's contract with the grant recipient. For example, from the documentation in the file for project number 00-01 N-340(1), the project appeared to include an engine that is not eligible for Carl Moyer Program funding – a spray rig. The database and the contract show this engine as an agricultural pump engine. It is unclear from the documentation whether the spray rig engine was inappropriately paid for with Carl Moyer Program funds. At the time of the audit, the District had no procedures for follow-up on such occasions. The District should ascertain continued project eligibility; recalculate emissions benefits and cost effectiveness; and, develop criteria for adjusting payment, when necessary.

5. At the time of the program, documentation of the status of the old replaced engine was not always complete. On the written statements that the engine will only be sold out of state, ARB found a number of occasions in which, these forms (and other engine sale forms) were not signed by the buyer of the old engine. The District did not have procedures for and consistent documentation of the status of the old replaced engine when the engine is destroyed. ARB recommends the post-inspection monitoring form be modified to include a section on the dispensation of the old engine and pictures be included when the engine is destroyed.

6. ARB staff did not find any situations where the District analyzed and responded to the absence or presence of the grant recipient's annual reports. For example, when the annual hours of operation were significantly less than what was committed to in the contract, it appears the District did not take any action. There was no recalculation of emissions benefits and cost effectiveness. Furthermore, the District did not investigate potential problems with the hour meter. Nor did the District take any action against the grant recipient for overestimating the use of the engine. When the lack of an annual report was discovered during a site visit, however, the District immediately took action to obtain the report from the grant recipient.

Accomplishments

1. ARB's review and findings pertaining to the Carl Moyer Program indicates the District has made many improvements to their implementation of the Carl Moyer Program since program start-up (FY1998-99). According to the Draft 2004 Carl Moyer Program Annual Status Report, "Over the first four years of the Carl Moyer Program, SJVAPCD received $17,989,495 in State funding, which it matched with $7,252,524 in district funds…SJVAPCD has provided Carl Moyer Program incentive funds to pay for about 1,280 engines that operate in the district." The staff at ARB

estimates that Carl Moyer Program funds obligated by the District will provide over 1,300 tons of NO_x and a substantial amount of PM_{10} reductions annually for the life of the projects. ARB continues to see progress in implementation over time, with District staff receptive to suggestions for programmatic changes.

Recommendations

Significant Recommendations:

1. The District should update and maintain the information in its databases and make sure information is consistent with hard copy files. The District should institute procedures for updating databases whenever there are changes to the projects.

2. The District should comply with its written policy regarding notification of applicants of the completeness of their application.

3. The District should use the grant recipients' applications as stand-alone documents of exactly what the grant recipient requested. A separate calculation form (with dates and initials) should be used to correct applicant errors; calculate emissions benefits and cost effectiveness; and, justify changes (e.g. modification to project life). A calculation form should also be used when there are changes in the completion of the project (see finding immediately below).

4. For projects that were not completed as outlined in the District's contract with the grant recipient, the District should ascertain continued project eligibility; recalculate emissions benefits and cost effectiveness; and, develop criteria for adjusting payment, when necessary.

5. The District should completely document the status of old replaced engines. On the written statements that the engine will only be sold out of state, forms (and other engine sale forms) should be signed by the buyer of the old engine. The District should develop procedures for consistent documentation of the status of the old replaced engine when the engine is destroyed.

6. The District should analyze and respond to the absence or presence of the grant recipient's annual reports.

Other Suggestions to Improve Program Effectiveness:

None

Appendix H – Ambient Air Monitoring Program

H. AMBIENT AIR MONITORING PROGRAM

Air monitoring programs are established by the districts to collect ambient air quality data in compliance with U.S. EPA requirements to monitor progress toward meeting air quality standards, identify patterns of transported pollutants, locate metropolitan pockets of high pollutant concentrations, and provide data for indicators of daily air quality such as the Pollutant Standard Index.

The overall goal of the District's air monitoring program is to provide accurate and precise data to meet monitoring objectives, to minimize loss of air quality data due to analyzer malfunctions, and to provide representative and comparable data of known precision and accuracy.

The purpose of this evaluation was to determine whether the District's air monitoring program during the study period satisfied the U.S. EPA's regulations stipulated in 40 CFR, Part 58. Compliance with these regulations is necessary if the data are to be considered "data-for-record" per California Code of Regulations, Title 17, Article 3, Section 70301. Only data meeting these requirements are eligible to be used in actions taken pursuant to the Federal Clean Air Act of 1990 and the California Clean Air Act.

ARB staff initiated the evaluation by sending the District a system audit questionnaire. Responses to the questionnaire were used to determine which areas of the program might warrant closer examination. The District's air monitoring program was evaluated with respect to network size and siting, resources and facilities, data and data management, and quality assurance/quality control.

Findings

1. Site reports are now kept at the District office and at the monitoring stations. Reports are reviewed and updated as time and personnel allow.

2. The District now operates both PM10 samplers on make-up days at collocated sites. Precision data are now being reported to the AQS for samplers run on make-up days.

3. All log entries are now initialed by the station operator.

4. The District is now keeping all calibration report files accurate and current and at each monitoring location. Non-current calibration reports are sent to the District office where they are stored for future reference.

5. District staff has made progress in organizing documentation and making all records accessible, and this should remain a priority until accomplished.

6. The District has separated data review responsibilities from the data collection and monitoring activities to improve quality control. To make the position more independent of the staff actually collecting the data, the position has been assigned to the Air Quality Analysis Section. This also provides more technical oversight of the data from meteorologists and modelers that use the data on a regular basis.

7. The District consistently exceeds data completeness criteria and submits required reports ahead of schedule. Data completeness for the last two years has exceeded 90%.

8. The District Air Monitoring Technicians continue to do a good job in maintaining their sites as evidenced by their ability to keep the monitoring instruments operational and providing complete data sets for each pollutant measured.

9. The District is in the process of updating their standard operating procedures (SOP). Since the initial system audit review, several of the SOPs have been finalized.

Recommendations

The items listed below are recommendations to help improve the operation and accountability of the sites and help to ensure good quality data (see the U.S. EPA's 40 CFR, Parts 50 and 58 as well as the U.S. EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volumes I and II).

Significant Recommendations:

1. The District should have all certification equipment re-certified at the intervals suggested by the U.S. EPA. All monitoring equipment should be calibrated using the U.S. EPA's frequency guidelines.

2. The District should implement a Corrective Action Program. Procedures should be established for handling data, which falls outside established limits.

3. The District should conduct a detailed review of the siting criteria and instrumentation listed for each of the District's air monitoring sites in the U.S. EPA's AQS. This review will ensure that all monitoring criteria are correct and that all instrumentation and equipment that are no longer operating or reporting data have been closed.

4. The District should create QA/QC documents detailing procedures and/or guidelines for the collection, analysis, validation, storage, and reporting of data.

Other Suggestions to Improve Program Effectiveness:

None

Appendix I – Implementation of 1994 Review Recommendations

I. IMPLEMENTATION OF 1994 PROGRAM REVIEW RECOMMENDATIONS

In 1994, the ARB conducted the first comprehensive program review of the unified District. As with all program reviews, a district is asked to implement the report's recommendations. This chapter provides examples where the District still needs to implement the 1994 recommendations. Recommendations that have been effectively implemented are also mentioned.

Items District has Addressed

Compliance

1. The District adopted written procedures in October 1995 for evidence gathering and sample collection.

2. Consistent with ARB's 1994 recommendations, the District has increased penalty amounts since 1994.

3. The average settlement has increased from $723 to $1215. In 1999, the District adopted a size multiplier of 1 to 5 in computing penalties; the largest facilities are subject to a five-fold penalty increase. The District has used the multiplier fairly and consistently.

4. In response to ARB's 1994 recommendations, the District has improved its air quality complaint handling statistics.

5. In 1994, ARB staff recommended improvements in the District's monitoring of emissions at major sources. In response, the District has installed a modern system for retrieving emissions data from facilities equipped with continuous emission monitors on a real time basis.

6. In response to ARB's 1994 recommendations, the District has made significant improvements to its open/agricultural burning program. A daily burn authorization program has been created and is centralized at the Fresno office. Burn authorizations for the 93 allocation zones are entered into the centralized database. Further, the District now has its own meteorology section which determines the daily burn decisions and operates the prescribed burn forecast system for the district.

Permitting

1. As recommended in the 1996 evaluation report, the District tallies the potential to emit for each project and attaches it to every engineering evaluation.

Hot Spots

1. The District began implementing an improved database system in the mid-1990's and the 1996 evaluation report by ARB acknowledged that this was "an excellent first step toward efficient record keeping." However, additional work needs to be done so the District can track the status of facilities in the program.

2. The District has approved Health Risk Assessments (HRAs) in a timely manner after receiving comments from the Office of Environmental Health Hazard Assessment (OEHHA).

3. The District has conducted public notification for 14 facilities. The District worked extensively with the facility and public throughout the public notification process. The District worked expeditiously to meet most timeframes as specified in their public notification procedures.

4. Based on file reviews and discussions with District staff, no facilities have triggered the significance level necessary to complete a risk reduction audit and plan.

Air Monitoring

1. The previous problems the District faced regarding retrieval and delivery of PM-10 samples have been addressed and corrected. The District has been retrieving and delivering PM-10 filters in a timely manner.

Items District has not Addressed

Compliance

1. For a district of this size, procedures for establishing in-house laboratory capability should be explored as recommended in 1994. The District does minimal sampling and analysis for VOC content.

2. The District typically determines compliance with VOC coating limits by relying on MSDS and facility records, which may not be adequate to determine compliance. The District should collect samples as needed to fully determine compliance.

3. The District does not conduct quarterly inspections on sources with actual emissions greater than 25 tons per year.

4. The District does not have written protocols or memoranda of understanding with local county prosecutors.

5. The Northern and Central Regions do not report CEM violations to ARB within five working days as required by HSC section 42706.

6. The Northern and Central Regions have not developed a computer data base tracking mechanism (such as the one in use in the Southern Region) that would allow them to look forward to see which facilities will need to be source tested in the future.

7. The Northern and Southern Zone variance Hearing Boards should ensure that they discuss the findings in HSC section 42352 at the hearing as is done by the Central Zone Hearing Board. An exchange of information between the petitioner and the board members regarding each finding is necessary, if only to determine that the facts, circumstances and conclusions provided are accurate. Staff reports should refrain from justifying each finding.

Permitting

1. In 2003, the permit backlog had increased from 250 to 887. The District had reduced the backlog from 1700 at unification to 250 in 1994. The District needs to make a concerted effort to solve this problem.

2. The District still has Policy #APR 1115 for the rounding of fractional emissions (less than 0.5) to zero. In accordance with the Policy, the contribution from individual emission units with maximum daily emissions below 0.5 lbs/day are allowed to be set to zero. This policy may allow some facilities to avoid offsets, particularly when applied to multiple emission units at one source.

3. The District's BACT cost effectiveness thresholds for ozone precursors are still low compared to other Districts with similar air quality status (Bay Area, South Coast, Ventura, and San Diego).

4. As a streamlining measure, the District could still reduce the length and complexity of its process descriptions in its engineering evaluations especially for simple modifications.

5. The District needs to continue its progress in making permitting policies available to interested parties by posting all non-administrative policies on its website.

Hot Spots

1. In 1994 the District claimed that all facilities were being prioritized within 90 days. This has not been the case for several facilities over the past few years.

Emissions Inventory

1. Emission inventory methodologies for area sources are still not being updated on a regular basis.

2. The District has not notified ARB of all new or closed facilities for purposes of estimating emission inventories from these facilities. The District should provide an updated list of these facilities each year to ARB.

3. Many SIC and SCC Code combinations have still not been fixed, despite claims from the District that unusable codes are being corrected prior to the annual CEIDARS submittal to ARB.

Air Monitoring

1. The monitoring site at Stockton-Wagner-Holt was established in October 1996; however, the AQS designation is “Other”, not NAMS. The monitoring site at Stockton-March was never established.

2. The CO monitoring at the Bakersfield-Golden site is still classified as “Neighborhood” scale instead of “middle” scale. The District should update the U.S. EPA’s AQS to show the site’s correct classification.

3. Meteorological monitoring has not been initiated at the Fresno-Drummond and Hanford-Irwin stations.

4. The District has not developed a formal training plan. The District takes advantage of on-going training when available.

5. The District has still occasionally had to use expired standards due to time and/or personnel limitations.

Appendix J – Comments From Stakeholder Interviews

J. COMMENTS FROM STAKEHOLDER INTERVIEWS

As part of the review process, ARB staff interviewed selected stakeholders in the San Joaquin Valley. These represent environmental/public health groups, industry, and agriculture. Questions to these groups related to the District's regulations and rule development, permitting, and enforcement programs. Participants were also given an opportunity to comment on any other issues important to their needs. Not all stakeholders commented on every question. A summary of responses is given below:

Rule Development Program

1. Perception by one stakeholder was that the adopted rules did not reflect stringent emission levels required to protect health. More than one stakeholder reflected the sentiment that the regulations associated with the oil industry contained less stringent requirements and exemptions.

2. A comment was made that the adopted rules did not take into account the needs of several communities.

3. A comment was made that the District's rule adoption agenda was driven by U.S. EPA sanctions, law suits, or fear of lawsuits instead of a genuine desire to improve the air quality at a rapid pace.

4. Some stakeholders (particularly from the industry) commented that the rule development process in the last two or three years was extremely rushed and did not allow the opportunity to clearly address all issues.

5. Almost all stakeholders mentioned that the Citizens Advisory Committee (CAC) was not functioning to its full potential or doing the job it was originally designed to perform. Some comments in this area were that the CAC was dominated by industry and the environmental designees were not connected to any environmental or public health group.

6. Most stakeholders were complimentary of the technical ability of the District rule making and other technical staff. A suggestion in regard to rule making meetings was that stakeholders could benefit if a detailed transcript of the main discussion was made available to all attendees.

Permitting Program

1. Almost all Industry representatives interviewed were concerned about the need for additional permit streamlining efforts so that new permits or changes to existing permits can be processed in a reasonable time period. They are not satisfied with the current processing schedule which can take up to six to seven months to process permit applications.

2. A comment made by industry was that applications should be evaluated based on policies or rules existing on the date an application is deemed complete by the District.

3. There is a long turnaround time even when using the priority permitting (paying additional money on cost reimbursable basis) avenue.

4. Industry commented that the turnaround time is not reduced even when permit applications are submitted under the Certified Air Permitting Professionals (CAPP) program. The District needs to reevaluate what level of scrutiny should be given to permit applications which have already been processed by certified permit application preparers. The current process does not provide industry an incentive to use the CAPP program. This program is not working at all.

5. Permitting policies should be made public. Policies which are material to the interpretation of a rule should not be drafted without public review or input. Industry should know how the District intends to interpret a particular rule. Also, if the certified permit preparers are not made aware of the extensive permitting policies used by District engineers, they will not be able to accurately prepare the application packages.

6. Permits are overly complex as compared to permits for similar equipment in other districts. In some areas they have an unnecessary level of detail (for example, should the permit state the manufacturer of an oxygen controller). Also, the permit conditions should be grouped for easier reading.

7. Permits are not consistent with each other. A comment was made about the need for more coordination between rulemaking, permitting, and enforcement divisions of the District.

8. Two stakeholders stated that there was too much “engineering” being done in the evaluation of permit applications. This causes delays in turnaround time. District should streamline the evaluation process. Conversion of authority to construct to permits to operate should also be simplified.

Enforcement Program

1. Industry’s perception of the mutual settlement program (for violations) was that it is fair. Some stakeholders stated the District holds its ground with respect to penalty settlement amounts and will reduce penalties only if there are valid mitigating circumstances.

2. One stakeholder mentioned that the District should conduct more outreach and education programs especially for industry groups which have previously not been regulated.

3. One stakeholder was very concerned about the District conducting unannounced inspections for oilfield operations. He stated that these are typically unmanned locations, are in remote places, and that some advance notice would be reasonable for these operations.

4. One stakeholder requested that the District should issue more notices to comply (NTCs) rather than notices of violation (NOVs). Only “bad actors” should receive NOVs.

5. One stakeholder was not pleased with the quality of inspectors conducting inspections on gasoline dispensing facilities. This stakeholder was also concerned with the turnover of inspectors assigned to his operation. He stated that new inspectors sometimes do not know the facility, take too much time to be educated about the process, yet are too eager to give NOVs for situations which they later realize are not really in violation.

6. Most industry members were in general satisfied with the variance process. A suggestion in this regard was that the variance process should not be used for routine and predictable maintenance or shutdown/startup type events. These situations should be covered by the rule, policy, or permit conditions.

Complaint Handling

1. The only comment about this subject was that repeated complaints (especially by one or two individuals) about the same facility or process should not require an onsite visit. These should be handled over the phone or screened out. Repeated visits by the District inspector are a strain on the facility’s resources.

Misc. Comments

1. A stakeholder wanted to remind the District to reflect on the severe health issues facing Valley residents before making or delaying any air quality decisions. The childhood rate for asthma in San Joaquin Valley at 16% is thrice the national average. Schools have to adjust schedules based on poor air quality days.

2. Several stakeholders were all praise for incentive programs such as the Carl Moyer program as a way to reduce emissions by replacing old high polluting equipment with modern equipment.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 2020 - EXEMPTIONS

(Adopted September 19, 1991)(Amended July 16, 1992; December 17, 1992; October 21, 1993; July 21, 1994; September 17, 1998; June 21, 2001; March 21, 2002; December 19, 2002; September 21, 2006)

1.0 Purpose

This rule specifies emissions units that are not required to obtain an Authority to Construct or Permit to Operate. This rule also specifies the recordkeeping requirements to verify the exemption and outlines the compliance schedule for emissions units that lose the exemption after installation.

2.0 Applicability

This rule shall apply to any source that emits or may emit air contaminants.

3.0 Definitions

3.1 Clean Produced Water: as defined in Rule 1020.

3.2 Emissions Unit: as defined in Rule 2201.

3.3 HAP: a hazardous air pollutant listed in Section 112(b) of the federal Clean Air Act or the lists prepared by the California Air Resources Board pursuant to Section 44321 of the California Health and Safety Code that have OEHHA approved health risk values.

3.4 HAP Source: an emissions unit that is subject to an emissions limitation, a performance standard, work practice standard, or other requirements under an applicable provision of any of the following regulations:

3.4.1 National Emission Standards for Hazardous Air Pollutants (NESHAPS), Maximum Achievable Control Technology (MACT) standard, or other requirements promulgated pursuant to Section 112 of the federal Clean Air Act (42 U.S. Code, 7401, et. seq.).

3.4.2 Airborne Toxic Control Measures (ATCM) adopted by the California Air Resources Board in accordance with requirements of Section 39658 of the California Health and Safety Code.

3.4.3 A rule contained in Regulation VII (Toxic Air Pollutants) of the District Rules and Regulations.

3.5 Indirect heat transfer system: a heat transfer system in which the products of combustion do not come into direct contact with the material being heated.

3.6 Low Emitting Unit: an emissions unit with an uncontrolled emissions rate of each air contaminant,

3.6.1 Less than or equal to two pounds per day or,

3.6.2 If greater than two pounds per day, is less than or equal to 75 pounds per year.

3.7 NSPS Source: an emissions unit that is subject to an emissions limitation, performance standard, work practice standard, or other requirements under an applicable provision of 40 CFR, Part 60, New Source Performance Standards (NSPS).

3.8 Portable Emissions Unit: as defined in Rule 2280.

3.9 Reconstructed Stationary Source: a Reconstructed Stationary Source as defined in Rule 2201, or a Reconstruction as defined in 40 CFR Part 60 Subpart A.

3.10 Roadmix: a mixture of tank bottoms from crude oil storage tanks, material from crude oil spills, or other crude-oil-containing soil mixed with aggregates and soils, that is used as a base or cover material for roads, parking lots, berms, tank and well locations, or similar applications.

3.11 Routine Replacement: as defined in Rule 2201.

3.12 Stationary Source: as defined in Rule 2201.

3.13 True Vapor Pressure: as defined in Rule 4623.

3.14 Unloading Rack: any aggregate or combination of equipment or control equipment that unloads organic liquid into a storage tank from tank trucks, trailers, or railroad tank cars. The unloading rack is the portion of the connection system from the connection at the inlet of the organic liquid pump to and including the hose and connector at the delivery tank.

4.0 Precluded Source Categories

No Authority to Construct or Permit to Operate shall be required for the following source categories that are specifically precluded from District permitting requirements by state or federal law:

4.1 Any structure designed for and used exclusively as a dwelling for not more than four families and any incinerator used exclusively in connection with such structure (Health and Safety Code Section 42310(b) and (c)).

4.2 Barbecue equipment that is not used for commercial purposes, (Health and Safety Code Section 42310(d)).

4.3 Motor vehicles as defined by the Vehicle Code of the State of California (Health and Safety Code, Section 42310(a)), but not including any emissions unit mounted on such vehicle that would otherwise require a permit under the provisions of the District Rules and Regulations.

4.4 Locomotives, airplanes, and watercraft used to transport passengers or freight. This exemption is not intended to apply to equipment used for the dredging of waterways or to equipment used in pile driving adjacent to or in waterways.

5.0 District Permit Exemptions

An Authority to Construct or Permit to Operate shall not be required for an emissions unit covered under District Exempt Source Categories listed in Sections 6.0 or 7.0, unless one or more of the following is true:

5.1 The source is a NSPS source;

5.2 The source is a HAP source;

5.3 The APCO makes a determination that a permit shall be required because the source may not operate in compliance with all District rules and regulations; or

5.4 The owner specifically requests a Permit to Operate.

6.0 District Exempt Source Categories

Except as required by Section 5.0, no Authority to Construct or Permit to Operate shall be required for an emission unit specified below. All other equipment within that source category shall require an ATC or PTO.

6.1 Combustion and Heat Transfer Systems

6.1.1 Steam generators, steam superheaters, water boilers, water heaters, steam cleaners, and closed indirect heat transfer systems that have a maximum input heat rating of 5,000,000 Btu per hour (gross) or less and is equipped to be fired exclusively with natural gas, liquefied petroleum gas, or any combination thereof provided the fuel contains no more than five percent by weight hydrocarbons heavier than butane (as determined by test method ASTM E-260-73) and no more than 0.75 grains of total sulfur per 100

standard cubic feet of gas (as determined by test method ASTM D-1072-80).

6.1.2 Piston type internal combustion engines with a manufacturer's maximum continuous rating of 50 braking horsepower (bhp) or less.

6.1.3 Gas turbine engines with a maximum heat input rating of 3,000,000 Btu per hour or less at ISO Standard Day Conditions.

6.1.4 Equipment used exclusively for space heating, other than boilers.

6.1.5 Multiple chambered or equivalent incinerators used to destroy animals from a wildlife habitat for the sole purpose of disease control, as authorized by a public official.

6.2 Cooling Towers: Water cooling towers that have a circulation rate of less than 10,000 gallons per minute, and that are not used for cooling of process water, water from barometric jets, or water from barometric condensers.

6.3 Graphic Arts Equipment: Printing, coating, or laminating facility with a total graphic arts material usage of:

6.3.1 Less than or equal to two gallons per any day or,

6.3.2 If greater than two gallons per day, is less than or equal to 30 gallons per year.

6.3.3 Graphic arts materials are any ink, coating, adhesive, fountain solution, thinner, retarder, or cleaning solution.

6.4 Food Processing Equipment

6.4.1 Equipment, excluding charbroilers subject to Rule 4692 and boilers, used in eating establishments or other retail establishments for the purpose of preparing food for human consumption.

6.4.2 Mixers and blenders used in bakeries where the products are edible and intended for human consumption.

6.4.3 Ovens at bakeries provided that the total production from the bakery is less than 1,000 pounds of product per operating day and the oven is fired solely on natural gas and the oven has a rating less than 5 MMBtu per hour.

6.4.4 Smokehouses for preparing food in which the maximum horizontal inside cross-sectional area does not exceed 20 square feet.

6.5 Plastic/Rubber Processing: Emissions units used exclusively for the extruding or the compression molding of rubber products or plastics, where no plasticizer or blowing agent is present.

6.6 Storage Equipment: Containers, reservoirs, or tanks used exclusively for:

6.6.1 The storage or processing of clean produced water as represented in Figure 1 as being below the oil/water line.

6.6.2 The storage of crude oil with 0.8762 specific gravity or higher (30ºAPI or lower) as measured by test method API 2547 or ASTM D-1298-80, having a capacity of 100 bbl or less, and is not subject to a VOC control requirement of Rule 4623.

6.6.3 The storage of crude oil with specific gravity lower than 0.8762 (greater than 30ºAPI) as measured by test method API 2547 or ASTM D-1298-80, and existing before June 1, 1989, having a capacity of 100 bbl or less, and is not subject to a VOC control requirement of Rule 4623. This exemption shall not apply to a new tank installed after June 1, 1989.

6.6.4 The storage of organic material with a capacity of 250 gallons or less where the actual storage temperature does not exceed 150ºF.

6.6.5 The unheated storage of organic material with an initial boiling point of 302ºF or greater as measured by test method ASTM D-86.

6.6.6 The storage of fuel oils or non-air-blown asphalt with 0.9042 specific gravity or higher (25ºAPI or lower) as measured by test method API 2547 or ASTM D-1298-80.

6.6.7 The storage of petroleum distillates used as motor fuel with 0.8251 specific gravity or higher (40ºAPI or lower) as measured by test method API 2547 or ASTM D-1298-80 and having a capacity of 19,800 gallons (471 bbl) or less.

6.6.8 The storage of refined lubricating oils.

6.6.9 The storage of liquefied gases in unvented (except for emergency pressure relief valves) pressure vessels.

6.6.10 The storage of produced fluids in portable tanks, to be used for less than six months at any one (1) location and is not subject to a VOC control requirement of Rule 4623.

6.6.11 Mobile transport, delivery, or cargo tanks on vehicles for delivery of VOCs.

6.7 Transfer Equipment

6.7.1 Loading Racks (as defined in Rule 1020 (Definitions)) and unloading racks that are:

6.7.1.1 Used exclusively for the transfer of less than 4,000 gallons per day of:

6.7.1.1.1 Unheated organic materials with an initial boiling point of 302ºF or greater as measured by test method ASTM D-86, or

6.7.1.1.2 Fuel oil with 0.8251 specific gravity or higher (40ºAPI or lower) as measured by test method API 2547 or ASTM D-1298-80.

6.7.1.2 Used exclusively for the transfer of:

6.7.1.2.1 Crude oil, asphalt, or residual oil stored in tanks not required to be permitted in accordance with this rule; or

6.7.1.2.2 Crude oil with 0.8762 specific gravity or higher (30ºAPI or lower) as measured by test method API 2547 or ASTM D-1298-80.

6.7.1.3 Attached to an organic material delivery vehicle and used exclusively for the transfer of crude oil, asphalt, or residual oil.

6.7.2 Equipment used exclusively for the transfer of refined lubricating oil.

6.8 Surface Coating Operations

6.8.1 Application equipment for architectural surface coatings used for commercial or residential applications. Architectural surface coating is defined as any coating applied to stationary structures and their appurtenances, to mobile homes, to pavements, or to curbs. This exemption does not apply to coating application equipment used in the manufacturing of architectural components and appurtenances that are coated before their installation as part of a structure.

6.8.2 Surface coating operations, except for powder coating operations, which use less than one quart of coating per day or less than eight gallons of coating per year.

6.8.3 Powder coating operations that use less than five pounds of coating material per day or less than fifty pounds of coating material per year.

6.9 Solvent Cleaning Operations

Unheated, nonconveyorized cleaning equipment (not including the control enclosures):

6.9.1 With an open surface area of 10.0 square feet or less, and internal volume of 92.5 gallons or less;

6.9.2 Using only organic solvents with an initial boiling point of 248ºF or greater as determined by ASTM 1078-78; and

6.9.3 From which less than 25 gallons of solvent per year are lost to the atmosphere from all such equipment at the stationary source. Solvent lost shall not include solvent that is recycled or disposed of properly. Any person claiming exemption pursuant to this section shall maintain adequate monthly records to substantiate their exempt status.

6.10 Brazing, soldering, or welding equipment.

6.11 Equipment used exclusively to compress or hold dry natural gas. Any internal combustion engine or other emissions unit associated with the operation that would otherwise require a written permit is not exempt.

6.12 Fugitive emissions sources such as valves and flanges associated with an emissions unit that is exempt from a written permit.

6.13 Unvented (except for emergency pressure relief valves) pressure vessels associated with an emissions unit that is exempt from a written permit.

6.14 Fugitive emissions sources and pressure vessels that are associated with an emissions unit for which a written permit is required shall be included as part of such emissions unit. A separate permit for the fugitive source or pressure vessel is not required.

6.15 Pits and ponds as defined in Rule 1020 (Definitions).

6.16 Portable Emissions Units: a portable emissions unit for which a written permit is otherwise required, shall be exempt from the permitting requirements provided that all of the following conditions are met:

6.16.1 The emissions unit has a valid registration obtained in accordance with the provisions of Rule 2280 (Portable Equipment Registration), the Statewide Portable Equipment Registration Program (California Code of Regulation

Title 13, Article 5, Sections 2450-2465), or other equipment registration program approved by the APCO; and

6.16.2 The portable emissions unit is not subject to the District's Title V permitting requirements (Rule 2520).

6.17 Roadmix manufacturing and application operations

6.17.1 Roadmix manufacturing operations, provided that:

6.17.1.1 The roadmix is used exclusively on properties owned or operated by the company which operates the roadmix manufacturing operation and generated the roadmix feedstock, excluding aggregates, and

6.17.1.2 The roadmix feedstock does not contain refined hydrocarbons.

6.17.1.3 Notwithstanding the provisions of Section 6.17.1.1, an exempt roadmix manufacturing operator may donate roadmix material to non-profit organizations.

6.17.2 Roadmix application operations.

6.18 Laboratory testing equipment and quality control testing equipment used exclusively for chemical and physical analysis, provided:

6.18.1 Emissions from such equipment do not exceed 2.0 pounds per day or 75 pounds per year, and

6.18.2 The equipment is not a HAP source.

6.19 Low Emitting Units, except those which belong to a source category listed in Sections 6.1 through 6.18 shall not require an Authority to Construct or Permit to Operate.

6.19.1 Low Emitting Units, which belong to a source category listed in Sections 6.1 through 6.18, shall require an Authority to Construct or Permit to Operate unless they are specifically exempted in the applicable source category section.

6.19.2 Notwithstanding Sections 6.19 and 6.19.1, Low Emitting Units, with uncontrolled HAP emissions that may cause a significant health risk to the public, shall require an Authority to Construct or Permit to Operate.

6.20 Agricultural sources, but only to the extent provided by California Health and Safety Code, section 42301.16.

7.0 District Exempt Activities

No Authority to Construct or Permit to Operate shall be required for the following activities:

7.1 Routine replacement of a whole or partial emissions unit where the replacement part is the same as the original emissions unit in all respects except for the serial number and the action does not create a reconstructed Stationary Source.

7.2 The venting of California Public Utility Commission quality natural gas from pipelines and compressors for the sole purpose of pipeline and compressor repair and or maintenance, providing that such emissions consist solely of residual natural gas that is vented after the equipment is isolated or shut down and that the residual amounts have been reduced as much as practical prior to venting.

7.3 Repairs or maintenance not involving structural changes to any emissions unit for which a permit has been granted (Health and Safety Code, Section 42310(f)).

7.4 The detonation of explosives for research and development activity, provided the quantity of explosives detonated does not exceed 100 pounds per day and 1,000 pounds per year at a single stationary source.

7.5 Pilot tests for soil remediation projects, provided that all of the following conditions are met:

7.5.1 The sole purpose of the pilot test is to determine the VOC concentration in the soil in order to design or size the appropriate control equipment for the soil remediation project;

7.5.2 The pilot test will not last more than five days; and

7.5.3 The effluent gas stream from the pilot test is controlled by either carbon canisters, a thermal or catalytic incinerator, or an IC engine.

8.0 Administrative Requirements

Recordkeeping shall be required to verify or maintain any exemption for which the exemption is based on a throughput or emissions limitation. Such records shall be retained for at least two years and provided to the APCO upon request.

9.0 Compliance Schedule

The owner or operator of an emissions unit that was exempt from written permits at the time of installation, which becomes subject to the provisions of Rule 2010 (Permits

Required), through loss of exemption, shall submit an application for a Permit to Operate within six months from the date of adoption of this rule and shall not be subject to Rule 2201 (New and Modified Stationary Source Review Rule), until such time that the emissions unit is modified.

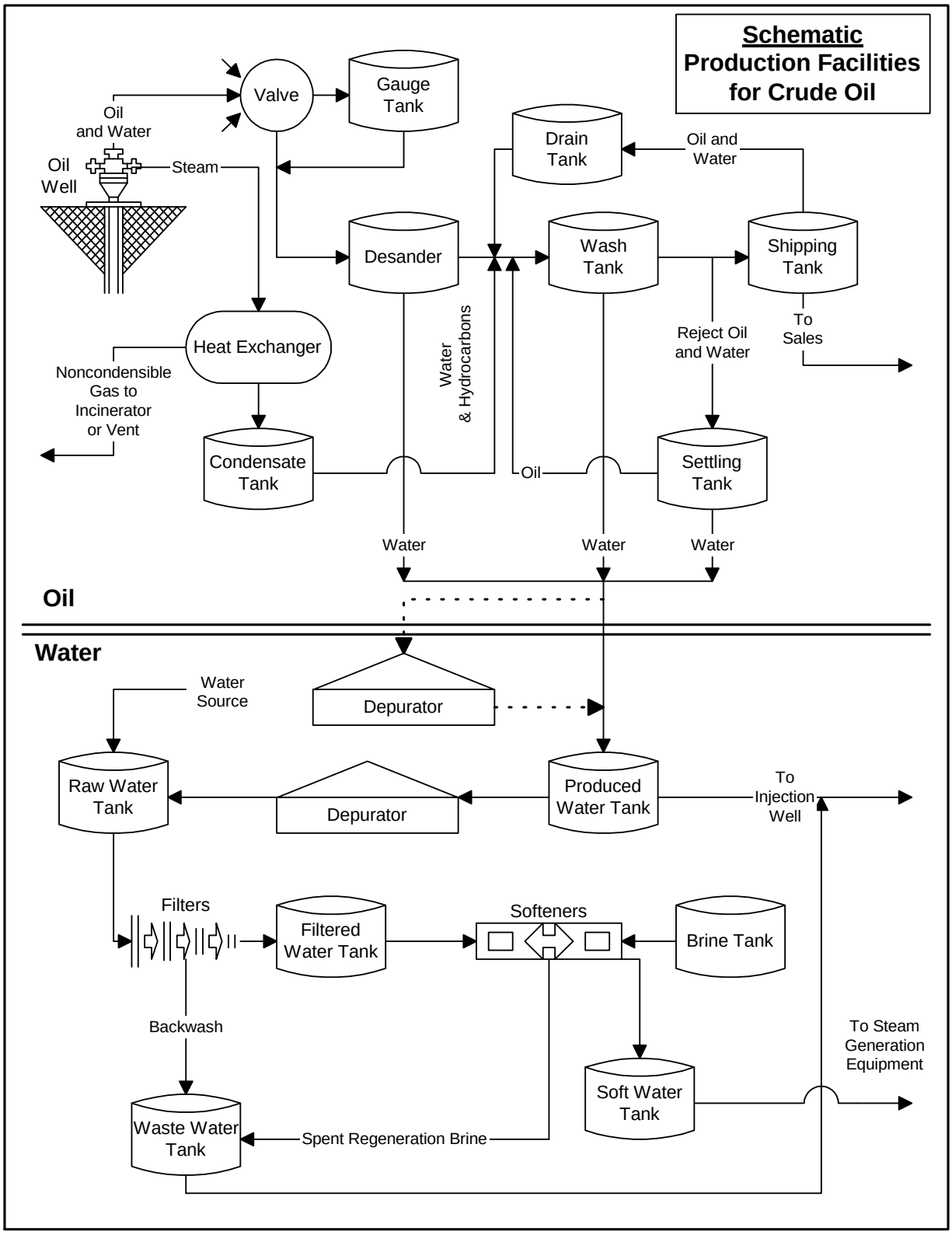

Figure1 Oil/water line

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4306 - BOILERS, STEAM GENERATORS, AND PROCESS HEATERS – PHASE 3
(Adopted September 18, 2003) (Amended March 17, 2005)

1.0 Purpose

The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) from boilers, steam generators, and process heaters.

2.0 Applicability

This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million Btu per hour.

3.0 Definitions

3.1 Annual Capacity Factor: the ratio of the amount of fuel burned by the unit in a calendar year to the amount of fuel that the unit could have burned if it had operated at its maximum rated capacity for 8,760 hours during the calendar year.

3.2 Annual Heat Input: the actual, total heat input of fuels burned by a unit in a calendar year, as determined from the higher heating value and cumulative annual usage of each fuel.

3.3 Boiler or Steam Generator: any external combustion equipment, except oilfield steam generators, fired with any fuel used to produce hot water or steam.

3.4 British Thermal Unit (Btu): the amount of heat required to raise the temperature of one pound of water from 59°F to 60°F at one atmosphere.

3.5 Dryer: any unit in which material is dried in direct contact with the products of combustion.

3.6 Gaseous Fuel: any fuel which is a gas at standard conditions.

3.7 Gas Liquids Processing Facility: a facility that is engaged in the catalytic processing of gas liquids to produce finished products._

3.8 Heat Input: the heat (hhv basis) released due to fuel combustion in a unit, not including the sensible heat of incoming combustion air and fuel.

3.9 Higher Heating Value (hhv): the total heat liberated per mass of fuel burned (Btu per pound), when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.

3.10 Liquid Fuel: any fuel which is a liquid at standard conditions.

3.11 Load-following Unit: For the purposes of this rule, a load-following unit is defined as a unit with normal operational load fluctuations and requirements which exceed the operational response range of an Ultra-Low NOx burner system(s) operating at 9 ppmv NOx. The operator shall designated load-following units on the Permit to Operate.

3.12 NOx Emissions: the sum of oxides of nitrogen expressed as NO_2 in the flue gas.

3.13 Oilfield Steam Generator: an external combustion equipment which converts water to dry steam or to a mixture of water vapor and steam, with an absolute pressure of more than 30 psia, and which is used exclusively in thermally enhanced crude oil production.

3.14 Parts Per Million by Volume (ppmv): the ratio of the number of gas molecules of a given species, or group of species, to the number of millions of total gas molecules.

3.15 Process Heater: any combustion equipment fired with liquid and/or gaseous fuel and which transfers heat from combustion gases to water or process streams. This definition excludes: kilns or ovens used for drying, baking, cooking, calcining, or vitrifying; and unfired waste heat recovery heaters used to recover sensible heat from the exhaust of combustion equipment.

3.16 Public Utilities Commission (PUC) Quality Natural Gas: any gaseous fuel, gas-containing fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet and no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet. PUC quality natural gas also means high methane gas (at least 80% methane by volume) as specified in PUC General order 58-A.

3.17 PUC Quality Natural Gas Curtailment: means a shortage in the supply of Public Utility Commission (PUC) quality natural gas, due solely to supply limitations or restrictions in distribution pipelines by the utility supplying the gas, and not due to the cost of natural gas.

3.18 Qualified Technician: a stationary source employee or any personnel contracted by a stationary source operator who has a documented training and a demonstrated experience performing tune-ups on a unit to the satisfaction of the APCO. The documentation of tune-up training and experience shall be made available to the APCO upon request.

3.19 Rated Heat Input (million Btu per hour): the heat input capacity specified on the nameplate of the unit. If the unit has been physically modified such that its

maximum heat input differs from what is specified on the nameplate, the modified maximum heat input shall be considered as the rated heat input and made enforceable by Permit to Operate.

3.20 Refinery Unit: a unit that is permanently installed and operated at a petroleum refinery or a gas liquids processing facility.

3.21 Re-ignition: the relighting of a unit after an unscheduled and unavoidable interruption or shut off of the fuel flow or electrical power, for a period of less than 30 minutes, due to reasons outside the control of the operator.

3.22 Shutdown: The period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off.

3.23 Solid Fuel: any fuel which is a solid at standard conditions.

3.24 Standard Conditions: standard conditions as defined in Rule 1020 (Definitions).

3.25 Start-up: The period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation.

3.26 Unit: any boiler, steam generator, oilfield steam generator, or process heater as defined in this rule.

4.0 Exemptions

4.1 This rule shall not apply to:

4.1.1 Solid fuel fired units.

4.1.2 Dryers and glass melting furnaces.

4.1.3 Kilns and smelters where the products of combustion come into direct contact with the material to be heated.

4.1.4 Unfired or fired waste heat recovery boilers that are used to recover or augment heat from the exhaust of combustion turbines or internal combustion engines.

4.2 The requirements of Sections 5.1.1 and 5.1.2 shall not apply to a unit when burning any fuel other than PUC quality natural gas during PUC quality natural gas curtailment provided all of the following conditions are met:

4.2.1 Fuels other than PUC quality natural gas are burned no more than 168 cumulative hours in a calendar year plus 48 hours per calendar year for equipment testing, as limited by Permit to Operate.

4.2.2 NOx emission shall not exceed 150 ppmv or 0.215 lb/MMBtu. Demonstration of compliance with this limit shall be made by either source testing, continuous emission monitoring system (CEMS), an APCO approved Alternate Monitoring System, or an APCO approved portable NOx analyzer.

5.0 Requirements

All ppmv emission limits specified in this section are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen in accordance with Section 8.1.

5.1 NOx and CO Emission Limits

5.1.1 Except for units subject to Sections 5.2, NOx and carbon monoxide (CO) emissions shall not exceed the limits specified in Table 1 on and after the dates specified in Tables 2 and 3.

Table 1 NOx and CO Limits

Category	Operated on Gaseous Fuel			Operated on Liquid Fuel	
	NOx Limit		CO Limit (ppmv)	NOx Limit	CO Limit (ppmv)
	Standard Option	Enhanced Option			
A. Units with a rated heat input equal to or less than 20.0 MMBtu/hour, except for Categories C, D, E, F, G, H, and I units	15 ppmv or 0.018 lb/MMBtu	9 ppmv or 0.011 lb/MMbtu	400	40 ppmv or 0.052 lb/MMBtu	400
B. Units with a rated heat input greater than 20.0 MMBtu/hour, except for Categories C, D, E, F, G, H, and I units	9 ppmv or 0.011 lb/MMbtu	6 ppmv or 0.007 lb/MMbtu	400	40 ppmv or 0.052 lb/MMBtu	400

Table 1 NOx and CO Limits (continued)

Category	Operated on Gaseous Fuel		Operated on Liquid Fuel	
	NOx Limit	CO Limit (ppmv)	NOx Limit	CO Limit (ppmv)

	Standard Option	Enhanced Option			
C. Oilfield Steam Generators	15 ppmv or 0.018 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
D. Refinery units with a rated heat input greater than 5 MMBtu/hr up to 65 MMBtu/hr	30 ppmv or 0.036 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
E. Refinery units with a rated heat input greater than 65 MMBtu/hr up to 110 MMBtu/hr	25 ppmv or 0.031 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
F. Refinery units with a rated heat input greater than 110 MMBtu/hr	5 ppmv or 0.0062 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
G. Load-following units	15 ppmv or 0.018 lb/MMBtu	9 ppmv or 0.011 lb/Mmbtu	400	40 ppmv or 0.052 lb/MMBtu	400
H. Units limited by a Permit to Operate to an annual heat input of 9 billion Btu/year to 30 billion Btu/year	30 ppmv or 0.036 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
I. Units in which the rated heat input of each burner is less than or equal to 5 MMBtu/hr but the total rated heat input of all the burners in a unit is greater than 5 MMBtu/hr, as specified in the Permit to Operate, and in which the products of combustion do not come in contact with the products of combustion of any other burner.	30 ppmv or 0.036 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400

5.1.2 When a unit is operated on combinations of gaseous fuel and liquid fuel, the NOx limit shall be the heat input weighted average of the applicable limits specified in Sections 5.1.1, as calculated by the following equation:

$$\text{Weighted Average Limit} = \frac{(\text{NOx limit for gaseous fuel x G}) + (\text{NOx limit for liquid fuel x L})}{\text{G} + \text{L}}$$

Where: G = annual heat input from gaseous fuel
L = annual heat input from liquid fuel

5.2 For each unit that is limited to less than 9 billion Btu per calendar year heat input pursuant to a Permit to Operate, the operator shall comply with the requirement of Section 7.4 and one of the following:

5.2.1 tune the unit at least twice per calendar year, (from four to eight months apart) by a qualified technician in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown; or

5.2.2 operate the unit in a manner that maintains exhaust oxygen concentrations at less than or equal to 3.00 percent by volume on a dry basis; or

5.2.3 operate the unit in compliance with the applicable emission limits of Sections 5.1.1 or 5.1.2.

5.3 On and after the full compliance schedule specified in Section 7.1, the applicable emission limits of Sections 5.1, 5.2.2 and 5.2.3 shall not apply during start-up or shutdown provided an operator complies with the requirements specified below.

5.3.1 The duration of each start-up or each shutdown shall not exceed two hours, except as provided in Section 5.3.3.

5.3.2 The emission control system shall be in operation and emissions shall be minimized insofar as technologically feasible during start-up or shutdown.

5.3.3 Notwithstanding the requirement of Section 5.3.1, an operator may submit an application for a Permit to Operate condition to allow more than two hours for each start-up or each shutdown provided the operator meets all of the conditions in specified in Sections 5.3.3.1 through 5.3.3.3.

5.3.3.1 The maximum allowable duration of start-up or shutdown will be determined by the APCO. The allowable duration of start-up shall not exceed twelve hours and the allowable duration of shutdown shall not exceed nine hours.

5.3.3.2 The APCO will only approve start-up or shutdown duration longer than two hours when the application meets the following conditions:

5. 3.3.2.1 clearly identifies the control technologies or strategies to be utilized; and

5. 3.3.2.2 describes what physical conditions prevail during start-up or shutdown periods that prevent the controls from being effective; and

5. 3.3.2.3 provides a reasonably precise estimate as to when the physical conditions will have reached a state that allows for the effective control of emissions.

5.3.3.3 The operator shall submit to the APCO any information deemed necessary by the APCO to determine the appropriate length of start-up or shutdown. The information shall include, but is not limited to the following:

5.3.3.3.1 a detailed list of activities to be performed during start-up or shutdown and a reasonable explanation for the length of time needed to complete each activity; and

5.3.3.3.2 a description of the material process flow rates and system operating parameters, etc., the operator plans to evaluate during the process optimization; and an explanation of how the activities and process flow affect the operation of the emissions control equipment; and

5.3.3.3.3 basis for the requested additional duration of start-up or shutdown.

5.3.4 Permit to Operate modification solely to include start-up or shutdown conditions shall be exempt from the BACT and offset requirements of Rule 2201 (New and Modified Stationary Source Review Rule) for applications for Authority to Construct that are submitted and are approved by the APCO by the applicable “full compliance” schedule specified in Section 7.1 Table 2.

5.4 Monitoring Provisions

5.4.1 The operator of any unit which simultaneously fires gaseous and liquid fuels, and is subject to the requirements of Section 5.1, shall install and maintain an operational non-resettable, totalizing mass or volumetric flow

meter in each fuel line to each unit. Volumetric flow measurements shall be periodically compensated for temperature and pressure.

5.4.2 The operator of any unit subject to the applicable emission limits in Sections 5.1 shall install and maintain an operational APCO approved Continuous Emissions Monitoring System (CEMS) for NOx, CO, and oxygen, or implement an APCO-approved Alternate Monitoring System. An APCO approved CEMS shall comply with the requirements of 40 Code of Federal Regulations (CFR) Part 51, 40 CFR Parts 60.7 and 60.13 (except subsection h), 40 CFR Part 60 Appendix B (Performance Specifications) and 40 CFR Part 60 Appendix F (Quality Assurance Procedures, and applicable provisions of Rule 1080 (Stack Monitoring). An APCO approved Alternate Monitoring System shall monitor one or more of the following:

5.4.2.1 periodic NOx and CO exhaust emission concentrations,
5.4.2.2 periodic exhaust oxygen concentration,
5.4.2.3 flow rate of reducing agent added to exhaust,
5.4.2.4 catalyst inlet and exhaust temperature,
5.4.2.5 catalyst inlet and exhaust oxygen concentration,
5.4.2.6 periodic flue gas recirculation rate,
5.4.2.7 other operational characteristics.

5.4.3 For units subject to the requirements of Section 5.2.1 or 5.2.2, the operator shall monitor, at least on a monthly basis, the operational characteristics recommended by the manufacturer and approved by the APCO.

5.4.4 The operator of any Category H unit listed in Section 5.1.1 Table 1 and any unit subject to Section 5.2.1 or 5.2.2 shall install and maintain an operational non-resettable, totalizing mass or volumetric flow meter in each fuel line to each unit. Volumetric flow measurements shall be periodically compensated for temperature and pressure. A master meter, which measures fuel to all units in a group of similar units, may satisfy these requirements if approved by the APCO in writing. The cumulative annual fuel usage may be verified from utility service meters, purchase or tank fill records, or other acceptable methods, as approved by the APCO.

5.4.5 The APCO shall not approve an alternative monitoring system unless it is documented that continued operation within ranges of specified emissions-related performance indicators or operational characteristics provides a reasonable assurance of compliance with applicable emission limits. The operator shall source test over the proposed range of surrogate operating parameters to demonstrate compliance with the applicable emission standards.

5.5 Compliance Determination

5.5.1 The operator of any unit shall have the option of complying with either the applicable heat input (lb/MMBtu) emission limits or the concentration (ppmv) emission limits specified in Section 5.1. The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (Source Sampling).

5.5.2 All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0.

5.5.3 All Continuous Emissions Monitoring System (CEMS) emissions measurements shall be averaged over a period of 15 consecutive minutes to demonstrate compliance with the applicable emission limits of this rule. Any 15-consecutive-minute block average CEMS measurement exceeding the applicable emission limits of this rule shall constitute a violation of this rule.

5.5.4 For emissions monitoring pursuant to Sections 5.4.2, 5.4.2.1, and 6.3.1 using a portable NOx analyzer as part of an APCO approved Alternate Emissions Monitoring System, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15-consecutive-minute period.

5.5.5 For emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit.

6.0 Administrative Requirements

6.1 Recordkeeping

The records required by Sections 6.1.1 through 6.1.3 shall be maintained for five calendar years and shall be made available to the APCO upon request. Failure to maintain records or information contained in the records that demonstrate noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

6.1.1 The operator of any unit operated under the exemption of Section 4.2 shall monitor and record for each unit the cumulative annual hours of operation on each fuel other than natural gas during periods of natural gas curtailment and equipment testing. The NOx emission concentration (in ppmv or lb/MMBtu) for each unit that is operated during periods of natural gas curtailment shall be recorded. Failure to maintain records required by Section 6.1.1 or information contained in the records that demonstrates noncompliance with the conditions for exemption under Section 4.2 will result in loss of exemption status. On and after the applicable compliance schedule specified in Section 7.0, any unit losing an exemption status shall be brought into full compliance with this rule as specified in Section 7.3.

6.1.2 The operator of any Category H unit listed in Section 5.1.1 Table 1 and any unit that is subject to the requirements of Section 5.2 shall record the amount of fuel use at least on a monthly basis for each unit, or for a group of units as specified in Section 5.4.4. On and after the applicable compliance schedule specified in Section 7.0, in the event that such unit exceeds the applicable annual heat input limit specified in Sections 5.1.1 Table 1 Category H and Section 5.2, the unit shall be brought into full compliance with this rule as specified in Section 7.4.

6.1.3 The operator of any unit subject to Section 5.2.1 or Section 6.3.1 shall maintain records to verify that the required tune-up and the required monitoring of the operational characteristics of the unit have been performed.

6.1.4 The operator performing start-up or shutdown of a unit shall keep records of the duration of start-up or shutdown.

6.2 Test Methods

The following test methods shall be used unless otherwise approved by the APCO and EPA.

6.2.1 Fuel hhv shall be certified by third party fuel supplier or determined by:

6.2.1.1 ASTM D 240-87 or D 2382-88 for liquid hydrocarbon fuels;
6.2.1.2 ASTM D 1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels.

6.2.2 Oxides of nitrogen (ppmv) - EPA Method 7E, or ARB Method 100.
6.2.3 Carbon monoxide (ppmv) - EPA Method 10, or ARB Method 100.
6.2.4 Stack gas oxygen - EPA Method 3 or 3A, or ARB Method 100.
6.2.5 NOx Emission Rate (Heat Input Basis) - EPA Method 19.

6.2.6 Stack gas velocities - EPA Method 2.
6.2.7 Stack gas moisture content - EPA Method 4.

6.3 Compliance Testing

6.3.1 Each unit subject to the requirements in Sections 5.1 or 5.2.3 shall be source tested to determine compliance with the applicable emission limits at least once every 12 months, no more than 30 days before or after the required annual source test date. Units that demonstrate compliance on two consecutive 12-month source tests may defer the following 12-month source test for up to 36 months (no more than 30 days before or after the required 36-month source test date). During the 36-month source testing interval, the operator shall tune the unit in accordance with the provisions of Section 5.2.1, and shall monitor, on a monthly basis, the unit's operational characteristics recommended by the manufacturer to ensure compliance with the applicable emission limits specified in Sections 5.1 or 5.2.3. Tune-ups required by Sections 5.2.1 and 6.3.1 do not need to be performed for units that operate and maintain an APCO approved CEMS or an APCO approved Alternate Monitoring System where the applicable emission limits are periodically monitored. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits specified in Sections 5.1 or 5.2.3, the source testing frequency shall revert to at least once every 12 months. Failure to comply with the requirements Section 6.3.1, or any source test results that exceed the applicable emission limits in Sections 5.1 or 5.2.3 shall constitute a violation of this rule.

6.3.2 In lieu of compliance with Section 6.3.1, compliance with the applicable emission limits in Sections 5.1 or 5.2.3 shall be demonstrated by submittal of annual emissions test results to the District from a unit or units that represents a group of units, provided:

6.3.2.1 All units in the group are initially source tested. The emissions from all test runs from units within the group are less than 90% of the permitted value, and the emissions do not vary greater than 25% from the average of all test runs; and

6.3.2.2 All units in a group are similar in terms of rated heat input, make and series, operational conditions, fuel used, and control method. No unit with a rated heat input greater than 100 MMBtu shall be considered as part of the group; and

6.3.2.3 The group is owned by a single owner and is located at a single stationary source; and

6.3.2.4 Selection of the representative unit(s) is approved by the APCO prior to testing; and

6.3.2.5 The number of representative units source tested shall be at least 30% of the total number of units in the group. The representative tests shall rotate each year so that within three years all units in the group have been tested at least once.

6.3.2.6 All units in the group shall have received the similar maintenance and tune-up procedures as the representative unit(s) as listed in the Permit to Operate. The operator shall submit to the APCO the specific maintenance procedures to be performed on each unit that will be included in the group for representative testing. Such maintenance procedures shall be specified in the Permit to Operate for units that are included in the group for representative testing. Any maintenance work on a unit which has no effect on emissions standards and which is not specified in the maintenance procedures shall be submitted to the APCO for approval before such unit can be included as part of the group for representative testing. Any unit that necessitates any maintenance work which has an effect on emission standards and is beyond the maintenance procedures identified in the Permit to Operate, shall not be included as part of the group for representative testing. The unit shall be source tested in accordance with the provisions of Section 6.3.1; and

6.3.2.7 Should any of the representative units exceed the required emission limits, each of the units in the group shall demonstrate compliance by emissions testing. Failure to complete emissions testing within 90 days of the failed test shall result in the untested units being in violation of this rule. After compliance with the requirements of Section 6.3.2.7 has been demonstrated, subsequent source testing shall be performed pursuant to Sections 6.3.1 or 6.3.2.

6.4 Emission Control Plan (ECP)

6.4.1 The operator of any unit shall submit to the APCO for approval an Emissions Control Plan according to the compliance schedule in Section 7.0. For each unit, the plan shall contain the following:

6.4.1.1 Permit to Operate number,
6.4.1.2 Fuel type and hhv,
6.4.1.3 Annual fuel consumption (Btu/yr),

6.4.1.4 Current emission level, including method used to determine emission level,

6.4.1.5 NOx limit to be satisfied, either Standard Option or Enhanced Option, and

6.4.1.6 Plan of actions, including a schedule of increments of progress, which will be taken to satisfy the requirements of Section 5.0 and the compliance schedule in Section 7.0.

6.4.2 The operator shall submit to the APCO for approval, as part of the ECP, a list of units which are to be designated as load-following units. The APCO shall only designate, as load-following, units for which the following information has been provided to demonstrate that the units qualify as load-following:

6.4.2.1 Technical data such as steam demand charts or other information to demonstrate the normal operational load fluctuations and requirements of the unit,

6.4.2.2 Technical data about the operational response range of an Ultra-Low NOx burner system(s) operating at 9 ppmv NOx, and

6.4.2.3 Technical data demonstrating that the unit(s) are designed and operated to optimize the use of base-loaded units in conjunction with the load-following unit(s).

7.0 Compliance Schedule

7.1 An operator with multiple units at a stationary source shall comply with this rule in accordance with the schedule specified in Table 2. A stationary source with only one unit shall comply with the schedule specified in Table 2 Group 1 for standard option or Table 3 Group 1 for enhanced option.

TABLE 2 – Standard Option Compliance Schedule

Units to be in Compliance at a Stationary Source	Emission Control Plan	Authority to Construct	Full Compliance
Group 1: 25% or more of the total number of units subject to this rule on June 1, 2005, excluding Group 4	June 1, 2004	June 1, 2004	June 1, 2005
Group 2: 62.5% or more of the total number of units subject to this rule on June 1, 2006, excluding Group 4	June 1, 2004	January 2, 2005	June 1, 2006
Group 3: 100% of the total number of units subject to this rule on June 1, 2007	June 1, 2004	January 2, 2006	June 1, 2007

Group 4: A. Load-following units B. Units limited by Permit to Operate to an annual capacity factor of 10% or less as of June 1, 2005 C. Category I units at any stationary source that has no more than two units subject to this rule.	June 1, 2004	January 2, 2006	June 1, 2007

Units are considered to be subject to this rule if the rule is applicable to the units pursuant to Section 2.0 and the units are not exempt pursuant to Section 4.1.

TABLE 3 – Enhanced Option Compliance Schedule

Units to be in Compliance at a Stationary Source	Emission Control Plan	Authority to Construct	Full Compliance
Group 1: 25% or more of the total number of units subject to this rule on June 1, 2005, excluding Group 4	December 1, 2005	December 1, 2005	December 1, 2006
Group 2: 62.5% or more of the total number of units subject to this rule on June 1, 2006, excluding Group 4	December 1, 2005	July 1, 2006	December 1, 2007
Group 3: 100% of the total number of units subject to this rule on June 1, 2007	December 1, 2005	July 1, 2007	December 1, 2008
Group 4: A. Load-following units	December 1, 2005	July 1, 2007	December 1, 2008

Units are considered to be subject to this rule if the rule is applicable to the units pursuant to Section 2.0 and the units are not exempt pursuant to Section 4.1.

7.2 As shown in Table 2 and Table 3, the column labeled:

7.2.1 "Emission Control Plan" identifies the date by which the operator shall submit an Emission Control Plan pursuant to Section 6.4. The Emission Control Plan shall identify all units subject to this rule. The Emission Control Plan shall identify steps to be taken to comply with this rule.

7.2.2 “Authority to Construct” identifies the date by with the operator shall submit an Application for Authority to Construct for each unit subject to the rule.

7.2.3 "Full Compliance" identifies the date by which the owner shall demonstrate that each unit is in compliance with this rule.

7.3 Any unit that is exempted under Section 4.2 that becomes subject to the emission limits of this rule through the loss of exemption status, shall be in full compliance with this rule on and after the date the exemption status is lost.

7.4 Any unit that becomes subject to the emission limits of this rule as a result of exceeding the applicable annual heat input limit specified in either Section 5.1.1 Table 1 Category H or Section 5.2, shall be in compliance with the applicable standard option emission limits for Category A and B units in Section 5.1.1 on and after the date the annual heat input limit is exceeded.

8.0 Calculations

8.1 All ppmv emission limits specified in Section 5.1 are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen as follows:

$$[\text{ppm NOx}]_{\text{corrected}} = \frac{17.95\%}{20.95\% - [\%O2]_{\text{measured}}} \text{ x } [\text{ppm NOx}]_{\text{measured}}$$

$$[\text{ppm CO}]_{\text{corrected}} = \frac{17.95\%}{20.95\% - [\%O2]_{\text{measured}}} \text{ x } [\text{ppm CO}]_{\text{measured}}$$

8.2 All pounds per million Btu NOx emission rates shall be calculated as pounds of nitrogen dioxide per million Btu of heat input (hhv).

9.0 Alternative Emission Control

9.1 General

The single owner of two or more units may comply with Section 5.1 by controlling units in operation at the same stationary source, or at two contiguous stationary sources, to achieve an aggregated NOx emission factor no higher than 90 percent of the aggregated NOx emission factor limit that would result if each unit in operation were individually in compliance with the applicable NOx emission limits in Section 5.1. An operator that is subject to the AECP requirements below shall also comply with the applicable requirements of Sections 5.0, 6.0, 7.0 and 8.0.

9.2 Eligibility

A unit not subject to Section 5.1 or Section 5.2.3 is not eligible for inclusion in an AECP.

9.3 Exclusion

No unit subject to Sections 5.2.1 or 5.2.2 shall be included in an AECP.

9.4 AECP Definitions

For the purposes of Section 9.0, the following definitions shall apply:

9.4.1 Aggregated NOx emission factor limit: the sum of the NOx emissions, over seven consecutive calendar days, that would result if all units in the AECP were in compliance with the lb/MMBtu limits in Section 5.1 and operating at their actual firing rates, divided by the sum of the heat input of all units in the AECP over seven consecutive calendar days. Aggregated emission factor limit is calculated as:

$$L_A = \frac{\Sigma L_i F_i}{\Sigma F_i}$$

where: L_A is the aggregated NOx emission factor limit (lb/MMBtu)

L_i is the applicable NOx emission factor limit (lb/MMBtu) specified in Section 5.1.1 Table 1 or Section 5.1.2 for each category of unit in the AECP,

F_i is the total heat input (hhv basis) of fuel (MMBtu) combusted in each unit during seven consecutive calendar days, and

i identifies each unit in the AECP.

9.4.2 Aggregated NOx emission factor: the sum of the actual NOx emissions during seven consecutive calendar days from all units in the AECP, divided

by the sum of the heat input of all units in the AECP during seven consecutive calendar days. The aggregated emission factor is calculated as:

$$E_A = \frac{\Sigma E_i F_i}{\Sigma F_i}$$

where: E_A is the aggregated NOx emission factor (lb/MMBtu),

E_i is the NOx emission factor (lb/MMBtu) for each unit in the AECP, established and verified by source testing, or continuous emission monitors,
F_i is the total heat input (hhv basis) of fuel (MMBtu) combusted in each unit during seven consecutive calendar days, and

i identifies each unit in the AECP.

9.5 AECP Requirements

9.5.1 The aggregated NOx emission factor (E_A) shall not exceed 90 percent of the aggregated emission limit (L_A). The owner of any unit in an AECP shall notify the APCO within 24 hours of any violation of this section.
$E_A <= 0.90 \times L_A$

9.5.2 Only units in the AECP which were operated during seven consecutive calendar days shall be included in the calculations of the aggregated NOx emission factor (L_A) and the aggregated NOx emission limit (E_A).

9.5.3 During each seven consecutive calendar days_of operation that the AECP is used, the operator shall calculate and record the aggregated NOx emission factor (L_A) and the aggregate NOx emission limit (E_A).

9.5.4 The operator shall submit a NOx emission factor for each unit that is included in the AECP. The established NOx emission factor of the unit shall be no less than the emission factor of the unit from the most recent source test conducted pursuant to Section 6.3 and approved by the APCO. The operator shall not operate any AECP unit in such a manner that the NOx emissions exceed the established NOx emission factor of the unit.

9.5.5 The operator shall submit the AECP, for approval by the APCO, by June 1, 2004 or at least 24 months before compliance with the applicable emission limits in Section 5.1 is required pursuant to the

Section 7.1, whichever is later. The AECP shall be submitted with an application for an Authority to Construct pursuant to complying with Section 7.1 as applicable. The operator shall obtain a written approval of the AECP from the APCO prior to implementation.

9.6 AECP Administrative Requirements

9.6.1 The AECP shall:

9.6.1.1 Contain all data, records, and other information necessary to determine eligibility of the units for alternative emission control, including but not limited to:

9.6.1.1.1 A list of units subject to alternative emission control,
9.6.1.1.2 Daily average and maximum hours of utilization for each unit,
9.6.1.1.3 Rated heat input of each unit, and
9.6.1.1.4 Fuel type for each unit.

9.6.1.2 Present the methodology for recordkeeping and reporting required by Sections 9.6.4 and 9.6.5.

9.6.1.3 Specify which NOx limit, either Standard Option or Enhanced Option, will be satisfied by the units under the AECP.

9.6.1.4 Demonstrate that the aggregated emission factor will meet the requirements of Section 9.5.

9.6.1.5 Demonstrate that the schedule for achieving AECP NOx emission levels is at least as expeditious as the schedule if applicable units were to comply individually with the applicable emission levels in Section 5.1 and the increments of progress in Section 7.0.

9.6.2 Revision of AECP

Owners shall demonstrate APCO approval of the AECP prior to applying for a modification to said AECP.

9.6.3 AECP Recordkeeping

In addition to the records kept pursuant to Section 6.1, the operator shall maintain records, on a daily basis, of the parameters needed to demonstrate compliance with the applicable NOx emission limits when operating under the AECP. The records shall be retained for at least five years and shall be

made available to the APCO upon request. The records shall include, but are not limited to, the following:

9.6.3.1 For each unit included in the AECP the owner shall maintain the following records for each day:

9.6.3.1.1 fuel type and amount used for each unit (F_i),
9.6.3.1.2 the actual emission factor for each unit (E_i),
9.6.3.1.3 the total emissions for all units ($\Sigma E_i F_i$),
9.6.3.1.4 the aggregated emission factor (E_A),
9.6.3.1.5 the aggregated emission factor limit (L_A), and
9.6.3.1.6 any other parameters needed to demonstrate daily compliance with the applicable NOx emissions when operating the units under the AECP.

9.6.4 Reporting and Annual Updates

Notifications of any violation pursuant to Section 9.5 shall include:
9.6.4.1 name and location of facility,
9.6.4.2 list of applicable units,
9.6.4.3 cause and expected duration of exceedance,
9.6.4.4 the amount of excess emissions, and
9.6.4.5 proposed corrective actions and schedule.

9.7 Compliance Schedule

The AECP schedule for achieving reduced NOx emission levels shall be at least as expeditious as the schedule if applicable units were to comply individually with the emissions limits specified in Sections 5.1.1 and 5.1.2 and the applicable compliance schedule required by Section 7.0.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4307 - BOILERS, STEAM GENERATORS, AND PROCESS HEATERS – 2.0 MMBtu/hr to 5.0 MMBtu/hr

(Adopted December 15, 2005) (Amended April 20, 2006)

1.0 Purpose

The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) from boilers, steam generators, and process heaters.

2.0 Applicability

This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input of 2.0 million Btu per hour (MMBtu/hr) up to and including 5.0 MMBtu/hr.

3.0 Definitions

3.1 Air Pollution Control Officer (APCO): as defined in Rule 1020 (Definitions).

3.2 Air Resources Board (ARB): as defined in Rule 1020 (Definitions).

3.3 Annual Heat Input: the actual, total heat input of fuels burned by a unit in a calendar year, as determined from the higher heating value and cumulative annual usage of each fuel.

3.4 Boiler or Steam Generator: any external combustion equipment fired with any fuel used to produce hot water or steam.

3.5 British Thermal Unit (Btu): the amount of heat required to raise the temperature of one pound of water from 59°F to 60°F at one atmosphere.

3.6 Certified Unit or Certified Retrofit Control Technology: any unit, any control technology, or any burner and ancillary controls or blowers, that has been demonstrated to comply with the emissions limits of this rule and which has been approved by the APCO pursuant to Section 9.0 of this rule.

3.7 Dryer: any unit in which material is dried in direct contact with the products of combustion.

3.8 Gaseous Fuel: any fuel which is a gas at Standard Conditions.

3.9 Heat Input: the heat (hhv basis) released due to fuel combustion in a unit, not including the sensible heat of incoming combustion air and fuel.

3.10 Higher Heating Value (hhv): the total heat liberated per mass of fuel burned (Btu per pound), when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.

3.11 Humidifier: a device or system that uses an air stream heated by a direct contact combustion process in combination with a water spray to produce warm air of high humidity in order to maintain or increase the moisture content of the material being processed or conveyed by the air stream.

3.12 Liquid Fuel: any fuel which is a liquid at Standard Conditions.

3.13 NOx Emissions: the sum of oxides of nitrogen expressed as NO_2 in the flue gas.

3.14 NOx Exhaust Control: a device or technique used to treat a unit's exhaust combustion gas to reduce NOx emissions. Such a device or technique includes, but is not limited to, selective catalytic reduction or nonselective catalytic reduction.

3.15 Parts Per Million by Volume (ppmv): as defined in Rule 1020 (Definitions).

3.16 Process Heater: any combustion equipment fired with liquid and/or gaseous fuel and which transfers heat from combustion gases to water or process streams. This definition excludes: kilns or ovens used for drying, baking, cooking, calcining, or vitrifying; and unfired waste heat recovery heaters used to recover sensible heat from the exhaust of combustion equipment.

3.17 Qualified Technician: a stationary source employee or any personnel contracted by a stationary source operator who has a documented training and a demonstrated experience performing tune-ups on a unit to the satisfaction of the APCO. The documentation of tune-up training and experience shall be made available to the APCO upon request.

3.18 Rated Heat Input (million Btu per hour): the heat input capacity specified on the nameplate of the unit. If the unit has been physically modified such that its maximum heat input differs from what is specified on the nameplate, the modified maximum heat input shall be considered as the rated heat input and made enforceable by Permit to Operate.

3.19 Re-ignition: the relighting of a unit after an unscheduled and unavoidable interruption or shut off of the fuel flow or electrical power, for a period of less than 30 minutes, due to reasons outside the control of the operator.

3.20 School: any public or private school used for the purpose of education and instruction of school pupils in Kindergarten through Grade 12, but does not include any private school in which education and instruction are primarily conducted in private homes.

3.21 Shutdown: The period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to a cold or ambient temperature as the fuel supply is turned off. A unit is considered in shutdown status when the fuel supply to the unit is turned off for a continuous period of at least 30 minutes.

3.22 Solid Fuel: any fuel which is a solid at Standard Conditions.

3.23 Standard Conditions: as defined in Rule 1020 (Definitions).

3.24 Start-up: the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure.

3.25 Stationary Source: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).

3.26 Unit: any boiler, steam generator or process heater as defined in this rule.

3.27 US EPA: United States Environmental Protection Agency

4.0 Exemptions

This rule shall not apply to:

4.1 Solid fuel fired units.

4.2 Dryers and glass melting furnaces.

4.3 Kilns, humidifiers, and smelters where the products of combustion come into direct contact with the material to be heated.

4.4 Unfired or fired waste heat recovery boilers that are used to recover or augment heat from the exhaust of combustion turbines or internal combustion engines.

4.5 Units used at a school.

5.0 Requirements

All ppmv emission limits specified in this section are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen in accordance with Section 8.1.

5.1 NOx and CO Emission Limits

Except for units subject to Section 5.2, no unit shall be operated unless it is certified, according to Section 9.0, to comply with the emission limits specified in Table 1.

Table 1 NOx and CO limits

Type of Unit	NOx Limit	CO Limit (ppmv)
Gaseous Fuel-Fired Unit	30 ppmv or 0.036 lb/MMBtu	400
Liquid Fuel-Fired Unit	40 ppmv or 0.052 lb/MMBtu	400

5.2 For each existing natural draft unit operated in an oilfield or refinery; each glycol reboiler; or each unit limited to no more than 5.0 billion Btu per calendar year heat input pursuant to a Permit to Operate or Permit-Exempt Equipment Registration, the operator shall comply with Section 5.4.2, Section 7.3, Section 7.4, and either Section 5.2.1, 5.2.2, or 5.2.3.

5.2.1 Tune the unit at least twice per calendar year, (from four to eight months apart) using a qualified technician in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown; or

5.2.2 Operate the unit in a manner that maintains exhaust oxygen concentrations at less than or equal to 3.00 percent by volume on a dry basis; or

5.2.3 Certify the unit according to Section 9.0 to comply with the applicable emission requirements of Section 5.1.

5.3 The applicable emission limits of Sections 5.1 and 5.2.2 shall not apply during start-up or shutdown provided an operator complies with the requirements specified below.

5.3.1 For units not equipped with a NOx exhaust control, the duration of each start-up and each shut down shall not exceed one hour, except as provided in Section 5.3.4.

5.3.2 For units equipped with a NOx exhaust control, the duration of each start-up and each shut down shall not exceed two hours, except as provided in Section 5.3.4.

5.3.3 The emission control system shall be in operation and emissions shall be minimized insofar as technologically feasible during start-up or shutdown.

5.3.4 Notwithstanding the requirements of Section 5.3.1 or Section 5.3.2, the APCO, ARB, and US EPA may approve a longer start-up or shutdown duration, if an operator submits an application for a Permit to Operate or Permit-Exempt Equipment Registration which provides a justification for the requested additional duration.

5.3.4.1 The maximum allowable duration of start-up or shutdown will be determined by the APCO, ARB, and US EPA.

5.3.4.2 At a minimum, a justification for increased start-up or shutdown duration shall include the following:

5.3.4.2.1 A clear identification of the control technologies or strategies to be utilized; and

5.3.4.2.2 A description of what physical conditions prevail during start-up or shutdown periods that prevent the controls from being effective; and

5.3.4.2.3 A reasonably precise estimate as to when the physical conditions will have reached a state that allows for the effective control of emissions; and

5.3.4.2.4 A detailed list of activities to be performed during start-up or shutdown and a reasonable explanation for the length of time needed to complete each activity; and

5.3.4.2.5 A description of the material process flow rates and system operating parameters, etc., the operator plans to evaluate during the process optimization; and an explanation of how the activities and process flow affect the operation of the emissions control equipment; and

5.3.4.2.6 Basis for the requested additional duration of start-up or shutdown.

5.3.5 Permit to Operate (PTO) changes solely to include start-up or shutdown conditions may be exempt from Best Available Control Technology (BACT) and emission offset requirements if the PTO changes meet the requirements of Rule 2201 (New or Modified Stationary Source Review Rule) Section 4.2 (BACT Exemptions) and Rule 2201 Section 4.6 (Offset Exemptions).

5.4 Monitoring Provisions

5.4.1 For units subject to the emission limits of Section 5.1 the operator shall;

5.4.1.1 Monitor, at least once a month, the operational characteristics recommended by the manufacturer and approved by the APCO; and

5.4.1.2 Tune the unit at least twice per calendar year, (from four to eight months apart) using a qualified technician in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown. In lieu of tuning the unit, operators shall monitor the emissions with a portable NOx analyzer and adjust the unit's operating parameters accordingly to assure compliance with the emission limits of this rule.

5.4.2 The operator of any unit limited to no more than 5.0 billion Btu per calendar year heat input shall install and maintain an operational non-resettable, totalizing mass or volumetric flow meter in each fuel line to each unit. Volumetric flow measurements shall be periodically compensated for temperature and pressure. A master meter, which measures fuel to all units in a group of similar units, may satisfy these requirements if approved by the APCO in writing. The cumulative annual fuel usage may be verified from utility service meters, purchase or tank fill records, or other acceptable methods, as approved by the APCO.

5.5 Compliance Determination

5.5.1 For the purposes of certification, the operator of any unit shall have the option of demonstrating compliance with either the applicable heat input emission limits (lb/MMBtu) or the concentration emission limits (ppmv) specified in Section 5.1. The emission limits selected to demonstrate compliance shall be specified in the Permit to Operate or Permit-Exempt Equipment Registration. The emission limit selected in Section 5.1 shall also be specified in the source test proposal pursuant to Rule 1081 (Source Sampling).

5.5.2 All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate or Permit-Exempt Equipment Registration.

5.5.3 No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0.

5.5.4 Notwithstanding the requirements of Section 5.5.3, for units with a cyclical firing period that routinely interrupts fuel flow as part of its normal operation, source testing may commence sooner than specified in Section 5.5.3 and continue through its normal cyclical firing period.

5.5.5 For emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit.

6.0 Administrative Requirements

6.1 Recordkeeping

The records required by Sections 6.1.1 and 6.1.2 shall be maintained, retained for five calendar years, and shall be made available to the APCO, ARB, and US EPA upon request. Failure to maintain records or information contained in the records that demonstrates noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

6.1.1 The operator of any unit limited to no more than 5.0 billion Btu per calendar year heat input shall record the amount of fuel use, at least once a month for each unit, or for a group of units as specified in Section 5.4.2. On and after the compliance schedule specified in Section 7.0 Table 2, any unit that exceeds the annual heat input limit specified in Section 5.2, shall be brought into full compliance with this rule as specified in Section 7.3.

6.1.2 The operator of any unit subject to the applicable requirements of Sections 5.2.1, 5.4.1.1, and 5.4.1.2 shall maintain records to verify that tune-up and monitoring of the operational characteristics of the unit have been performed.

6.2 Test Methods

The following test methods shall be used unless otherwise approved by the APCO, ARB, and US EPA.

6.2.1 Oxides of nitrogen (ppmv) – US EPA Method 7E, or ARB Method 100.

6.2.2 Carbon monoxide (ppmv) – US EPA Method 10, or ARB Method 100.

6.2.3 Stack gas oxygen – US EPA Method 3 or 3A, or ARB Method 100.

6.2.4 NOx Emission Rate (Heat Input Basis) – US EPA Method 19.

6.2.5 Stack gas velocities – US EPA Method 2.

6.2.6 Stack gas moisture content – US EPA Method 4.

6.3 Compliance Demonstration

6.3.1 The operator shall conduct an initial source test at the time of installation and/or modification for each non-certified unit or each non-certified retrofit control technology to demonstrate compliance with the applicable certification emission limits in Section 5.1. Units demonstrating compliance are eligible for certification under the provisions of Section 9.0.

6.3.2 Source testing of a certified unit or certified retrofit control technology, as defined in Section 3.0, is not required provided the operator complies with the requirements of Sections 6.3.2.1 and 6.3.2.2.

6.3.2.1 Operate the unit within range of operating parameters specified in the APCO-approved certification document.

6.3.2.2 Operate and maintain the unit in accordance with the manufacturer's instructions and conditions specified in the APCO-approved certification document.

6.3.3 A unit or retrofit control technology that loses its certification status shall be source tested within 60 days after the date the certification status is lost to demonstrate compliance with the emission limits of this rule. The manufacturer or operator may request re-certification of a unit or retrofit control technology that lost its exemption status provided the provisions of Section 9.0 are met.

6.4 Equipment Registration Requirement

Except for units that require a Permit to Operate pursuant to Rule 2020 (Exemptions), the operator shall register with the District any unit subject to this rule no later than the applicable date shown in Table 2, in accordance with Rule 2250 (Permit-Exempt Equipment Registration).

7.0 Compliance Schedule

7.1 An operator with multiple units at a stationary source shall comply with this rule in accordance with the schedule specified in Table 2. An operator with only one unit at a stationary source shall comply with the schedule specified in Table 2, Group 2.

TABLE 2 - Compliance Schedule

Quantity of Units to be in Compliance at a Stationary Source	Authority to Construct	Permit-Exempt Equipment Registration	Full Compliance
Group 1: 50% or more of the total number of units subject to this rule on July 1, 2008	January 1, 2008	April 1, 2008	July 1, 2008
Group 2: 100% of the total number of units subject to this rule on July 1, 2009	January 1, 2009	April 1, 2009	July 1, 2009

Units are considered to be subject to this rule if the rule is applicable to the units pursuant to Section 2.0 and the units are not exempt pursuant to Section 4.0.

7.2 As shown in Table 2, the column labeled:

7.2.1 "Authority to Construct" identifies the date by which the operator shall submit an Application for Authority to Construct for each unit subject to this rule and which is required to have a Permit to Operate (PTO) pursuant to Rule 2020 (Exemptions).

7.2.2 "Permit-Exempt Equipment Registration" identifies the date by which the owner or operator shall submit a complete Permit-Exempt Equipment Registration application for each unit subject to the registration requirements of Rule 2250 (Permit-Exempt Equipment Registration).

7.2.3 "Full Compliance" identifies the date by which the owner shall demonstrate that each unit is in compliance with this rule regardless of whether the unit requires a Permit to Operate or a Permit-Exempt Equipment Registration.

7.3 Any unit that becomes subject to the emission limits of this rule as a result of exceeding the annual heat input limit specified in Section 5.2, shall be in compliance with this rule on and after the date the annual heat input limit is exceeded.

7.4 When an existing unit, that is subject to Section 5.2, is replaced, the replacement unit shall be certified, according to Section 9.0, to comply with the emission limits specified in Section 5.1, on and after the date of initial operation.

8.0 Calculations

8.1 All ppmv emission limits specified in Section 5.1 are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen as follows:

$$[ppm\,NOx]_{corrected} = \frac{17.95\%}{20.95\% - [\%O2]_{measured}}\ x\ [ppm\,NOx]_{measured}$$

$$[ppm\,CO]_{corrected} = \frac{17.95\%}{20.95\% - [\%O2]_{measured}}\ x\ [ppm\,CO]_{measured}$$

8.2 All pounds per million Btu NOx emission rates shall be calculated as pounds of nitrogen dioxide per million Btu of heat input (hhv).

9.0 Equipment Certification Requirements

9.1 To be considered for APCO certification, the manufacturer or operator shall comply with the following requirements:

9.1.1 Certification shall be based upon the emission source testing results of a specific unit, or a randomly selected unit of each model, or retrofit control technology.

9.1.2 A source testing protocol shall be submitted in accordance with the provisions of Rule 1081 (Source Sampling) for approval by the APCO prior to conducting the source test. The source testing protocol approved by the APCO shall be strictly adhered to during certification source testing.

9.1.3 Source testing shall be conducted over the range of operating parameters for which the unit(s) or retrofit control technology will be operated.

9.1.4 The source testing results shall demonstrate compliance with the emission limits of this rule for each model of unit(s), or retrofit control technology to be certified.

9.1.5 The source testing procedure and reports shall be prepared by an ARB-approved independent testing laboratory, and shall contain all the elements identified in the APCO-approved source testing protocol.

9.1.6 Source testing shall be conducted no more than 90 days prior to the date of submission of request for certification by the APCO.

9.2 The manufacturer or operator requesting certification shall submit to the APCO the following information:

9.2.1 Copies of the source testing results conducted pursuant to the requirements of Section 9.1, and other pertinent technical data to demonstrate compliance with the emission limits of this rule.

9.2.2 The applicant shall sign and date the statement attesting to the accuracy of all information in the statement.

9.2.3 Name and address of the unit manufacturer or operator, brand name of the unit or retrofit control technology, model number, rated heat input as it appears in the unit nameplate, and description of model of unit(s), or retrofit control technology being certified.

9.3 The APCO will only approve an application for certification to the extent that the requirements of Sections 9.1 through 9.2 are met and the source testing results demonstrate that the emission limits of this rule are met.

9.4 The APCO-approved certification is valid only for the range of operating parameters for which certification is issued.

9.5 A certified unit or a certified retrofit control technology that is operated outside the APCO-certified range of operating parameters shall lose its certification status. A unit or retrofit control technology that loses its certification status shall comply with the requirements of Section 6.3.3.

9.6 The APCO shall publish a list of certified units or certified retrofit control technology after the certification process is completed.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4308 BOILERS, STEAM GENERATORS, AND PROCESS HEATERS - 0.075 MMBtu/hr to 2.0 MMBtu/hr

(Adopted October 20, 2005)

1.0 Purpose

The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) from boilers, steam generators, process heaters and water heaters.

2.0 Applicability

This rule applies to any person who supplies, sells, offers for sale, installs, or solicits the installation of any new small boiler, steam generator, process heater or water heater with a rated heat input capacity greater than or equal to 75,000 British thermal units per hour and up to but not including 2,000,000 British thermal units per hour.

3.0 Definitions

3.1 APCO: the Air Pollution Control Officer of the San Joaquin Valley Unified Air Pollution Control District, or any person authorized to act on behalf of the APCO.

3.2 Boiler or Water Heater: any external combustion equipment fired with any liquid or gaseous fuel to produce hot water or steam.

3.3 British Thermal Unit (Btu): the amount of heat required to raise the temperature of one pound of water from 59° F to 60° F at one atmosphere.

3.4 District: as defined in Rule 1020 (Definitions).

3.5 Heat Output: the enthalpy of the working fluid output of the unit.

3.6 Higher Heating Value (hhv): the total heat liberated per mass of fuel burned (Btu per pound), when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.

3.7 Humidifier: a device or system that uses an air stream heated by a direct contact combustion process in combination with a water spray to produce warm air of high humidity in order to maintain or increase the moisture content of the material being processed or conveyed by the air stream.

3.8 Manufactured Home: as defined in 42 United States Code Section 5402 and California Health and Safety Code Section 18007.

3.9 NOx Emissions: the sum of oxides of nitrogen (NOx) in the flue gas, collectively expressed as nitrogen dioxide.

3.10 Process Heater: any combustion equipment fired on gaseous or liquid fuel, which transfers heat from combustion gases to water or process streams. Process heaters exclude kilns or ovens used for drying, baking, cooking, calcining, heat treating or vitrifying.

3.11 Unit: any boiler, process heater, or water heater as defined in this rule.

4.0 Exemptions

The provisions of this rule shall not apply to:

4.1 Units installed in manufactured homes and

4.2 Humidifiers, where the products of combustion come into direct contact with the material to be heated.

5.0 Requirements

5.1 A person shall not supply, sell, offer for sale, install or solicit the installation of any boiler, process heater or water heater unless it has certified emissions complying with Table 1.0:

Table 1.0

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~~Boiler/Heater Size~~ Heat Input Capacity (MMBtu/hr)	NOx Limit	CO Limit
Greater than or equal to 0.075 MMBtu/hr but less than or equal to 0.4 MMBtu/hr	0.093 lbs of NOx/MMBtu of heat output at 3% stack gas oxygen by volume on a dry basis.	Not Applicable.
Greater than 0.4 MMBtu/hr but less than 2.0 MMBtu/hr	0.036 lbs of NOx/MMBtu of heat input at 3% stack gas oxygen by volume on a dry basis.	400 ppm at 3% stack gas oxygen by volume on a dry basis.

6.0 Administrative Requirements

6.1 Emission Certification

6.1.1 Certified emissions levels shall be demonstrated by an emission certification approved under either of the following:

6 .1.1.1 The District's certification program as described in Section 6.2 of this rule.

6.1.1.2 The South Coast Air Quality Management District Certification List for Rule 1146.2.

6.1.1.3 Other emission certification programs approved by the EPA and APCO.

6.2 District Certification Program

6.2.1 For each model to be certified, the manufacturer shall obtain from an independent testing laboratory, a certification source test verifying compliance with the emission limits in Section 5.0. The results should be submitted with the compliance report information in Section 6.3.

6.2.2 Source tests shall be conducted on a randomly selected unit no more than 90 days prior to the date of proposed certification of the model by the District.

6.2.3 Tests shall be conducted and reports shall be prepared according to the "Nitrogen Oxides Emissions Compliance Testing for Natural Gas-Fired Water Heaters and Small Boilers," Protocol, South Coast Air Quality Management District, Source Testing and Engineering Branch, Applied Science and Technology.

6.2.4 District certification shall be valid for three years from the date of certification.

6.2.5 The District shall publish and maintain a list of certified emissions for the tested unit.

6.3 Compliance Report

6.3.1 The compliance report shall contain the following information:

6.3.1.1 General Information:

6.3.1.1.1 Name and address of manufacturer,

6.3.1.1.2 Brand name,

6.3.1.1.3 Model number, as it appears on the permanent nameplate, and

6.3.1.1.4 Description of the model being certified, including burner type and rated heat input capacity.

6.3.1.2 A report on the certification test specified in Section 6.2.3.

6.3.1.3 A signed and dated statement attesting, under penalty of perjury, to the accuracy of all statements and information in the compliance report.

6.4 Identification of Compliant Units

The manufacturer shall display the model number and the certification status, as determined in Section 6.1 and 6.2 of this rule, of an applicable unit on the permanent nameplate. If packaging obscures the permanent nameplate, the model number and certification status shall also appear on the packaging.

7.0 Compliance Schedule

On and after January 1, 2007, no person shall supply, sell, offer for sale, install or solicit the installation of a unit subject to this rule unless it meets the requirements of Section 5.1.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4309 - DRYERS, DEHYDRATORS, AND OVENS
(Adopted December 15, 2005)

1.0 Purpose

The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) from dryers, dehydrators, and ovens.

2.0 Applicability

This rule applies to any dryer, dehydrator, or oven that is fired on gaseous fuel, liquid fuel, or is fired on gaseous and liquid fuel sequentially, and the total rated heat input for the unit is 5.0 million British thermal units per hour (5.0 MMBtu/hr) or greater.

3.0 Definitions

3.1 APCO: as defined in Rule 1020 (Definitions).

3.2 ARB: California Air Resources Board.

3.3 Bake: to cook food in a unit with dry heat.

3.4 Btu: British thermal unit, the amount of heat required to raise the temperature of one pound of water from 59°F to 60°F at one atmosphere.

3.5 CEMS: continuous emission monitoring system.

3.6 CFR: the Code of Federal Regulations.

3.7 Charbroiler: as defined in Rule 4692 (Commercial Charbroiling).

3.8 CO: carbon monoxide.

3.9 Dehydrator: a device that drives free water from products like fruits, vegetables, and nuts, at an accelerated rate without damage to the product.

3.10 Dryer: a device in which material is dried or cured in direct contact with the products of combustion.

3.11 Fry: to cook food over direct heat in oil or fat.

3.12 Gaseous Fuel: a fuel that is a gas at standard conditions.

3.13 Heat Input: the heat, on an hhv basis, released due to fuel combustion in a unit, not including the sensible heat of incoming combustion air and fuel.

3.14 Higher Heating Value (hhv): the total heat liberated per mass of fuel burned, in Btu per pound, when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.

3.15 Liquid Fuel: a fuel that is a liquid at standard conditions.

3.16 MMBtu: one million (1,000,000) British thermal units.

3.17 Normal Business Hours: the time period Monday through Friday, 8:00 am to 5:00 pm.

3.18 NOx: the sum of oxides of nitrogen in the flue gas, expressed as nitrogen dioxide (NO_2).

3.19 Oven: a chamber in which material is dried or cured in direct contact with the products of combustion.

3.20 Oxygen Correction Factor: the factor used to adjust measured emission readings to an emission rate at a reference oxygen (O_2) level. For purposes of this rule:

3.20.1 For units operating at measured O_2 concentrations 19.0 percent by volume (19.0 vol% O_2) or less, emission concentrations shall be corrected to 19.0 vol% O_2 using the appropriate equation in Section 8.1.

3.20.2 For units operating at measured O_2 concentrations greater than 19.0 vol% O_2, the corrected NOx or CO concentration is equal to the measured NOx or CO concentration.

3.21 Parts Per Million by Volume (ppmv): as defined in Rule 1020 (Definitions).

3.22 PTO: Permit to Operate issued by the District.

3.23 Public Utilities Commission (PUC) Quality Natural Gas: a gas-containing fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet and no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet. PUC quality natural gas also means high methane gas (at least 80% methane by volume) as specified in PUC General Order 58-A.

3.24 PUC Quality Natural Gas Curtailment: a shortage in the supply of PUC quality natural gas, due solely to supply limitations or restrictions in distribution pipelines by the utility supplying the gas, and not due to the cost of natural gas.

3.25 Rated Heat Input: the heat input capacity specified on the nameplate of the unit. For the purposes of this rule, if the unit has been physically modified such that its maximum heat input differs from what is specified on the nameplate, the modified maximum heat input shall be considered as the rated heat input and made enforceable by PTO.

3.26 Re-ignition: the relighting of a unit after an unscheduled and unavoidable interruption or shut off of the fuel flow or electrical power, for a period of less than 30 minutes, due to reasons outside the control of the operator.

3.27 Shutdown: the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off.

3.28 Solid Fuel: a fuel that is a solid at standard conditions.

3.29 Standard Conditions: as defined in Rule 1020 (Definitions).

3.30 Start-up: the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation.

3.31 Stationary Source: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).

3.32 US EPA: the United States Environmental Protection Agency.

3.33 Unit: a dryer, dehydrator, or oven, or any combination of such devices, with one or more burners and one or more exhaust stacks, that are collectively operated as the source(s) of heat to dry or cure a product. Associated VOC control systems, such as thermal oxidizers or afterburners, are not considered part of the unit for purposes of this rule.

4.0 Exemptions

4.1 The requirements of this rule shall not apply to the following:

4.1.1 Column-type or tower dryers used to dry grains, or tree nuts. This exemption does not apply to tunnel dryers, belt dryers, or tray dryers.

4.1.2 Units used to pre-condition onions or garlic prior to dehydration.

4.1.3 Smokehouses or units used for roasting.

4.1.4 Units used to bake or fry food for human consumption.

4.1.5 Charbroilers.

4.1.6 Units used to dry lint cotton or cotton at cotton gins.

4.1.7 Units with all of the following characteristics:

4.1.7.1 No stack for the exhaust gas, and

4.1.7.2 One or more sides open to the atmosphere.

4.2 The requirements of this rule shall not apply to units subject to any of the following rules:

4.2.1 Rule 4305 (Boilers, Steam Generators, and Process Heaters – Phase 2)

4.2.2 Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3)

4.2.3 Rule 4307 (Small Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr)

4.2.4 Rule 4351 (Boilers, Steam Generators, and Process Heaters – Phase 1)

4.3 The requirements of Section 5.1 and Section 5.2 shall not apply to a unit when burning any fuel other than PUC quality natural gas during PUC quality natural gas curtailment provided all of the following conditions are met:

4.3.1 Fuels other than PUC quality natural gas are burned no more than 168 cumulative hours in a calendar year plus 48 hours per calendar year for equipment testing, as limited by PTO.

4.3.2 NOx emission shall not exceed 30 ppmv referenced at dry stack conditions and adjusted using the oxygen correction factor as defined in Section 3.0 or 0.215 lb/MMBtu. Demonstration of compliance with this limit shall be made by source testing, CEMS, an APCO-approved Alternate Monitoring System, or an APCO-approved portable NOx analyzer.

5.0 Requirements

All ppmv emission limits specified in this section are referenced at dry stack gas conditions and adjusted using the oxygen correction factor as defined in Section 3.0.

5.1 Dehydrators shall be fired exclusively on PUC quality natural gas, except during periods of PUC quality natural gas curtailment.

5.1.1 All dehydrators shall be operated and maintained according to manufacturer's specifications or APCO-approved alternative procedures.

5.1.2 Operation and maintenance records and manufacturer's specifications/APCO-approved alternative procedures shall be maintained in accordance with Section 6.1.3.

5.1.3 During PUC quality natural gas curtailment, the dehydrator shall be in compliance with the provisions of Section 4.3.

5.2 For any unit subject to this rule, except dehydrators, NOx emissions and CO emissions shall not exceed the limits specified in Table 1 on and after the full compliance schedules specified in Section 7.1, Table 2 compliance schedule, or Section 7.3, as appropriate.

Table 1 NOx and CO Limits (Referenced at dry stack conditions and adjusted using the oxygen correction factor as defined in Section 3.0)

Process Description	NOx Limit (in ppmv)		CO Limit (in ppmv)	
	Gaseous Fuel Fired	Liquid Fuel Fired	Gaseous Fuel Fired	Liquid Fuel Fired
Asphalt/Concrete Plants	4.3	12.0	42	64
Milk, Cheese, and Dairy Processing < 20 MMBtu/hr	3.5	3.5	42	42
Milk, Cheese, and Dairy Processing ≥ 20 MMBtu/hr	5.3	5.3	42	42
Other processes not described above	4.3	4.3	42	42

5.3 Start-up and Shutdown Provisions

The applicable emission limits in Section 5.2 shall not apply during start-up or shutdown provided an operator complies with the requirements specified below.

5.3.1 For units not equipped with a NOx exhaust control system, the duration of each start-up and each shutdown shall not exceed one hour, except as provided in Section 5.3.3.

5.3.2 For units equipped with a NOx exhaust control system, units shall meet both of the following requirements:

5.3.2.1 The NOx exhaust control system shall be in operation and emissions shall be minimized as much as technologically feasible during start-up or shutdown.

5.3.2.2 The duration of each start-up and each shutdown shall not exceed two hours, except as provided in Section 5.3.3.

5.3.3 Notwithstanding the requirements of Section 5.3.1 or Section 5.3.2, the APCO, ARB, and US EPA may approve a longer start-up or shutdown duration, if an operator submits an application for a PTO condition which provides a justification for the requested additional duration.

5.3.3.1 The maximum allowable duration of start-up or shutdown will be determined by the APCO, ARB, and US EPA.

5.3.3.2 At a minimum, a justification for increased start-up or shutdown duration shall include the following:

5.3.3.2.1 Clear identification of the control technologies or strategies to be utilized; and

5.3.3.2.2 Description of what physical conditions prevail during start-up or shutdown periods that prevent the controls from being effective; and

5.3.3.2.3 Reasonably precise estimate as to when the physical conditions will have reached a state that allows for the effective control of emissions; and

5.3.3.2.4 Detailed list of activities to be performed during start-up or shutdown and a reasonable explanation for the length of time needed to complete each activity; and

5.3.3.2.5 Description of the material process flow rates and system operating parameters the operator plans to evaluate during the process optimization and an explanation of how the activities and process flow affect the operation of the emissions control equipment; and

5.3.3.2.6 Basis for the requested additional duration of start-up or shutdown.

5.3.4 PTO changes solely to include start-up or shutdown conditions may be exempt from the Best Available Control Technology (BACT) and emission offset requirements if the PTO change meets the requirements of Rule 2201 (New and Modified Stationary Source Review Rule) Section 4.2 (BACT Exemptions) and Rule 2201 Section 4.6 (Emission Offset Exemptions).

5.4 Monitoring Requirements

5.4.1 Except for dehydrators, the operator of any unit subject to the applicable emission limits in Sections 4.3.2, or 5.2 shall monitor emissions using one of the techniques specified in Sections 5.4.1.1 or 5.4.1.2.

5.4.1.1 Install and maintain an APCO-approved CEMS for NOx, and oxygen that meets the requirements of Sections 5.4.1.1.1 through 5.4.1.1.6.

5.4.1.1.1 40 CFR Part 51, and

5.4.1.1.2 40 CFR Parts 60.7 and 60.13 (except subsection h), and

5.4.1.1.3 40 CFR Part 60 Appendix B (Performance Specifications), and

5.4.1.1.4 40 CFR Part 60 Appendix F (Quality Assurance Procedures), and

5.4.1.1.5 The applicable provisions of District Rule 1080 (Stack Monitoring).

5.4.1.1.6 The APCO shall only approve CEMS that meets the requirements of Sections 5.4.1.1.1 through 5.4.1.1.5 of this rule.

5.4.1.2 Install and maintain an alternate emission monitoring method that meets the requirements of Sections 5.4.1.2.1 through 5.4.1.2.3 of this rule.

5.4.1.2.1 The APCO shall not approve an alternative monitoring system unless it is documented that continued operation within ranges of specified emissions-related performance indicators or operational characteristics provides a reasonable assurance of compliance with applicable emission limits.

5.4.1.2.2 The approved alternate emission monitoring system shall monitor operational characteristics necessary to assure compliance with the emission limit. Operational characteristics shall be one or more of the following:

5.4.1.2.2.1 Periodic NOx exhaust emission concentrations,

5.4.1.2.2.2 Periodic exhaust oxygen concentration,

5.4.1.2.2.3 Flow rate of reducing agent added to exhaust,

5.4.1.2.2.4 Catalyst inlet and exhaust temperature,

5.4.1.2.2.5 Catalyst inlet and exhaust oxygen concentration,

5.4.1.2.2.6 Periodic flue gas recirculation rate,

5.4.1.2.2.7 Other surrogate operating parameter(s) that demonstrate compliance with the emission limit.

5.4.1.2.3 The operator shall source test over the proposed range of surrogate operating parameter(s) to demonstrate compliance with the applicable emission limits.

5.4.2 Operators of a dehydrator shall maintain records that demonstrate, to the satisfaction of the APCO, ARB, and US EPA that the dehydrator is:

5.4.2.1 Fired exclusively on PUC quality natural gas, except during PUC quality natural gas curtailment, and

5.4.2.2 Properly operated and maintained according to manufacturer's specifications or APCO-approved alternative procedures.

5.4.3 Operators shall maintain records of emissions and emissions monitoring systems pursuant to Section 6.1.

5.5 Compliance Determination

5.5.1 All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the PTO.

5.5.2 Except for as provided in Section 5.5.3, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0.

5.5.3 Notwithstanding the requirements of Section 5.5.2, the APCO, ARB, and US EPA may approve a longer or shorter period before compliance determination, if an operator submits an application for a PTO condition which provides a justification for the requested duration.

5.5.4 All CEMS emissions measurements shall be averaged over a period of 15 consecutive minutes to demonstrate compliance with the applicable emission limits of this rule. Any 15-consecutive-minute block average CEMS measurement exceeding the applicable emission limits of this rule shall constitute a violation of this rule.

5.5.5 For emissions monitoring pursuant to Section 5.4.1.2.2.1, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15-consecutive-minute period.

5.5.6 For emissions source testing performed pursuant to Section 6.3.1 to determine compliance with an applicable emission limit of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two of the three runs individually demonstrate emissions above the applicable limit, the test cannot be used to demonstrate compliance for the unit, even if the averaged emissions of all three test runs is less than the applicable limit.

6.0 Administrative Requirements

6.1 Recordkeeping

6.1.1 For operators using CEMS to monitor emissions, the following records shall be kept on a daily basis:

6.1.1.1 Total hours of operation.

6.1.1.2 Type and quantity of fuel used during operations.

6.1.1.3 NOx emissions as tested.

6.1.1.4 Stack gas oxygen content.

6.1.1.5 NOx emissions corrected to dry stack conditions and adjusted using the oxygen correction factor shall be reported in ppmv.

6.1.1.6 CO emissions corrected to dry stack conditions and adjusted using the oxygen correction factor shall be reported in ppmv.

6.1.2 For operators using an alternate emission monitoring system, the following records shall be kept on a periodic basis:

6.1.2.1 Total hours of operation.

6.1.2.2 Type and quantity of fuel used during operations.

6.1.2.3 Measurement for each surrogate parameter.

6.1.2.4 Range of allowed values for each surrogate parameter.

6.1.2.5 The period for recordkeeping shall be specified in the PTO conditions.

6.1.3 The operator of a dehydrator shall maintain the following records:

6.1.3.1 Records that show the dehydrator is fired exclusively on PUC quality natural gas, except during PUC quality natural gas curtailment.

6.1.3.2 Operation and maintenance records that demonstrate operation of the dehydrator within the limits of the manufacturer's specification and maintenance according to manufacturer's recommendation or APCO-approved alternative procedures.

6.1.3.2.1 Operation records shall be maintained on a daily basis when the dehydrator is operating on that day.

6.1.3.2.2 The operator shall keep maintenance records that verify that maintenance was performed in accordance with manufacturer's specifications or APCO-approved alternative procedures.

6.1.3.3 A copy of the manufacturer's operation specifications and maintenance instruction manual or APCO-approved alternative procedures shall be maintained on-site during normal business hours.

6.1.3.4 If the manufacturer's operation specifications or maintenance instruction manual are not available, the operator of a dehydrator shall submit alternative operation or maintenance procedures for approval by the APCO and US EPA by July 1, 2006.

6.1.4 The operator of a unit subject to Section 5.2 and performing start-up or shutdown of that unit shall keep records of the duration of each start-up and each shutdown.

6.1.5 The operator of any unit subject to this rule and operated under the exemption of Section 4.3 shall:

6.1.5.1 Monitor and record, for each unit, the cumulative annual hours of operation on each fuel other than PUC quality natural gas during periods of natural gas curtailment and equipment testing.

6.1.5.2 The NOx emissions for each unit that is operated during periods of PUC quality natural gas curtailment shall be recorded, corrected to dry stack conditions and adjusted using the oxygen correction factor. NOx emissions shall be reported in ppmv.

6.1.5.3 Failure to maintain records required by Section 6.1.5.1 and Section 6.1.5.2 or information contained in the records that demonstrates noncompliance with the conditions for exemption under Section 4.3 will result in the loss of exempt status for the unit during PUC quality natural gas curtailment.

6.1.6 The records and manufacturer's specifications required by Sections 6.1.1 through 6.1.5 shall meet all of the following requirements.

6.1.6.1 The records shall be maintained for five (5) calendar years,

6.1.6.2 The records shall be made available on-site during normal business hours, and

6.1.6.3 The records shall be submitted to the APCO upon request.

6.1.7 Failure to maintain records or information contained in the records that demonstrates noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

6.2 Test Methods

The following test methods shall be used unless otherwise approved by the APCO and US EPA.

6.2.1 Fuel hhv shall be certified by third party fuel supplier or determined by:

6.2.1.1 ASTM D 240-87 or D 2382-88 for liquid hydrocarbon fuels;

6.2.1.2 ASTM D 1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels.

6.2.2 Oxides of nitrogen (ppmv) – US EPA Method 7E, or ARB Method 100.

6.2.3 Carbon monoxide (ppmv) – US EPA Method 10, or ARB Method 100.

6.2.4 Stack gas oxygen – US EPA Method 3 or 3A, or ARB Method 100.

6.2.5 Stack gas velocities – US EPA Method 2.

6.2.6 Stack gas moisture content – US EPA Method 4.

6.3 Compliance Demonstration

The operator with one or more units subject to this rule shall comply with the following requirements:

6.3.1 For purposes of demonstrating compliance, the operators of a dehydrator shall demonstrate that the unit meets the requirements of Section 5.4.2. No other requirement of Sections 6.3.2 through 6.3.9 shall apply for compliance determination of dehydrators.

6.3.2 Each unit subject to the requirements in Sections 4.3, or 5.2 shall be initially source tested to determine compliance with the applicable emission limits not later than the applicable full compliance schedule specified in Section 7.0. Thereafter, each unit subject to Section 5.2 emission limits shall be source tested at least once every 24 months. Units subject to Section 5.2 and operating less than 50 days per calendar year shall follow the source test frequency prescribed in Section 6.3.3.

6.3.3 For purposes of source testing, operators of a unit subject to Section 5.2 that operates less than 50 days per calendar year shall be initially source tested to determine compliance with the applicable emission limits not later than the applicable full compliance schedule specified in Section 7.0. Thereafter, the unit shall be tested at least once every 36 months.

6.3.4 Each exhaust stack of a unit subject to the requirements in Sections 4.3 or 5.2 shall be source-tested to demonstrate compliance with the applicable emission limits.

6.3.5 The APCO shall be notified according to the provisions of Rule 1081 (Source Sampling).

6.3.6 Emissions source testing shall be conducted with the unit operating either at conditions representative of normal operations or conditions specified in the PTO.

6.3.7 All test results for NOx and CO shall be reported in ppmv, corrected to dry stack conditions and adjusted using the oxygen correction factor.

6.3.8 For the purpose of determining compliance with an applicable emission limit, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply.

6.3.9 If two of the three runs specified by Section 6.3.8 individually demonstrate emissions above the applicable limit, the test cannot be used to demonstrate compliance for the unit, even if the averaged emissions of all three runs is less than the applicable limit.

6.4 In addition to the provisions of Section 6.3, asphalt/concrete plants shall choose one of the following options for source testing:

6.4.1 Test the unit using locally mined aggregate in the dryer. If the source test using locally mined aggregate fails, the operator may re-run the source test using aggregate from a different source.

6.4.2 Test the unit using aggregate from a source different from the source used during normal operations.

6.4.3 Test the unit using a heat-absorbing material in the dryer, but no aggregate.

6.4.4 Test the unit with no material in the dryer.

7.0 Compliance Schedule

7.1 Group 1 and Group 2 units, as defined in Sections 7.1.1 through 7.1.3, shall be in compliance with applicable requirements of this rule according to the schedule listed in Table 2, except for asphalt/concrete plants and dehydrators. Asphalt/concrete plants shall follow the compliance schedule outlined in Section 7.3. Dehydrators shall follow the compliance schedule outlined in Section 7.4.

7.1.1 Operators with a single unit that becomes subject to this rule on December 15, 2005 shall comply with the compliance schedule for Table 2 Group 2 units.

7.1.2 For operators of multiple units that become subject to this rule on December 15, 2005, Table 2 Group 1 units are those units selected by the operator to be to meet the compliance schedule soonest. The number of units in this group must be at least 50.0% of the total number of units that subject to this rule, rounded up to the next highest integer, where required.

7.1.3 For operators of multiple units that become subject to this rule on December 15, 2005, Table 2 Group 2 units are the units subject to this rule and are not Table 2 Group 1 units.

Table 2 Compliance Schedule

Units to be in Compliance at a Stationary Source	Authority to Construct	Full Compliance
Group 1: 50% or more of the total number of units subject to this rule on December 15, 2005	January 1, 2007	December 1, 2007
Group 2: 100% of the total number of units subject to this rule on December 15, 2005	January 1, 2008	December 1, 2008

Units are considered to be subject to this rule if the rule is applicable to the units as defined in Section 2.0 and the units are not exempted in either Section 4.1 or Section 4.2.

7.2 As shown in Table 2, the column labeled:

7.2.1 “Authority to Construct” identifies the date by which the operator shall submit an Application for Authority to Construct for each unit subject to the rule that would require an Authority to Construct to order to comply with the requirements of this rule.

7.2.2 "Full Compliance" identifies the date by which the operator shall demonstrate that each unit is in compliance with this rule.

7.3 An operator of an asphalt/concrete unit subject to this rule shall meet the following compliance schedule.

7.3.1 The operator shall submit an Application for Authority to construct for each unit subject to the rule that would require an Authority to Construct in order to comply with the requirements of this rule by December 1, 2008.

7.3.2 The operator shall demonstrate that each unit subject to this rule is in full compliance with this rule by December 1, 2009.

7.4 An operator of a dehydrator subject to this rule shall be in compliance with this rule by July 1, 2006.

8.0 Calculations

8.1 If the measured O_2 is 19.0 vol% O_2 or less, all emission limits specified in Section 5.2 are referenced at dry stack gas conditions and 19.0 vol% O_2. Emission concentrations in ppmv shall be corrected 19.0 vol% O_2 as follows:

$$[\text{ppmvNOx}]_{corrected} = \frac{1.95\%}{20.95\% - [\%O_2]_{measured}} \times [\text{ppmvNOx}]_{measured}$$

$$[\text{ppmvCO}]_{corrected} = \frac{1.95\%}{20.95\% - [\%O_2]_{measured}} \times [\text{ppmvCO}]_{measured}$$

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4311 - FLARES
(*Adopted June 20, 2002; Amended June 15, 2006*)

1.0 Purpose

The purpose of this rule is to limit the emissions of volatile organic compounds (VOC) and oxides of nitrogen (NOx) from the operation of flares.

2.0 Applicability

This rule is applicable to operations involving the use of flares.

3.0 Definitions

3.1 Air-Assisted Flare: a combustion device where forced air is injected to promote turbulence for mixing and to provide combustion air.

3.2 Air Pollution Control Officer (APCO): as defined in Rule 1020 (Definitions).

3.3 Air Resources Board (ARB or CARB): as defined in Rule 1020 (Definitions).

3.4 Coanda Effect Flare: A flare in which the high pressure flare gas flows along a curved surface inspirating air into the gas to promote combustion.

3.5 Emergency: any situation or a condition arising from a sudden and reasonably unforeseeable event beyond the control of the operator. An emergency situation requires immediate corrective action to restore safe operation. A planned flaring event shall not be considered as an emergency.

3.6 Enclosed Flare: a flare composed of multiple gas burners that are grouped in an enclosure, and are staged to operate at a wide range of flow rates.

3.7 Flare: a direct combustion device in which air and all combustible gases react at the burner with the objective of complete and instantaneous oxidation of the combustible gases. Flares are used either continuously or intermittently and are not equipped with devices for fuel-air mix control or for temperature control.

3.8 Flare Gas: gas burned in a flare.

3.9 Gaseous Fuel: any gases used as combustion fuel which include, but are not limited to, any natural, process, synthetic, landfill, sewage digester, or waste gases. Gaseous fuel includes produced gas, pilot gas and, when burned, purge gas.

3.10 Non-Assisted Flare: a combustion device without any auxiliary provision for enhancing the mixing of air into its flame. This definition does not include those flares, that by design, provide excess air at the flare tip.

3.11 NOx: any nitrogen oxide compounds

3.12 Open Flare: a vertically or horizontally oriented open pipe flare from which gases are released into the air before combustion is commenced.

3.13 Planned Flaring: a flaring operation that constitutes a designed and planned process at a source, and which would have been reasonably foreseen ahead of its actual occurrence, or is scheduled to occur. The operation of a flare for the purpose of performing equipment maintenance provided it does not exceed 200 hours per calendar year, or during compliance source testing or visible emission inspections is not considered planned flaring. Planned flaring includes, but is not limited to, the following flaring activities:

3.13.1 Oil or gas well tests, well related work, tests ordered by a regulatory agency.

3.13.2 Equipment depressurization for maintenance purposes.

3.13.3 Equipment start-up or shutdown.

3.13.4 Flaring of gas at production sources where no gas handling, gas injection or gas transmission facilities exists.

3.13.5 Flaring of off-specification gas (i.e. non PUC quality gas), unless the operator can demonstrate that the gas must be flared for engineering or safety reasons, e.g., under emergency.

3.14 Public Utilities Commission (PUC) Quality Gas: any gaseous fuel, gas containing fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet and no more than five grains of total sulfur per one hundred (100) standard cubic feet. PUC quality gas shall also mean high methane (at least 80 % by volume) gas as specified in PUC's General Order 58-A.

3.15 Purge Gas: Nitrogen, carbon dioxide, liquefied petroleum gas, or natural gas, any of which can be used to maintain a non-explosive mixture of gases in the flare header or provide sufficient exit velocity to prevent any regressive flame travel back into the flare header.

3.16 Steam-Assisted Flare: a combustion device where steam is injected into the combustion zone to promote turbulence for the mixing of the combustion air before it is introduced to the flame.

3.17 Total Organic Gases: all hydrocarbon compounds containing hydrogen and carbon with or without other chemical elements.

3.18 U.S. EPA: the United States Environmental Protection Agency.

3.19 Volatile Organic Compound (VOC): as defined in Rule 1020 (Definitions).

4.0 Exemptions

4.1 Flares operated in municipal solid waste landfills subject to the requirements of Rule 4642 (Solid Waste Disposal Sites) are exempt from this rule.

4.2 Flares that are subject to the requirements of 40 CFR 60 Subpart WWW (Standards of Performance for Municipal Waste Landfills), or Subpart Cc (Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills) are exempt from this rule.

4.3 Except for the recordkeeping requirements in Section 6.2.4, the requirements of this rule shall not apply to any stationary source that has the potential to emit, for all processes, less than ten (10.0) tons per year of VOC and less than ten (10.0) tons per year of NOx.

5.0 Requirements

The owner or operator of any source subject to this rule shall comply with the following requirements:

5.1 Flares that are permitted to operate only during an emergency are not subject to the requirements of Sections 5.6 and 5.7.

5.2 The flame shall be present at all times when combustible gases are vented through the flare.

5.3 The outlet shall be equipped with an automatic ignition system, or, shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares.

5.4 Except for flares equipped with a flow-sensing ignition system, a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an equivalent device, capable of continuously detecting at least one pilot flame or the flare flame is present shall be installed and operated.

5.5 Flares that use flow-sensing automatic ignition systems and which do not use a continuous flame pilot shall use purge gas for purging.

5.6 Open flares (air-assisted, steam-assisted, or non-assisted) in which the flare gas pressure is less than 5 psig shall be operated in such a manner that meets the provisions of 40 CFR 60.18. The requirements of this section shall not apply to Coanda effect flares.

5.7 Ground-level enclosed flares shall meet the following emission standards:

Type of Flare and Heat Release Rate in MMBtu/hr	VOC (lb/MMBtu)	NOx (lb/MMBtu)
Without Steam-assist		
<10 MMBtu	0.0051	0.0952
10-100 MMBtu	0.0027	0.1330
>100 MMBtu	0.0013	0.5240
With Steam-assist		
All	0.14 as TOG	0.068

6.0 Administrative Requirements

6.1 Compliance Determination

6.1.1 Upon request the operator of flares that are subject to Section 5.6 shall make available to the APCO the compliance determination records that demonstrate compliance with the provisions of 40 CFR 60.18, (c)(3) through (c)(5).

6.1.2 The operator of ground-level enclosed flares shall conduct source testing at least once every 12 months to demonstrate compliance with Section 5.7. The operator shall submit a copy of the testing protocol to the APCO at least 30 days in advance of the scheduled testing. The operator shall submit the source test results not later than 45 days after completion of the source testing.

6.2 Recordkeeping

The following records shall be maintained, retained on-site for a minimum of five years, and made available to the APCO, ARB, and U.S. EPA upon request:

6.2.1 Copy of the compliance determination conducted pursuant to Section 6.1.1.

6.2.2 Copy of the source testing result conducted pursuant to Section 6.1.2.

6.2.3 For flares used during an emergency, record of the duration of flare operation, amount of gas burned, and the nature of the emergency situation.

6.2.4 Beginning January 1, 2007, facilities claiming an exemption pursuant to Section 4.3 shall record annual throughput, material usage, or other information necessary to demonstrate an exemption under that section.

6.3 Test Methods

The test methods listed below shall be used to demonstrate compliance with this rule. Alternate equivalent test methods may be used provided the test methods have been approved by the APCO and EPA.

6.3.1 VOC, measured and calculated as carbon, shall be determined by EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case Method 25a may be used, and analysis of halogenated exempt compounds shall be analyzed by EPA Method 18 or ARB Method 422 "Determination of Volatile organic Compounds in Emission from Stationary Sources". The VOC concentration in ppmv shall be converted to pounds per million Btu (lb/MMBtu) by using the following equation:

$$\text{VOC in lb/MMBtu} = \frac{(ppmv\ dry)\ x\ (F, dscf\ /\ MMBtu)}{(1.135\,x\,10^{6})\,x\ (20.9 - \%O_2)}$$

Where: F = As determined by EPA Method 19

6.3.2 NOx emissions in pounds per million BTU shall be determined by using EPA Method 19.

6.3.3 NOx and O_2 concentrations shall be determined by using EPA Method 3A, EPA Method 7E, or ARB 100.

7.0 Compliance Schedule

7.1 Flares at facilities with a potential to emit more than 25 tons per year of VOC or NOx that are installed and in operation before June 20, 2002 shall be in compliance with this rule by December 20, 2003.

7.2 Flares, at facilities with a potential to emit more than 25 tons per year of VOCs or NOx, that are installed or constructed on or after June 20, 2002, shall be in compliance with this rule upon initial operation and thereafter.

7.3 Flares that are installed before June 15, 2006 at facilities, which have the potential to emit between 10 tons per year and 25 tons per year of VOC or NOX shall demonstrate compliance with this rule by January 1, 2008.

7.4 Flares, at facilities with a potential to emit between 10 tons per year and 25 tons per year of VOC or NOx that are installed or constructed on or after June 15, 2006, shall be in compliance with this rule upon initial operation and thereafter.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4352 - SOLID FUEL FIRED BOILERS, STEAM GENERATORS AND PROCESS HEATERS

(Adopted September 14, 1994)(Amended October 19, 1995; May 18, 2006)

1.0 Purpose

The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) from solid fuel fired boilers, steam generators and process heaters.

2.0 Applicability

This rule applies to any boiler, steam generator or process heater fired on solid fuel. Heat may be supplied by liquid or gaseous fuels for start-ups, shutdowns, and during other flame stabilization periods, as deemed necessary by the owner/operator.

3.0 Definitions

3.1 Air Pollution Control Officer (APCO): as defined in Rule 1020 (Definitions).

3.2 ARB: California Air Resources Board.

3.3 Block 24-hour Average: the arithmetic average of the hourly NOx emission rates of a unit as measured over 24 one-hour periods, daily, from 12:00 AM to 11:59 PM, excluding periods of system calibration.

3.4 Boiler or Steam Generator: any combustion equipment fired directly or indirectly with any solid fuel used to produce hot water or steam.

3.5 British Thermal Unit (Btu): the amount of heat required to raise the temperature of one pound of water from 59°F to 60°F at one atmosphere.

3.6 EPA: United States Environmental Protection Agency.

3.7 Gaseous Fuel: any fuel which is a gas at standard conditions.

3.8 Heat Input: the heat of combustion released due to burning a fuel in a unit, based on the higher heating value of the fuel, not including the sensible heat of incoming combustion air and fuel.

3.9 Higher Heating Value (hhv): the total heat liberated per mass of fuel burned (Btu per pound), when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.

3.10 Liquid Fuel: any fuel which is a liquid at standard conditions.

3.11 Potential to Emit: as defined in Rule 2201 (New and Modified Stationary Source Rule).

3.12 Process Heater: any combustion equipment fired on solid fuel, which transfers heat from combustion gases to water or process streams. Process heaters exclude kilns or ovens used for drying, baking, cooking, calcining, heat treating or vitrifying.

3.13 NOx Emissions: the sum of oxides of nitrogen (NO) in the flue gas, collectively expressed as nitrogen dioxide.

3.14 Rated Heat Input: Rated Heat Input (million Btu per hour): the heat input capacity specified on the nameplate of the unit. If the unit has been physically modified such that its maximum heat input differs from what is specified on the nameplate, the modified maximum heat input shall be considered as the rated heat input and made enforceable by Permit to Operate.

3.15 Shutdown: the period of time during which a unit is taken from operational to non-operational status by allowing it to cool down from its operating temperature and pressure to an ambient temperature.

3.16 Solid Fuel: any fuel which is a solid at standard conditions.

3.17 Standard Conditions: defined in Rule 1020 (Definitions).

3.18 Start-up: the period of time during which a unit is heated to the operating temperature and pressure from a shutdown status.

3.19 Stationary Source: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).

3.20 Unit: any boiler, steam generator or process heater as defined in this rule. For the purpose of this rule, two boilers, two steam generators, or two process heaters may be considered as one unit, if, they are operated as one single unit sharing a single common stack and have been issued only one District Permit to Operate (PTO).

4.0 Exemptions

Except for complying with the recordkeeping requirements of Section 6.2 and applicable compliance schedule in Section 7.0, this rule shall not apply to units operated at a Stationary Source that has a potential to emit less than 10 tons per year of oxides of nitrogen (NOx) or volatile organic compounds (VOC).

5.0 Requirements

5.1 The owner/operator of a boiler, steam generator or process heater shall not operate such a unit in a manner that results in NOx and CO emissions exceeding the limits

specified in Table 1. The emission limits measured in parts per million by volume (ppmv) are referenced at dry stack gas conditions and shall be corrected to the applicable percent O_2 or CO_2 specified in Table 1 in accordance with EPA Method 19.

Table 1 - NOx and CO Emission Limits

Fuel Type	Tier 1 Emission Limits effective until December 31, 2006		Tier 2 Emission Limits effective on and after January 1, 2007	
	NOx Limit	CO Limit	NOx Limit	CO Limit
Municipal Solid Waste	200 ppmv corrected to 12% CO_2	400 ppmv corrected to 3% O_2, or 310 ppmv corrected to 7% O_2, or 310 ppmv corrected to 12% CO_2	200 ppmv corrected to 12% CO_2	400 ppmv corrected to 3% O_2
Biomass using Multiple Hearth Furnace	0.35 lb/MMBtu of heat input		115 ppmv corrected to 3% O_2	
All Others	0.20 lb/MMBtu of heat input		115 ppmv corrected to 3% O_2	

5.2 All NOx and CO emission limits shall be based on a block 24-hour average. A violation of the emission limits as measured by the test methods listed in Section 6.4 shall constitute a violation of this rule.

5.3 Start-up and Shutdown Provisions

The applicable emission limits of Section 5.1 shall not apply during start-up or shutdown provided an operator complies with the requirements specified below.

5.3.1 The duration of each shut down shall not exceed twelve (12) hours, except as provided in Section 5.3.4.

5.3.2 Except as provided in Section 5.3.4, the duration of each start-up shall not exceed 96 hours. If curing of the refractory is required after a modification to the unit is made, the duration of start-up shall not exceed 192 hours, except as provided in Section 5.3.4.

5.3.3 The emission control system shall be in operation and emissions shall be minimized insofar as technologically feasible during start-up or shutdown.

5.3.4 Notwithstanding the requirements of Section 5.3.1 or Section 5.3.2, the APCO, ARB, and EPA may approve a longer start-up or shutdown duration,

if an operator submits an application for a Permit to Operate which provides a justification for the requested additional duration.

5.3.4.1 The maximum allowable duration of start-up or shutdown will be determined by the APCO, ARB, and EPA.

5.3.4.2 At a minimum, a justification for increased start-up or shutdown duration shall include the following:

5.3.4.2.1 A clear identification of the control technologies or strategies to be utilized; and

5.3.4.2.2 A description of what physical conditions prevail during start-up or shutdown periods that prevent the controls from being effective; and

5.3.4.2.3 A reasonably precise estimate as to when the physical conditions will have reached a state that allows for the effective control of emissions; and

5.3.4.2.4 A detailed list of activities to be performed during start-up or shutdown and a reasonable explanation for the length of time needed to complete each activity; and

5.3.4.2.5 A description of the material process flow rates and system operating parameters, etc., the owner/operator plans to evaluate during the process optimization; and an explanation of how the activities and process flow affect the operation of the emissions control equipment; and

5.3.4.2.6 Basis for the requested additional duration of start-up or shutdown.

5.4 Units operated at less than 50 percent of rated heat input (RHI)

Notwithstanding the requirements of Section 5.1, the APCO, ARB, and EPA may approve an increased emission limit if the owner/operator submits an application for a Permit to Operate, which provides a justification for the requested limit. Operations above 50 percent of RHI shall comply with the emission limits in Section 5.1.

5.4.1 The maximum NOx or CO emission limit for operations less than 50 percent of RHI will be determined by the APCO, ARB, and EPA.

5.4.2 At a minimum, a justification for an increased emission limit shall include the following:

5.4.2.1 The basis for the requested increased emission limit; and

5.4.2.2 A clear identification of the control technologies or strategies to be utilized; and

5.4.2.3 A description of what physical conditions prevail at less than 50% of RHI that prevent the controls from being completely effective; and

5.4.2.4 A reasonably precise estimate as to when the physical conditions must be reached that allows for the effective control of emissions; and

5.4.2.5 A detailed list of activities to be performed to control emissions and a reasonable explanation for the length of time needed to complete each activity; and

5.4.2.6 A description of the material process flow rates and system operating parameters, etc., the owner/operator plans to evaluate during the process optimization; and an explanation of how the activities and process flow affect the operation of the emissions control equipment.

5.5 Monitoring Provisions

The owner/operator of any unit using ammonia injection as a NOx control technique, shall operate a Continuous Emissions Monitoring system (CEM) to monitor and record NOx concentrations, CO_2 or O_2 concentrations, as well as the NOx emission rate. Continuous Emission Monitoring systems shall be operated, maintained, and calibrated pursuant to the requirements of 40 CFR 60.7 (c) and 60.13. CEMs must also satisfy the Performance Specifications of 40 CFR 60 Appendix B and the Relative Accuracy Test Audit of Appendix F.

6.0 Administrative Requirements

6.1 Emission Control Plan

The owner/operator of any unit subject to the provisions of this rule shall submit to the APCO an emissions control plan of all actions to be taken to satisfy the requirements of Section 5.0. Such plan shall identify the type of emission controls to be applied to each unit and a construction schedule, or shall provide source tests,

in accordance with Section 6.4, sufficient to demonstrate that the unit is currently in compliance with the emission limits of this rule.

6.2 Recordkeeping

6.2.1 Except for municipal solid waste (MSW) fired units; the owner/operator of any unit subject to the requirements of this rule shall maintain, on a monthly basis, an operating log for each unit that includes the following information:

6.2.1.1 type and quantity of fuel used.

6.2.1.2 the higher heating value (hhv) of each fuel as determined by Section 6.4, or as certified by a third party fuel supplier.

6.2.2 The records required by Section 6.2.1 shall be retained on site for a period of five years, and shall be made available to the APCO, ARB, and EPA upon request.

6.3 Compliance Source Testing

6.3.1 Each unit subject to the requirements of this rule shall be tested at least once every twelve (12) months, to determine compliance with the applicable requirements of Section 5.0.

6.3.2 All emission measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate.

6.3.3 No compliance determination shall be established within two hours after a period in which fuel flow to the unit is zero, or is shut off for 30 minutes or longer.

6.4 Test Methods

6.4.1 Compliance with the requirements of Section 5.0 shall be determined in accordance with the following source test procedures unless otherwise approved by the APCO, ARB, and EPA:

6.4.1.1 Oxides of nitrogen (ppmv) – EPA Method 7E, or ARB Method 100.

6.4.1.2 Carbon monoxide (ppmv) - EPA Method 10, or ARB Method 100.

6.4.1.3 Stack gas oxygen - EPA Method 3 or 3A, or ARB Method 100.

6.4.1.4 NOx emission rate (Heat input basis) - EPA Method 19.

6.4.1.5 Stack gas velocities - EPA Method 2.

6.4.1.6 Stack gas moisture content - EPA Method 4.

6.4.1.7 Solid fuel higher heating value (hhv) - ASTM Method D 2015-96, or

6.4.1.8 Solid fuel higher heating value (hhv) - ASTM Method E 711-87.

6.4.1.9 ASTM D 1826-94 or D 1945-96 in conjunction with ASTM D 3588-98 for gaseous fuels.

7.0 Compliance Schedule

7.1 Owners/operators of each unit subject to the provisions of this rule shall demonstrate compliance in accordance to the following schedule:

7.1.1 For units at a stationary source that has the potential to emit 10 to 50 tons per year of NOx or VOC:

On and after January 1, 2007, demonstrate compliance with the Table 1 Tier 2 emissions limits and all applicable requirements of this rule.

7.1.2 For units at a stationary source that has the potential to emit greater than or equal to 50 tons per year of NOx or VOC:

7.1.2.1 By March 14, 1995, submit to the APCO an emission control plan pursuant to Section 6.1 and a complete application for an Authority to Construct (ATC), if necessary.

7.1.2.2 By May 31, 1995, demonstrate full compliance with Table 1 Tier 1 emission limits and all applicable requirements of this rule.

7.1.2.3 On and after January 1, 2007, demonstrate compliance with Table 1 Tier 2 emissions limits and all applicable requirements of this rule.

7.1.3 For units exempted pursuant to Section 4.0, on and after January 1, 2007 comply with the recordkeeping requirements of Section 6.2.

SAN JOAQUIN VALLEY UNIFIED AIR QUALITY MANAGEMENT DISTRICT

RULE 4354 - GLASS MELTING FURNACES
(Adopted September 14, 1994)(Amended April 16, 1998; February 21, 2002; August 17, 2006)

1.0 Purpose

The purpose of this rule is to limit emissions of nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOC), and oxides of sulfur (SOx) from glass melting furnaces.

2.0 Applicability

The provisions of this rule shall apply to any glass-melting furnace.

3.0 Definitions

3.1 Air-fuel Firing: operation of a glass melting furnace where greater than 50% of the oxidant for the fuel comes from ambient air. 100% air-fuel fired means operation of a glass melting furnace where the oxidant is exclusively ambient air.

3.2 APCO: as defined in Rule 1020 (Definitions).

3.3 ARB: California Air Resources Board.

3.4 Block 24-hour Average: the arithmetic average of the hourly NOx emission rates of a furnace as measured over 24 one-hour periods, daily, from 12:00 AM to 11:59 PM, excluding periods of system calibration.

3.5 Carbon Monoxide (CO): emissions of carbon monoxide, a colorless and odorless gas resulting from incomplete combustion of fuel.

3.6 Commercial Propane: a gaseous fuel composed primarily of propane.

3.7 Container Glass: any glass manufactured by pressing, blowing in molds, drawing, rolling, or casting which is used as a container.

3.8 EPA: United States Environmental Protection Agency.

3.9 Fiberglass: material consisting of fine filaments of glass that are combined in yarn and woven or spun into fabrics, or that are used as reinforcement in other materials or in masses as thermal or as acoustical insulating products for the construction industry.

3.10 Flat glass: any glass produced by the float, sheet, rolled, or plate glass process which is used in windows, windshields, tabletops, or similar products.

3.11 Furnace Battery: two or more glass melting furnaces that exhaust to a common stack.

3.12 Furnace Rebuild: a cold tank repair which is commenced after the end of a furnace campaign period or expected life cycle of a furnace. For the purpose of compliance deadline in Section 7.1, the effective date of a furnace rebuild is the date of the start of the furnace shutdown.

3.13 Idling: the operation of a furnace at less than 25 percent of the permitted glass production capacity or fuel use capacity as stated on the Permit to Operate (PTO).

3.14 Liquefied Petroleum Gas (LPG): LPG is a general term for the following gases: commercial propane, commercial butane, propane-butane (PB) mixtures, and special duty propane, although some people consider commercial propane separate from LPG.

3.15 Multiple Furnaces: two or more glass melting furnaces at a single facility that do not exhaust to a common stack.

3.16 Normal Business Hours: Monday through Friday, 8:00 am to 5:00 pm.

3.17 Oxides of Nitrogen (NOx): the sum of oxides of nitrogen in the flue gas, collectively expressed as nitrogen dioxide (NO_2).

3.18 Oxides of Sulfur (SOx): the sum of compounds containing sulfur and oxygen, such as sulfur dioxide (SO_2) and sulfur trioxide (SO_3).

3.19 Oxygen-Assisted Combustion: operation of a glass melting furnace where the oxidant is greater than the oxygen content in ambient air or greater than 20.9 percent oxygen.

3.20 Oxy-fuel Fired: operation of a glass melting furnace where greater than 50% of the oxidant for the fuel is provided from enriched oxygen streams.

3.21 Parts Per Million by Volume (ppmv): the ratio of the number of gas molecules of a given species or group of species, to the number of millions of a total gas molecules.

3.22 Parts Per Million by Weight (ppm): the ratio of the weight of the given species or group of species, to the weight of total mixture and the ratio multiplied by one million.

3.23 Permitted Glass Production Capacity: the maximum pull rate as stated in the Permit to Operate (PTO).

3.24 Potential to Emit: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).

3.25 Primary Furnace Combustion System: the burners in a furnace that are used during production of glass.

3.26 PTO: a Permit To Operate issued by the District.

3.27 PUC-quality Natural Gas: a gaseous fuel that meets the requirements specified in California Public Utilities Commission (PUC) General Order 58-A. PUC-quality natural gas also means that the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet and no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet.

3.28 Pull Rate: the amount of glass coming out of a glass melting furnace, expressed in short tons per day.

3.29 Rolling 30-day Average: the arithmetic average of the daily emission rates of a furnace over a contiguous 30-day period, excluding periods of system calibration.

3.30 Shutdown: the period of time during which a glass-melting furnace is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to a cold or ambient temperature as the fuel supply is turned off.

3.31 Start-up: the period of time, after initial construction or a furnace rebuild, during which a glass melting furnace is heated to operating temperature by the primary furnace combustion system, and systems and instrumentation are brought to stabilization.

3.32 Stationary Source: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).

3.33 Volatile Organic Compound (VOC): as defined in Rule 1020 (Definitions).

4.0 Exemptions

4.1 Except for Section 6.8, the provisions of this rule shall not apply to electric glass melting furnaces where all the heat is supplied by an electric current from electrodes submerged in the molten glass, except that heat may be supplied by other fuels for start-up when the furnace contains no molten glass.

4.2 Except for Section 6.8, the provisions of this rule shall not apply to any glass-melting furnace that is part of a stationary source with a total potential to emit, for all processes, of less than ten (10.0) tons per year of NOx and less than ten (10.0) tons per year of VOC.

4.3 The emission limits in Section 5.1 Table 1 shall not apply during periods of start-up, shutdown, or idling, provided the operator complies with the applicable requirements of Sections 5.3, 5.4, 5.5, and 6.7.

5.0 Requirements

5.1 Except as specified in Section 4.3, the operator of any glass melting furnace shall not operate a furnace in such a manner that results in NOx, CO, or VOC emissions exceeding the limits in Table 1. The deadlines to comply with the emission limits are specified in Section 7.0.

Table 1 NOx, CO, and VOC Emission Limits

Type of Furnace	Combustion Type	Tier 1 Emission Limits	Tier 2 Emission Limits		
		NOx	NOx	CO	VOC
Container Glass or Fiberglass	100% Air-Fuel Fired	5.5 lb/ton of glass pulled	4.0 lb/ton of glass pulled on a block 24-hour average	300 ppmv	20 ppmv
	Oxygen-Assisted Combustion	5.5 lb/ton of glass pulled	4.0 lb/ton of glass pulled on a block 24-hour average	1.0 lb / ton of glass pulled	0.25 lb / ton of glass pulled
Flat Glass	100% Air-Fuel Fired	See Section 5.7	9.2 lb/ton of glass pulled on a block 24-hour average and 7.0 lb/ton of glass pulled on a rolling 30-day average	300 ppmv	20 ppmv
	Oxygen-Assisted Combustion	See Section 5.7	9.2 lb/ton of glass pulled on a block 24-hour average and 7.0 lb/ton of glass pulled on a rolling 30-day average	0.9 lb / ton of glass pulled	0.1 lb / ton of glass pulled

5.2 In order to limit SOx emissions, all glass melting furnaces subject to Table 1 emission limits shall fire on PUC-quality natural gas, commercial propane, or LPG on and after March 31, 2008. Liquid fuel may be used as backup fuel or standby fuel provided the liquid fuel contains no more than 15 ppm of sulfur and the furnace exhaust is controlled by a SOx emission control system with control system efficiency of 50% or greater.

5.3 Start-up Requirements

5.3.1 The operator shall submit a request for a start-up exemption to the APCO, ARB, and EPA in conjunction with or in advance of an application for Authority to Construct (ATC) associated with a furnace rebuild.

5.3.2 The operator shall submit to the APCO, ARB, and EPA any information deemed necessary by the APCO, ARB, or EPA to determine the appropriate length of start-up exemption. This information shall include, but is not limited to:

5.3.2.1 A detailed list of activities to be performed during start-up, and a reasonable explanation for the length of time needed to complete each activity, and

5.3.2.2 A description of the material process flow rates, system operating parameters, etc., that the operator plans to evaluate during the process optimization,

5.3.2.3 Clearly identified control technologies or strategies to be utilized,

5.3.2.4 Explicit description of what physical conditions prevail during start-up periods that prevent the controls from being effective, and

5.3.2.5 Reasonably precise estimate as to when physical conditions will have reached a state that allows for the effective control of emissions.

5.3.3 Start up exemptions shall begin upon activation of the primary combustion system.

5.3.4 The actual length of the start-up exemption shall be determined by the APCO, ARB, and EPA at the time of the ATC issuance, but in any case, it shall not exceed the amount of time specified in Table 2. The approval for the startup exemption shall be in writing from each agency.

Table 2 – Maximum Start-up Time

Type of Furnace	Maximum Start-up NOx control system that does not meet Section 5.3.4.2 provisions	Maximum Start-up NOx control system that meets Section 5.3.4.2 provisions
Container glass	70 days	100 days
Fiber glass	40 days	105 days
Flat glass	104 days	208 days

5.3.4.1 Maximum start-up time for furnaces with NOx controls that do not meet any of the conditions of 5.3.4.2 is listed in the center column of Table 2.

5.3.4.2 Maximum start-up time column as shown in the rightmost column of Table 2 shall be the maximum startup time if the NOx control system meets one or more of the following conditions:

5.3.4.2.1 Is innovative,

5.3.4.2.2 Is not in common use,

5.3.4.2.3 Is not readily available from a commercial supplier,

5.3.4.2.4 Is funded as original research by a public agency.

5.3.5 During start-up period, the stoichiometric ratio of the primary furnace combustion system shall not exceed 5% excess oxygen, as calculated from the actual fuel and oxidant flow measurements for combustion in the glass melting furnace.

5.3.6 The emission control system shall be in operation as soon as technologically feasible during start-up to minimize emissions.

5.3.7 Notifications shall be performed and records kept in accordance with Section 6.7.

5.4 Shutdown Requirements

5.4.1 The duration of shutdown, as measured from the time the furnace operations drop below the idle threshold specified in Section 3.13 to when all emissions from the furnace cease, shall not exceed 20 days.

5.4.2 The emission control system shall be in operation whenever technologically feasible during shutdown to minimize emissions.

5.4.3 Notifications shall be performed and records kept in accordance with Section 6.7.

5.5 Idling Requirements

5.5.1 The emission control system shall be in operation whenever technologically feasible during idling to minimize emissions.

5.5.2 The NOx, CO, and VOC emission during idling shall not exceed the amount as calculated using the following equation:

Pounds per day emission limit of NOx, VOC, or CO = (Applicable Tier 1 or Tier 2 emission limit in pounds emissions per ton of glass produced) x (Furnace permitted production capacity in tons of glass produced per day)

5.5.3 Notifications shall be performed and records kept in accordance with Section 6.7.

5.6 Compliance Determination

5.6.1 The emissions measured for compliance with Tier 1 NOx limits and Tier 2 CO and VOC limits shall be averaged over a three hour period in accordance with the applicable test methods in Section 6.5, or, if a continuous emission monitoring system (CEMS) or an alternate emission monitoring method is used, the applicable requirements of Sections 6.6.1 or 6.6.2, respectively.

5.6.2 Any source testing result, CEMS or alternate emission monitoring method averaged value exceeding the applicable emission limits in Section 5.1 shall constitute a violation of the rule.

5.7 The Tier 1 NOx emission limit for flat glass furnaces shall be calculated using the following equation:

NOx Limit = (32 lb NOx per ton of glass pulled) – [(0.2 lb NOx per ton of glass pulled) x CF]

Where:

$$CF = \frac{\text{Glass Pull Rate in tons per day}}{\text{Permitted Production Capacity in tons per day}} \times 100\%$$

5.8 In lieu of each furnace complying individually with the Tier 2 emission limits in Section 5.1, the owner operator of a furnace battery or multiple furnaces may comply with this rule according to Section 9.0.

5.9 The operator of any glass melting furnace shall implement a NOx CEMS or a NOx alternate emissions monitoring method on each furnace, that is approved, in writing, by the APCO, ARB, and EPA, and that meets the requirements of Sections 6.6. For a furnace battery, a single CEMS or alternate emissions monitoring method may be used to determine the total NOx emissions from all the furnaces provided the emission measurements are made at the common stack. The operator of a glass melting furnace not subject to the Table 1 limits of this rule before August 17, 2006 that becomes subject to Table 1 limits on August 17, 2006 shall implement an approved monitoring system by March 31, 2008.

6.0 Administrative Requirements

6.1 Permitted Glass Production Capacity and Fuel Use Capacity

Each glass melting furnace's PTO shall include either 6.1.1 or 6.1.2 or both as a permit condition.

6.1.1 The furnace's permitted glass production capacity in units of tons of glass pulled per day; or

6.1.2 The furnace's maximum fuel use capacity in units of million British thermal units per hour or per day (MMBtu/hr or MMBtu/day).

6.2 Emission Control Plan (ECP)

6.2.1 The operator of any glass melting furnace subject to the provisions of this rule on February 21, 2002 shall submit to the APCO an ECP in accordance with the compliance schedule in Section 7.1 which identifies all actions to be taken to satisfy the requirements of Section 5.0. Such plan shall identify the type of emission controls, CEMS or alternate emission monitoring method to be applied to each glass melting furnace and a construction schedule. The method used for determining pull rate shall be submitted. If the pull rate calculation method is changed, the new calculation method shall be submitted within 30 days from the date of such change. If a furnace is already achieving Section 5.1 Tier 2 emission limits prior to the compliance deadline specified in Section 7.1 Table 3 Tier 2, the ECP shall include CEMS or alternate emission monitoring data, or source tests results that are sufficient to demonstrate compliance with all the requirements of this rule.

6.2.2 An operator of a glass melting furnace not subject to the Table 1 limits of this rule before August 17, 2006 that becomes subject to the Table 1 limits on August 17, 2006 shall submit an ECP to the APCO by February 17, 2007. The ECP shall contain, at minimum, the following information:

6.2.2.1 The type of emission controls to be used to meet the requirements of Section 5.0.

6.2.2.2 Whether CEMS or alternate emission monitoring will be used for emission monitoring.

6.2.2.3 The method used to calculate pull rate. If the calculation method is changed, the new calculation method shall be submitted within 10 calendar days from the date of such change.

6.2.2.4 The construction schedule, should construction be necessary to meet the requirements of this rule.

6.2.2.5 If a furnace is achieving Section 5.1 Tier 2 emission limits before March 31, 2008, the ECP shall include emission monitoring data or source test results that are sufficient to demonstrate compliance with all requirements of the rule.

6.3 Operations Records

6.3.1 Until the full compliance date for Tier 2 emission limits specified in Section 7.1, the operator of any glass melting furnace subject to the provisions of this rule before February 21, 2002 shall maintain an operating log for each furnace that includes, on a monthly basis: the total hours of operation; type and quantity of fuel used in each furnace; and the quantity of glass pulled. The owner shall maintain records of source tests and operating parameters established during initial source test, maintenance, repair, malfunction, idling, shutdown, and start-up. This information shall be made available on site during normal business hours for a period of five years, and submitted to the APCO upon request.

6.3.2 Effective on and after the full compliance date for Tier 2 emission limits specified in Section 7.1, the owner of any glass melting furnace subject to the emission limits of Table 1 before February 21, 2002 shall maintain the records specified in Sections 6.3.2.1, 6.3.2.2, and 6.3.2.3 for a period of five years, make them available on site during normal business hours, and submit them to the APCO, ARB, or EPA upon request.

6.3.2.1 Daily records of the total hours of operation, type and quantity of fuel used in each furnace, and/or the quantity of glass pulled from each furnace whichever matches the permit condition in the furnace's PTO.

6.3.2.2 Daily records of NOx emission rate in lb/ton of glass pulled.

6.3.2.3 Records of source tests and operating parameters established during initial source test, maintenance and repair, malfunction, and idling, start-up and shutdown.

6.3.3 The operator of a glass furnace that is not subject to the emission limits of Table 1 prior to August 17, 2006 that becomes subject to the Table 1 emission limits on August 17, 2006 shall maintain the following records:

6.3.3.1 Daily records of total hours of operation and type of fuel used in each furnace.

6.3.3.2 Daily records or either the quantity of fuel used by each furnace or the quantity of glass pulled from each furnace, whichever matches the permit condition in the furnace's PTO.

6.3.3.3 Daily records of NOx emission rate in lb/ton of glass pulled.

6.3.3.4 Records of source tests and operating parameters established during initial source test, maintenance and repair, and malfunction.

6.3.4 The operator shall retain the records specified in Sections 6.3.3.1 through 6.3.3.4 for a period of five years, make them available on site during normal business hours to the APCO, ARB, or EPA, and submit them to the APCO, ARB, or EPA upon request.

6.4 Compliance Source Testing

6.4.1 Each glass melting furnace or a furnace battery shall be source tested at least once every calendar year, but not more than every 18 months and not sooner than every 6 months to demonstrate compliance with the applicable requirements of Section 5.0.

6.4.2 Source test conditions shall be representative of normal operations, but not less than 60 percent of either the permitted glass production capacity or the furnace's maximum fuel use capacity for each furnace, whichever limit is stated in the furnace's PTO.

6.4.3 For source testing performed in accordance with Section 6.4.1, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two of the three runs individually demonstrate emissions above the applicable limit, the test cannot be used to demonstrate compliance for the furnace, even if the averaged emissions of all three test runs is less than the applicable limit.

6.5 Test Methods

Compliance with the requirements of Section 5.0 shall be determined in accordance with the following source test procedures or their equivalents as approved by the EPA, ARB, and the APCO:

6.5.1 Oxides of nitrogen – EPA Method 7E, EPA Method 19, or ARB Method 100.

6.5.2 Carbon monoxide (ppmv) – EPA Method 10, or ARB Method 100.

6.5.3 Volatile Organic Compound (ppmv) – EPA Method 25A expressed in terms of carbon. EPA Test Method 18 or ARB Method 422 shall be used to determine emissions of exempt compounds.

6.5.4 Stack gas oxygen, carbon dioxide, excess air, and dry molecular weight – EPA Method 3 or 3A, or ARB Method 100.

6.5.5 Stack gas velocity and volumetric flow rate – EPA Method 2.

6.5.6 The SOx emission control system efficiency shall be determined using the following:

6.5.6.1 EPA Method 2 for measuring flow rates; and

6.5.6.2 EPA Method 6C or EPA Method 8 for measuring total SOx (expressed as SO_2) concentrations at the inlet and outlet of the control device.

6.5.6.3 The SOx emission control system efficiency shall be calculated using the following equation:

$$\% \text{ Control Efficiency} = [\ (C_{SO_2,\ inlet} - C_{SO_2,\ outlet}) / C_{SO_2,\ inlet}\ ] \times 100$$

Where:

$C_{SO_2,\ inlet}$ = concentration of SOx (expressed as SO_2) at the inlet side of the SOx emission control system, in lb/dscf

$C_{SO_2,\ outlet}$ = concentration of SOx (expressed as SO_2) at the outlet side of the SOx emission control system, in lb/dscf

6.6 Emissions Monitoring Systems

6.6.1. An approved CEMS shall comply with all of the following requirements:

6.6.1.1 40 Code of Federal Regulations (CFR) Part 51;

6.6.1.2 40 CFR Part 60.7;

6.6.1.3 40 CFR Part 60.13;

6.6.1.4 40 CFR Part 60 Appendix B (Performance Specifications);

6.6.1.5 40 CFR Part 60 Appendix F (Quality Assurance Procedures); and

6.6.1.6 Applicable sections of Rule 1080 (Stack Monitoring).

6.6.2 An approved alternate emission~~s~~ monitoring method shall be capable of determining the furnace emissions on an hourly basis and shall comply with the following requirements:

6.6.2.1 42 FR 54900 (Compliance Assurance Monitoring); and

6.6.2.2 40 CFR 60.13 (Monitoring Requirements).

6.7 Notifications and Records for Start-up, Shutdown, and Idling

6.7.1 The operator of any glass melting furnace claiming an exemption under Section 4.3 shall notify the APCO by telephone at least 24 hours before initiating idling, shutdown, or start-up. The notification shall include: date and time of the start of the exempt operation, reason for performing the operation, and an estimated completion date.

6.7.2 The operator shall notify the APCO by telephone within 24 hours after completion of the start-up, shutdown, or idling.

6.7.3 The operator claiming exemption under Section 4.3 shall maintain all operating records/support documentation necessary to support claim of exemption.

6.7.4 Records/support documentation required by Section 6.7.3 shall meet the following requirements:

6.7.4.1 The records/support documentation shall be retained on-site for five years.

6.7.4.2 The records/support documentation shall be made available to the APCO, ARB, or EPA during normal business hours.

6.7.4.3 The records/support documentation shall be submitted to the APCO, ARB, or EPA upon request.

6.8 Records for Exempt Furnaces

6.8.1 An operator claiming exemption under Section 4.1 or Section 4.2 shall maintain records/documentation necessary to support claim of exemption.

6.8.2 Records/support documentation specified in Section 6.8.1 shall meet the following requirements:

6.8.2.1 The records/documentation shall be retained on-site for five years after exemption is lost.

6.8.2.2 The records/documentation shall be made available to the APCO, ARB, or EPA during normal business hours.

6.8.2.3 The records/documentation shall be submitted to the APCO, ARB, or EPA upon request.

7.0 Compliance Schedule

7.1 The operator of any flat glass, container glass, or fiberglass melting furnace subject to Table 1 limits of this rule before February 21, 2002 shall demonstrate full compliance with the provisions of this rule not later than the schedules in Table 3.

Table 3 Compliance Schedule

Emission Limits	Emission Control Plan (ECP)	Authority to Construct (ATC) Application	Full Compliance
Tier 1	3/14/95	3/14/95	5/31/95
Tier 2	12 months prior to next furnace rebuild after 1/1/99 and no later than 3/31/2007	9 months prior to next furnace rebuild after 1/1/99 and no later than 6/31/2007	Next furnace rebuild after 1/1/99 and no later than 3/31/2008

7.2 For furnaces subject to this rules before February 21, 2002, as shown in Section 7.1 Table 3, the column labeled:

7.2.1 "Emission Control Plan (ECP)" identifies the date by which the operator shall submit an Emission Control Plan according to Section 6.2.1, or Section 9.0.

7.2.2 "Authority to Construct (ATC) Application" identifies the date by which the operator shall submit a complete application for Authority to Construct (ATC) for any necessary modifications to each glass melting furnace.

7.2.3 "Full Compliance" identifies the date by which the operator shall demonstrate that each furnace is in compliance after start-up with the emission limits in Section 5.1 and after which, the operator shall remain in compliance with the applicable emission limits in Section 5.1.

7.3 A glass melting furnace not subject to the Table 1 limits of this rule before August 17, 2006 that becomes subject to the Table 1 limits on August 17, 2006 shall be in full compliance with the requirements of this rule by March 31, 2008, unless otherwise specified in the rule requirements.

8.0 Calculations

8.1 The NOx emission rate in ppmv shall be converted to lb/hr by using the appropriate conversion equations in ARB Method 100, EPA Method 19, or an equivalent conversion method approved, in writing, by each of the following: APCO, ARB, and EPA. The NOx mass emission rate in lb/hr shall be converted to lb NOx/ton of glass pulled according to the following equation:

$$lb\ NOx / ton\ of\ glass\ pulled = \frac{lb / hr\ of\ NOx}{Pull\ rate\ in\ tons / hr}$$

8.2 100% air-fuel fired furnaces which have concentration limits in ppmv values shall be subject to the CO and VOC emission limits specified in Section 5.1. These limits are referenced at dry stack gas conditions and 8.0 percent by volume of stack oxygen. The CO and VOC emission concentrations shall be corrected to 8.0 percent oxygen by using the equation below, or an equivalent correction method that is approved, in writing, by each of the following: APCO, ARB, and EPA.

$$(\text{ppmv CO})_{\text{corrected}} = \frac{12.9\%}{20.9\% - (\%\,O_2)_{\text{measured}}} \times (\text{ppmv CO})_{\text{measured}}$$

$$(\text{ppmv VOC})_{\text{corrected}} = \frac{12.9\%}{20.9\% - (\%\,O_2)_{\text{measured}}} \times (\text{ppmv VOC})_{\text{measured}}$$

8.3 The operator of a oxy-fuel fired furnace, oxygen-assisted combustion furnace, or a furnace utilizing any fuel oxidants other than 100% ambient air, shall submit to the APCO, ARB, and EPA for approval any methodologies and data that will be used to calculate emission rates for NOx, CO, and VOC if the methods are different than specified in Sections 8.1 or 8.2. Unless the operator received prior written approval from APCO, ARB, and EPA of all the calculation methods to be used that are different than specified in Sections 8.1 or 8.2, compliance with the emissions limits cannot be fully demonstrated, and it shall be deemed to be a violation of the rule.

9.0 Furnace Battery or Multiple Furnaces Control

As an alternative to complying with Section 5.1 Tier 2 NOx emission limits and Section 7.0, the operator of a furnace battery or multiple furnaces shall operate the furnace battery or multiple furnaces pursuant to Sections 9.1 through 9.7. Any violation of the requirements below shall be considered a violation of this rule, and a violation of the aggregated emission limits shall constitute a violation for each furnace for the entire averaging time.

Any operator who elects to comply with Section 9.0 in lieu of complying with the requirements of Section 5.1 Tier 2 NOx emission limits and Section 7.0 shall be subject to a 10% environmental air quality benefit pursuant to the EPA's Emissions Trading Policy. NOx emissions shall be at least 10% lower than the limits specified in Section 5.1 Tier 2. The furnace shall not be subject to this requirement if the operator can demonstrate compliance by operating an approved CEMS or an approved alternate monitoring method for each furnace in accordance with the provisions of Section 6.6.

9.1 The operator shall submit an ECP and a complete ATC in accordance with schedules in Section 7.1. The ECP shall:

9.1.1 contain, in addition to the requirements of Section 6.2, all data, records, and other information necessary to determine eligibility of a furnace battery or multiple furnaces for NOx emission control under Section 9.0, including, but not limited to:

9.1.1.1 a list of furnaces subject to the ECP;

9.1.1.2 estimated aggregate emission levels as determined in accordance with Section 9.7; and

9.1.1.3 estimated aggregate glass production rates.

9.1.2 detail the method of recording and verifying daily compliance with the ECP.

9.2 The operator shall submit an updated or modified ECP for approval by the APCO, ARB, and EPA prior to any modification to the furnace(s) which requires an ATC as outlined in Rule 2010 (Permits Required).

9.3 The ECP schedule for achieving reduced NOx emission levels shall be at least as expeditious as the schedule were each furnace to comply individually with the emission limits in Section 5.1 Tier 2 and the compliance schedule in Section 7.1.

9.4 The daily aggregate NOx emissions, as determined in accordance with Section 9.7, shall be no greater than those obtained by controlling each furnace to comply individually with the limits in Section 5.1 Tier 2.

9.5 The operator shall conduct source testing of the furnace according to the requirements of Section 6.4.

9.6 Determination of Compliance

9.6.1 The operator shall calculate and record on a daily basis the aggregated NOx emissions of furnaces which are subject to an ECP. Such records shall be kept for a period of five years. The operator shall notify the APCO of any violation of Section 9.4 within 24 hours. The notification shall include:

9.6.1.1 name and location of the facility;

9.6.1.2 identification of furnace(s) causing the exceedances;

9.6.1.3 the cause and the expected duration of exceedances;

9.6.1.4 calculation of actual NOx, CO and VOC emissions;

9.6.1.5 corrective actions and schedules to complete the work.

9.6.2 The operator shall demonstrate compliance with the requirements of Section 9.4 through CEMS data or approved alternate emission monitoring methods, and source test results.

9.7 Determination of Aggregated NOx Emissions

9.7.1 The aggregated NOx emissions of a furnace battery are the NOx emissions as measured at the common stack divided by the sum of the daily glass pulled from each furnace.

9.7.2 The aggregated NOx emissions of multiple furnaces are the sum of the daily NOx emissions of each furnace divided by the sum of the daily glass pulled from each furnace.

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4565 - BIOSOLIDS, ANIMAL MANURE, AND POULTRY LITTER OPERATIONS
(Adopted: March 15, 2007)

1.0 Purpose

The purpose of this rule is to limit emissions of volatile organic compounds (VOC) from operations involving the management of biosolids, animal manure, or poultry litter.

2.0 Applicability

The provisions of this rule apply to all facilities whose throughput consists entirely or in part of biosolids, animal manure, or poultry litter and the operator who landfills, land applies, composts, or co-composts these materials.

3.0 Definitions

3.1 Active Composting: the phase of the composting process that begins when organic materials are mixed together for composting and lasts until one of the following conditions is met:

3.1.1 The organic material emits no more than seven (7) mg carbon dioxide per gram of organic material (CO_2-C) per day, as measured using the test method in Section 6.2.1.1; or

3.1.2 The material has a Solvita Maturity Index of 5 or greater as measured using the test method in Section 6.2.1.2; or

3.1.3 The material has been composted for a period of at least 22 consecutive calendar days.

3.2 Aerated Static Pile: a system designed, constructed, maintained, and operated for decomposing organic material in which the material is placed on top of perforated plates or pipes that are connected to blowers that either push or pull air through the piles.

3.3 Alternative Mitigation Measure: a mitigation measure, proposed by the operator, that is determined by the APCO and EPA to achieve VOC reductions that are equal to or greater than the VOC reductions that would be achieved by other mitigation measures listed in this rule, that operators could choose as a means of complying with rule requirements.

3.4 Animal Manure: non-human animal excretions and waste, including, but not limited to, dried solids and urine from cows, cattle, or swine.

3.5 APCO: as defined in Rule 1020 (Definitions).

3.6 ARB: California Air Resources Board.

3.7 Background: a reading on a hydrocarbon analyzer that is measured at a distance no greater than two (2) meters upwind from any component to be inspected and which is not influenced by any specific emission point.

3.8 BARCT: Best Available Retrofit Control Technology is an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.

3.9 Biosolids: organic material resulting from the treatment of sewage sludge or wastewater. Biosolids that have completed both the active phase and the curing phase of composting are considered finished compost for purposes of this rule.

3.10 Class One Mitigation Measure: a VOC mitigation measure or combination of measures for composting facilities subject to the rule that, at the time of rule adoption, are considered BARCT for VOC for all composting facilities.

3.11 Class Two Mitigation Measure: a VOC mitigation measure or combination of measures for the composting facilities subject to the rule with throughputs of at least 100,000 wet tons per year that, in combination with Class One mitigation measures, are considered BARCT for VOC for these facilities at the time of rule adoption.

3.12 Co-composting: composting where biosolids and/or animal manure and/or poultry litter are mixed with other materials, including amendments, to produce compost. Co-composting includes both the active and curing phases of the composting process.

3.13 Compostable Material: any organic material that is capable of undergoing active composting.

3.14 Composting: the controlled biological decomposition of organic material, such as sewage sludge, animal manures, or crop residues, under aerobic (with air) or anaerobic (without air) conditions to form a humus-like material.

3.15 Composting Facility: any facility where composting or co-composting occurs. Unless exempt under Section 4.0 of this rule, only those composting/co-composting facilities that use biosolids, animal manure, or poultry litter as part of the composting or co-composting operation are subject to this rule.

3.16 Contiguous or Adjacent Property: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).

3.17 Curing Composting: the phase of the composting process that begins immediately after the end of the active phase of composting and lasts until one of the following conditions is met:

3.17.1 The organic material emits no more than four (4) mg CO_2-C per gram of organic material per day, as measured using the test method in Section 6.2.1.1; or

3.17.2 The compost has a Solvita Maturity Index of 7 or greater, as measured using the test method in Section 6.2.1.2; or

3.17.3 The material has been composted at least 40 consecutive calendar days after the active composting period.

3.18 Day: a continuous twenty-four hour period, beginning at 12:00 A.M.

3.19 EPA: United States Environmental Protection Agency.

3.20 Facility: a portion of real property that is on one or more contiguous or adjacent properties all of which are under common ownership or control.

3.21 Finished Compost: a humus-like material that meets at least one of the following conditions:

3.21.1 Emits no more than four (4) mg CO2-C per gram of organic material per day, as measured using the test method in Section 6.2.1.1;

3.21.2 Has a Solvita Maturity Index of 7 or greater, as measured using the test method in Section 6.2.1.2;

3.21.3 Has completed both the active and curing phases of composting.

3.22 Hydrocarbon Vapor Analyzer: a hand-held portable hydrocarbon analyzer that meets the criteria specified in Section 6.2.4.2 or Section 6.2.5.5.

3.23 In-vessel Composting System: a system where all compostable material is inside a negatively-pressurized or positively-pressurized enclosure that is not open to the atmosphere and that is composed of hard-piping, ductwork connections, and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment.

3.24 Land Application: the final disposal of biosolids, animal manure, or poultry litter by spreading or piling of the material in an open area in a manner that does not meet the definition of landfilling.

3.25 Landfill (Landfilling): a method for final disposal of biosolids, animal manure, or poultry litter on land where the material is spread and compacted and a daily cover is applied.

3.26 Land Incorporate: use of a method, such as tilling, injecting, or plowing that covers and mixes material with soil.

3.27 Mitigation Measure: an activity, work practice, or technology that reduces VOC air pollutants emitted by or associated with the management of biosolids, animal manure, or poultry litter.

3.28 Operator: any person who owns, leases, supervises, or operates a facility that processes biosolids, animal manure, or poultry litter, or equipment on such a facility.

3.29 Pathogen Reduction: any process conducted entirely or in part to reduce the number of disease-causing organisms present in biosolids, animal manure, or poultry litter in accordance with Title 14 Chapter 3.1 Division 7 Section 17868.3 of the California Code of Regulations (CCR).

3.30 Pile: material that is heaped together.

3.31 Poultry Litter: poultry excretions and waste, including, but not limited to, dried solids and urine from chickens, turkeys, geese, or ducks.

3.32 Solvita Maturity Index: an index that defines the stage where compost exhibits resistance to further decomposition, as tested by the Solvita Maturity Test®.

3.33 Throughput: the weight of material to be processed, as it is received or generated at the facility subject to this rule, prior to any dewatering or treatment at the receiving facility. Throughput includes the weight of moisture present in the received materials.

3.34 Tipping Fees: money or other financial benefits received by a facility, owner, or operator in exchange for the facility, owner, or operator accepting green waste, biosolids, animal manure, or poultry litter.

3.35 TMECC: Test Methods for the Examination of Composting and Compost by the US Composting Council Research and Education Foundation.

3.36 VOC Control Device: any APCO, ARB, and EPA approved machine or technology used to reduce VOC emissions from a VOC emission source including, but not limited to, a biofilter, a carbon scrubber, or an incineration device.

3.37 Volatile Organic Compounds (VOC): as defined in Rule 1020 (Definitions).

3.38 Year: a continuous, 12-month period beginning on January 1 and ending on December 31.

4.0 Exemptions

Except for the applicable recordkeeping requirements of Section 6.1.1, the provisions of this rule shall not apply to the following facilities:

4.1 Facilities subject to Rule 4570 (Confined Animal Facilities) or facilities that are specifically exempt under Section 4.0 of Rule 4570.

4.2 Composting/co-composting facilities whose throughput includes a total of less than 100 wet tons per year of biosolids, animal manure, and poultry litter. For purposes of this exemption only, only biosolids, animal manure and poultry litter are counted in the throughput determination.

4.3 Operators who land apply any combination of biosolids, animal manure, or poultry litter and that meet all of the following criteria:

4.3.1 Receive, in total, less than 10,000 wet tons per year of any combination of biosolids, animal manure, or poultry litter; and

4.3.2 Are not intentionally conducting pathogen reduction on any biosolids, animal manure, or poultry litter at the facility; and

4.3.3 Are not subject to the regulations of the California Integrated Waste Management Board pertaining to solid waste transfer/processing or disposal; and

4.3.4 Do not receive or collect tipping fees.

4.4 Facilities that place all material containing un-composted biosolids, animal manure, or poultry litter in airtight bags or packages for sale or sell material containing biosolids, animal manure, or poultry litter as a soil amendment or fertilizer. Within 15 days of receipt, the biosolids, animal manure, or poultry litter must be placed in airtight bags or removed from the facility.

5.0 Requirements

5.1 Landfill Requirements

5.1.1 Within 24 hours of receipt at the facility, an operator that landfills biosolids, animal manure, or poultry litter shall cover the material with one of the following covers:

5.1.1.1 Six inches of finished compost, or

5.1.1.2 Six inches of soil, or

5.1.1.3 A waterproof covering, or

5.1.1.4 With the exception of biosolids or biosolids-derived material, an alternative material of alternative thickness as approved in California Code of Regulations, Title 27, Section 20690. Biosolids that have been through both the active and curing phases of the composting process are not considered biosolids or biosolids-derived material for the purposes of this requirement.

5.1.1.5 Operator shall not use biosolids or biosolids-derived material as alternative daily cover unless the operator has received an Authority to Construct authorizing such cover. At least 12 months prior to the intended use of such material as an alternative daily cover, an operator shall apply for a new or modified Permit to Operate and shall comply with all applicable Rule 2201 requirements including Best Available Control Technology (BACT), emission offsets, and public notification. In establishing BACT, the District must consider the use of alternate covers and all other available control technologies.

5.1.2 In lieu of covering the biosolids, animal manure, or poultry litter as in Section 5.1.1, an operator may implement an alternative mitigation measure that demonstrates at least a 10% reduction in VOC emissions.

5.2 Land Application Requirements

An operator that land-applies material containing biosolids, animal manure, or poultry litter shall implement at least one of the mitigation measures in Table 1.

Table 1 - Land Application Mitigation Measures	
1.	Directly inject the biosolids, animal manure, or poultry litter at least three inches (3") below the soil surface within three (3) hours of receipt at the facility.
2.	Land incorporate the biosolids, animal manure, or poultry litter within three (3) hours of receipt at the facility. Materials received after 6 pm must be land incorporated by noon of the following calendar day.
3.	Cover the biosolids, animal manure, or poultry litter within three (3) hours of receipt at the facility. The cover shall be one of the following: a waterproof cover; at least six (6) inches of finished compost; or at least six (6) inches of soil. When conditions are appropriate to allow direct injection or land incorporation of the covered material, the material shall be directly injected or land incorporated within three (3) hours of uncovering the material.
4.	Implement an alternative mitigation measure(s) not listed that demonstrates at least a 10% reduction in VOC emissions.

5.3 Composting/Co-composting Facility Requirements

5.3.1 Operators of composting/co-composting facilities with throughputs less than 20,000 wet tons per year shall meet either 5.3.1.1 or 5.3.1.2.

5.3.1.1 Implement at least three (3) of the Class One mitigation measures listed in Table 2.

5.3.1.2 Implement at least two (2) Class One mitigation measures in addition to one (1) Class Two mitigation measure for active composting.

5.3.2 Operators of composting/co-composting facilities with throughputs at least 20,000 wet tons per year but less than 100,000 wet tons per year shall meet either 5.3.2.1 or 5.3.2.2.

5.3.2.1 Implement at least four (4) of Class One mitigation measures listed in Table 2.

5.3.2.2 Implement at least three (3) Class One mitigation measures in addition to one (1) Class Two mitigation measure on active composting processes.

5.3.3 Operators of composting/co-composting facilities with throughputs at least 100,000 wet tons per year shall meet either 5.3.3.1 or 5.3.3.2.

5.3.3.1 Implement at least four (4) Class One mitigation measures in addition to one (1) Class Two mitigation measure for active composting.

5.3.3.2 Implement at least two (2) Class One mitigation measures, in addition to one (1) Class Two mitigation measure for active composting and one (1) Class Two mitigation measure for curing composting.

Table 2 – Composting/Co-composting Facility Mitigation Measures	
Class One Mitigation Measures	
1.	Scrape or sweep, at least once a day, all areas where compostable material is mixed, screened, or stored such that no compostable material greater than one inch (1") in height is visible in the areas scraped or swept immediately after scraping or sweeping, except for compostable material in process piles or storage piles.
2.	Maintain a minimum oxygen concentration of at least five percent (5%), by volume, in the free air space of every active and curing compost pile.
3.	Maintain the moisture content of every active and curing compost pile between 40% and 70%, by weight.
4.	Manage every active pile such that the initial carbon to nitrogen ratio of every pile is at least twenty (20) to one (1).
5.	Cover all active compost piles within 3 hours of each turning with one of the following: a waterproof covering; at least six (6) inches of finished compost; or at least six (6) inches of soil.
6.	Cover all curing compost piles within 3 hours of each turning with one of the following: a waterproof covering; at least six (6) inches of finished compost; or at least six (6) inches of soil.
7.	Implement an alternative Class One mitigation measure(s) not listed above that demonstrates at least a 10% reduction, by weight, in VOC emissions.
Class Two Mitigation Measures	
8.	Conduct all active composting in aerated static pile(s) vented to a VOC emission control device with a VOC control efficiency of at least 80% by weight.
9.	Conduct all active composting in an in-vessel composting system vented to a VOC emission control device with a VOC control efficiency of at least 80% by weight.
10	Conduct all curing composting in aerated static pile(s) vented to a VOC emission control device with a VOC control efficiency of at least 80% by weight.
11	Conduct all curing composting in an in-vessel composting system vented to a VOC emission control device with a VOC control efficiency of at least 80% by weight.
12.	Implement an alternative Class Two mitigation measure(s) not listed above that demonstrates at least 80% reduction, by weight, in VOC emissions.

5.3.4 Operators selecting oxygen concentration or moisture content as a mitigation measure shall test each active compost pile and each curing compost pile at least once each week using the applicable test methods in Section 6.2.2, unless the APCO and EPA determine, based on the weekly test results, that a different testing frequency is warranted to ensure compliance.

5.3.5 For operators selecting initial carbon to nitrogen ratio as a mitigation measure shall test the material when it is prepared for active composting using the applicable test method in Section 6.2.2. Testing shall be done each day that materials are mixed. Samples shall be representative of the initial composition of the active compost pile.

5.3.6 If a tested parameter is found to be outside the applicable limits specified in Table 2, the operator shall take remedial action within 24 hours of discovery to bring pile characteristics within the specified limits.

5.4 VOCs from Aerated Static Piles and In-Vessel Systems

5.4.1 In addition to the requirements of Section 5.3, an aerated static pile shall have no measurable increase (< 0.45 ppmv increase) over background levels of hydrocarbons within three feet of any surface of the aerated static pile.

5.4.2 In addition to the requirements of Section 5.3, an in-vessel composting operation shall have no measurable increase (< 0.45 ppmv increase) over background levels of hydrocarbons outside the in-vessel enclosure, including any opening that occurs briefly for access or maintenance.

5.4.3 An operator shall test for VOCs once each calendar quarter.

5.4.3.1 The location and number of test points for aerated static pile composting system shall be determined using TMECC 02.01-B (Selection of Sampling Locations for Windrows and Piles).

5.4.3.2 The openings of an in-vessel composting system shall be tested according to the test method specified in Section 6.2.3.2.

5.4.3.3 The hydrocarbon analyzer shall meet the requirements specified in Section 6.2.4.2.

5.4.4 In lieu of complying with the applicable requirements of Sections 5.4.1 or 5.4.2, an operator may monitor one or more alternative parameters. The operator must demonstrate, to the satisfaction of the APCO and EPA, that the alternative parameter(s) correlates to the composting system capturing as much of the VOC emissions as technologically practical.

5.4.5 In lieu of complying with the requirements of Section 5.4.3, an operator may use a different analyzer or test on a different schedule if the operator demonstrates, to the satisfaction of the APCO and EPA, that the alternate analyzer or alternate schedule is as indicative of system performance as the requirements Section 5.4.3.

5.5 Biofilter Requirements:

5.5.1 In addition to complying with the applicable requirements of Section 5.3, an operator using a biofilter as a VOC emission control device shall maintain all biofilters at their facility in such a manner that each biofilter complies with the following conditions at all times when it is in operation:

5.5.1.1 The biofilter media temperature is between 70 degrees Fahrenheit and 110 degrees Fahrenheit,

5.5.1.2 The moisture content of the biofilter media is between 40.0% and 70.0% by weight.

5.5.1.3 The pH of the biofilter media is between 6.5 and 8.0.

5.5.1.4 Visual inspection - The biofilter media is free of observable rodent burrows, cracks, and channeling. Weed coverage shall be less than 10% of the exposed surface of the biofilter.

5.5.2 Biofilter Monitoring Schedule

5.5.2.1 The biofilter media shall be tested for the following properties at least once per calendar month in five separate, evenly spaced locations throughout the biofilter: temperature, moisture, and pH.

5.5.2.2 Visual inspection of biofilter media shall be performed at least once each week.

5.5.3 In lieu of complying with the requirements of Section 5.5.1, an operator may be held to a different range of values or monitor alternative parameter(s) if the operator demonstrates, to the satisfaction of the APCO and EPA, that the range of values or alternate parameter(s) is as indicative of system performance as the applicable requirements Section 5.5.1. The alternate range of the parameters listed in 5.5.1 or alternate monitoring parameter can be demonstrated by a source test.

5.5.4 In lieu of complying with the requirements of Section 5.5.2, an operator may monitor on a different schedule if the operator demonstrates, to the satisfaction of the APCO and EPA, that alternate schedule is as indicative of system performance as the schedule in Section 5.5.2.

5.5.5 An operator using approved alternative parameter(s) from Section 5.5.3 shall also demonstrate the monitoring frequency for the alternative

parameter(s) as indicated in Section 5.5.4 is adequate to ensure rule compliance.

5.6 Non-Biofilter VOC Emission Control Device Requirements

5.6.1 In addition to the applicable requirements of Sections 5.3 and 5.4, an operator using a VOC emission control device that is not a biofilter shall monitor key system operating parameters that demonstrate continuous operation and compliance of the VOC emission control device during composting operations. Examples of key system operating parameters include, but are not limited to, temperatures, pressures, and flow rates.

5.6.2 In addition to the applicable requirements of Sections 5.3 and 5.4, operators using a VOC emission control device that is not a biofilter shall operate and maintain the VOC emission control device in accordance with the manufacturer's recommendations and any additional operating and maintenance standards determined necessary by the APCO, ARB, and EPA to ensure proper operation of the VOC control device.

5.7 Source Testing Requirements for VOC Emission Control Device

5.7.1 The VOC emission control device (biofilter or non-biofilter) shall be tested for VOC control efficiency within ninety days of installation and every two years thereafter. VOC emission control devices with an active Permit-to-Operate on March 15, 2007 shall be tested for VOC control efficiency on or before September 30, 2007, and every two years thereafter.

5.7.2 The source test must be conducted under representative operating conditions with respect to seasonal conditions, compost composition, process throughput, processing of materials, and pile geometries.

5.7.3 An operator of a biofilter may request a longer time between installation and source test if the operator shows, to the satisfaction of the APCO and EPA, that a longer time is necessary. In no case shall the time between installation and the source test be greater than six (6) months.

6.0 Administrative Requirements

6.1 Recordkeeping

6.1.1 Exempt Operations Records

6.1.1.1 Operators claiming exemption under Section 4.0 shall maintain records to demonstrate that the operation meets all of the conditions of the claimed exemption.

6.1.1.2 Except for throughput records, records documenting claim of exemption shall be retained until two years after loss of exemption.

6.1.1.3 Throughput records demonstrating claim of exemption shall be retained according to Section 6.1.8.

6.1.2 Landfill Records

An operator subject to this rule that landfills biosolids, animal manure, or poultry litter shall maintain an operations log. In the operations log, the operator shall record the following information on a daily basis:

6.1.2.1 The time at which the biosolids, animal manure, or poultry litter arrives on site; and

6.1.2.2 The quantity of biosolids, animal manure, or poultry litter received; and

6.1.2.3 The time at which the received material is completely covered as described in the mitigation measures or the time at which the alternate mitigation measure is in place.

6.1.3 Land Application Records

An operator subject to this rule that land applies any combination of biosolids, animal manure, or poultry litter shall maintain an operations log. In the operations log, the operator shall record the following information on a daily basis:

6.1.3.1 The time at which the biosolids, animal manure, or poultry litter arrives on site; and

6.1.3.2 The quantity of biosolids, animal manure, or poultry litter received; and

6.1.3.3 Other information necessary to determine compliance with the selected mitigation measures.

6.1.4 Composting Facility Records

An operator of a composting facility subject to this rule shall keep the following records:

6.1.4.1 Throughput Records

On a daily basis, an operator shall record the quantity of materials received that would be used in the compost/co-compost operation. These materials include, but are not limited to, material that may be recovered from the composting process for reuse in another batch of compostable material; biosolids; animal manure; poultry litter; and green waste.

6.1.4.2 Class One Mitigation Measure Records

An operator shall keep records that demonstrate that the facility meets the Class One mitigation measures selected for the facility each day that a mitigation measure is performed. For operators using an approved alternative Class One mitigation measure, the operator shall keep records for the alternative mitigation measure each day the alternative mitigation measure is performed.

6.1.4.3 Class Two Mitigation Measure Records

An operator shall keep records according to 6.1.5 through 6.1.7, as applicable, for the composting operations subject to Class Two mitigation measures.

6.1.5 VOC Inspection Records

The operator shall maintain an inspection logbook. The following information shall be contained in the logbook:

6.1.5.1 The date of the VOC inspection.

6.1.5.2 The reading of the portable hydrocarbon analyzer in ppmv for each inspection location.

6.1.5.3 If an alternate parameter is monitored, list the parameter monitored and record the level of the alternate parameter for each inspection location.

6.1.6 Biofilter Records

In addition to the records required in Section 6.1.4, an operator using a biofilter as a VOC emission control device shall keep records with the following information:

6.1.6.1 Date of biofilter monitoring.

6.1.6.2 The parameter monitored and the test results for the parameter monitored.

6.1.6.3 If an alternate parameter is monitored, list the parameter monitored and record the level of the alternate parameter for each location.

6.1.7 Non-Biofilter VOC Emission Control Device Records

6.1.7.1 An operator using a VOC emission control system that is not a biofilter as a means of complying with this rule shall maintain daily records of key system operating parameters which will demonstrate continuous operation and compliance of the VOC emission control system during composting operations. Examples of key system operation parameters include, but are not limited to, temperature, pressure, and flow rates.

6.1.7.2 An operator using a VOC emission control device that is not a biofilter shall keep records describing all maintenance work on the VOC emission control system.

6.1.8 Records Retention

Unless otherwise specified in this section, the operator shall retain the applicable records specified in this section on-site for a period of five years, make the records available on-site during normal business hours to the APCO, ARB, or EPA, and submit the records to the APCO, ARB, or EPA upon request.

6.2 Test Methods

6.2.1 Compost Maturity/Stability

Any of the following test methods:

6.2.1.1 TMECC Method 05-08-B (Carbon Dioxide Evolution Rate); or

6.2.1.2 TMECC Method 05-08-E (Solvita Maturity Test®).

6.2.2 Composting Facility Class One Mitigation Measure Test Methods

6.2.2.1 Oxygen Concentration – TMECC Method 05.08-C (In-Situ Oxygen Refresh Rate)

6.2.2.2 Moisture Content - TMECC Method 03.09 (Total Solids and Moisture at 70±5 degrees Centigrade)

6.2.2.3 Carbon to Nitrogen Ratio - TMECC Method 05.02-A (Carbon to Nitrogen Ratio)

6.2.3 Composting Facility Class Two Mitigation Measure Test Methods

6.2.3.1 Biofilter Control Efficiency

The control efficiency of a biofilter shall be determined using SCAQMD Method 25.3 (Determination of Low Concentration Non-Methane Non-Ethane Organic Compound Emissions from Clean Fueled Combustion Sources). The SCAQMD Method 25.3 apparatus should be connected to sample directly inside the flux chamber or duct as applicable. Compost emissions are considered as water-soluble sources where the 50 ppm applicability limit of Method 25.3 does not apply. Samples from more than one location may be combined (composited) per SCAQMD Rule 1133.2 Attachment A Section 8.

6.2.3.2 VOC Emission Control Device (Non-Biofilter) Control Efficiency

The control efficiency of a VOC emission control system shall be determined using EPA Methods 2, 2A, or 2D for measuring flow rates and EPA Methods 25, 25A, or 25B for measuring total gaseous organic concentrations at the inlet and outlet of the control device. EPA Method 18 or ARB Method 422 shall be used to determine the emissions of exempt compounds.

6.2.4 VOC Test Method

6.2.4.1 Test Method – EPA Method 21 (VOC Leaks)

6.2.4.2 Hydrocarbon Analyzer – The portable hydrocarbon analyzer shall be:

6.2.4.2.1 A flame ionization detector.

6.2.4.2.2 Operated per manufacturer's instructions.

6.3.4.2.3 Calibrated with certified zero and 10 ppmv methane standards.

6.2.5 Biofilter Test Methods

6.2.5.1 Temperature – EPA Method 170.1 (Temperature – Thermometric)

6.2.5.2 Moisture Content - TMECC Method 03.09 (Total Solids and Moisture at 70±5 degrees Centigrade)

6.2.5.3 Media pH - TMECC Method 04.11-A (1:5 Slurry pH)

6.2.5.4 VOC – EPA Method 21 (VOC Leaks)

6.2.5.5 Hydrocarbon Analyzer for VOCs – The portable hydrocarbon analyzer shall be:

6.2.5.5.1 A flame ionization detector.

6.2.5.5.2 Operated per manufacturer's instructions.

6.3.5.5.3 Calibrated with certified zero and 10 ppmv methane standards.

6.2.6 Alternative Test Methods

An operator may use an alternative test method to those listed in Sections 6.2.1 through 6.2.5 for which written approval of the APCO and EPA has been obtained.

6.2.7 Multiple Test Methods

When more than one test method or set of test methods is specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of this rule.

6.3 Alternative Mitigation Measures Compliance Plan

6.3.1 A compliance plan for alternative mitigation measures shall contain the following elements:

6.3.1.1 The name(s), address(es) and telephone number(s) of person(s) responsible for the preparation, submittal, and implementation of the compliance plan;

6.3.1.2 The name, address, and telephone number(s) of the facility for which the compliance plan is being prepared;

6.3.1.3 A description and process diagram of the operation;

6.3.1.4 A complete description of the control method(s) that will be used in place of a listed mitigation method;

6.3.1.5 All data, calculations methodology, calculations, records, manufacturer specifications, and all other information necessary to determine that proposed mitigation measure will achieve the required emission reductions;

6.3.1.6 Methodology and calculations establishing the daily and annual VOC emissions or projected VOC emissions. Unless the operator establishes an operation-specific baseline emission factor per Section 6.3.1.7, an emission factor of 1.78 pounds VOC emissions per wet ton of material shall be used;

6.3.1.7 If applicable, a source test protocol developed in accordance with the requirements of Section 6.2.2, to establish operation-specific baseline emission factors;

6.3.1.8 A source testing protocol developed in accordance with the requirements of Section 6.2.2 to demonstrate compliance with the emission reductions proposed;

6.3.1.9 An identification of all equipment needing permits to construct and operate.

6.3.2 In evaluating the compliance plan, the APCO and EPA may require tests and sampling, as necessary, to determine the adequacy of the compliance plan and the likelihood of compliance with the emission reduction requirements.

6.3.3 The APCO and EPA may approve operation-specific baseline emissions factors provided the baseline emissions factors are substantiated with source test data obtained in accordance with Section 6.2 of this rule and the material and mixtures of materials is representative of normal operations.

6.3.4 The APCO and EPA shall provide interim approval of the compliance plan provided the operator submits all of the information required under Section 6.3.1 and the APCO and EPA verifies that, by design, the compliance plan will reduce emissions similar to or greater than listed mitigation measures.

6.3.5 Following the interim approval of the compliance plan, the APCO and EPA shall approve the compliance plan provided the operator submits, no later than 180 days after the effective date of compliance, a certification of the compliance report that includes all source test data, and the APCO and EPA verifies that the emissions from the mitigation measure meets the emission reduction limits.

6.3.6 The APCO and EPA may impose conditions necessary to ensure that the operation complies with the compliance plan and all applicable District rules.

6.3.7 The APCO and EPA may require the operator to maintain records consistent with the compliance plan necessary to demonstrate compliance with the compliance plan.

6.3.8 Compliance with the provision of the approved proposal does not exempt an operator from complying with the requirements of the California Health and Safety Code or any other District rule.

7.0 Compliance Schedule

7.1 Landfill Operations

On and after March 15, 2008, all landfill operations shall be in full compliance with all applicable rule requirements.

7.2 Land Application Operations

7.2.1 On and after March 15, 2008, all land application operations with usage of biosolids, animal manure, or poultry litter totaling 100,000 wet tons per year or less shall be in full compliance with all applicable rule requirements.

7.2.2 On and after September 15, 2008, all land application operations with usage of biosolids, animal manure, or poultry litter totaling more than 100,000 wet tons per year shall be in full compliance with all applicable rule requirements.

7.3 Composting/Co-composting Operations

7.3.1 On and after September 15, 2008, operators of compost/co-compost facilities with throughputs less than 100,000 wet tons per year shall be in full compliance with all applicable rule requirements.

7.3.2 On and after March 15, 2010, operators of compost/co-compost facilities with throughput of at least 100,000 wet tons per year shall be in full compliance with all applicable rule requirements.

7.4 Operators of compost/co-composting facilities with throughput of at least 100,000 wet tons per year planning to convert composting/co-composting operations to energy generation operations shall comply with Sections 7.4.1 through 7.4.4. For purposes of this compliance schedule, energy generation operations are those operations that use biosolids, animal manure, or poultry litter as fuel for equipment to generate electricity.

7.4.1 On or before March 15, 2008, the operator shall file an Authority to Construct (ATC) application and an "Emission Control Plan" containing information to support the extended compliance schedule, including, but not limited to, the following:

7.4.1.1 All data, calculations methodology, calculations, records, manufacturer specifications, and all other information necessary to determine the percent of composting/co-composting operations converted to energy generation. The percent of composting operations converted shall be calculated using the following equation.

$$\% \text{ converted} = \frac{(W_{energy})}{(W_{current})} \times 100$$

Where

% converted = the estimated percent of current compost/co-compost operations that would be converted to energy generation operations (%)

W_{energy} = the estimated throughput of biosolids, animal manure or poultry litter and other materials used in energy generation operations (wet tons/year)

$W_{current}$ = the highest recorded annual throughput based on the calendar years 2002 through 2006 (wet tons/year)

7.4.1.2 All data, calculations methodology, calculations, records, manufacturer specifications, and all other information necessary

to determine that the proposed energy generation operation will achieve VOC emission reductions of at least 96% by weight compared to the uncontrolled emissions from composting/co-composting;

7.4.1.3 Methodology and calculations establishing the daily and annual VOC emissions or projected VOC emissions;

7.4.1.4 If applicable, a source test protocol developed in accordance with the requirements of Section 6.2.2, to establish operation-specific baseline emission factors.

7.4.1.5 A source testing protocol developed in accordance with the requirements of Section 6.2.2 to demonstrate compliance with the emission reductions proposed.

7.4.1.6 A demonstration, subject to approval by the APCO and EPA, that the energy generation project will reduce VOC emissions by at least 96% by weight compared to the uncontrolled emissions from composting/co-composting. The project shall demonstrate a net air quality benefit with respect to particulate matter and ozone formation, after accounting for any increases in oxides of nitrogen (NOx) emissions from the project.

7.4.2 If the percent converted to energy generation operations in Section 7.4.1.1 is less than 100%, the unconverted composting/co-composting operations shall be in compliance with all provisions of the rule by the compliance schedule in Section 7.3.1 or Section 7.3.2, as appropriate; and

7.4.3 On and after September 15, 2008, the operator shall implement four (4) Class One mitigation measures from Table 2 for all compost/co-compost operations that would be converted to energy generation operations. These mitigation measures shall remain in place until 7.4.4 is implemented or the compost/co-compost operations are converted to energy generation operations, whichever comes first; and

7.4.4 On and after September 15, 2012, the operator shall implement three Class One mitigation measures and operated in-vessel composting systems, for both the active and curing phases of composting of all composting/co-composting operations, at the facility, that were originally planned for conversion to energy generation operations but that have not been converted. The in-vessel systems shall be vented to a VOC control system with a control efficiency of at least 90% by weight and complies with Section 5.4 of this rule.

7.4.5 Compliance with the provision of the approved proposal does not exempt an operator from complying with the requirements of the California Health and Safety Code or any other District rule.

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4570 - CONFINED ANIMAL FACILITIES
(Adopted June 15, 2006)

1.0 Purpose

The purpose of this rule is to limit emissions of volatile organic compounds (VOC) from Confined Animal Facilities (CAF).

2.0 Applicability

The provisions of this rule shall apply to any Confined Animal Facility.

3.0 Definitions

3.1 Aerated Static Pile (ASP): a system designed, constructed, maintained, and operated for decomposing organic material in which the material is placed on top of perforated plates or pipes that are connected to blowers that either push or pull air through the piles. The system shall operate under negative or positive pressure for not less than 90% of its blower operation cycle and the exhaust shall be vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.

3.2 Aerobic Digester: a basin or tank designed, constructed, maintained, and operated for the aerobic treatment of liquid or solid animal waste that is approved by the APCO, ARB, and EPA.

3.3 Aerobic Lagoon: a lagoon designed, constructed, maintained, and operated in accordance with the applicable standards for aerobic lagoons in the Natural Resource Conservation Service (NRCS) California Field Office Technical Guide Code 359 or other applicable standards approved by the APCO, ARB, and EPA.

3.4 Alternative Mitigation Measure: a mitigation measure that is determined by the APCO, ARB, and EPA to achieve reductions that are equal to or exceed the reductions that would be achieved by other mitigation measures listed in this rule that owners/operators could choose to comply with rule requirements.

3.5 Anaerobic Digester: a basin or tank designed, constructed, maintained, and operated for the anaerobic treatment of liquid or solid animal waste in accordance with the applicable standards for anaerobic digesters in the Natural Resource Conservation Service (NRCS) California Field Office Technical Guide Code 359 or other applicable standards approved by the APCO, ARB, and EPA.

3.6 Anaerobic Treatment: the decomposition of organic matter by microbes in the absence of oxygen. During this process four main reactions occur. In the first

reaction, complex organic materials (e.g. carbohydrates, proteins, and fats) are hydrolyzed to form soluble organic molecules (e.g. sugars, amino acids, and fatty acids). In the second reaction, soluble organic molecules ferment to form acetic acid, formic acid, and volatile fatty acids. In the third reaction, volatile fatty acids undergo acetogenesis to form acetic acid and formic acid. In the fourth reaction, acetic acid and formic acid undergo methanogenesis to form methane and carbon dioxide.

3.7 Anaerobic Treatment Lagoon: a lagoon designed, constructed, maintained, and operated in accordance with the standards for anaerobic lagoons in the Natural Resource Conservation Service (NRCS) California Field Office Technical Guide Code 359 or other applicable standards approved by the APCO, ARB, and EPA.

3.8 Animal Waste: any animal excretions and mixtures containing animal excretions, except for material meeting the definition of separated solids.

3.9 APCO: as defined in Rule 1020 (Definitions).

3.10 ARB: as defined in Rule 1020 (Definitions).

3.11 Beef Feedlot: a CAF that is primarily concerned with raising cattle for the production of meat for commercial purposes.

3.12 CDFA: California Department of Food and Agriculture or any person designated to act on its behalf.

3.13 Certified Nutritionist: a nutritionist certified by the American Registry of Professional Animal Scientists or who is approved by the APCO, ARB, and EPA.

3.14 Class One Mitigation Measures: a mitigation measure or combination of measures for the specific source category that, at the time of rule adoption, are considered to be the Best Available Retrofit Control Technology (BARCT) for VOC, as defined in the California Health and Safety Code Section 40406.

3.15 Class Two Mitigation Measures: a mitigation measure or combination of measures for the specific source category that achieve VOC reductions equal to or greater than those achieved by Class One Mitigation Measures, but are considered beyond the Best Available Retrofit Control Technology (BARCT) standards for existing facilities after taking into account environmental, energy, economic, legal, social, and technological factors. These measures are considered to be between BARCT (the standard for existing facilities) and Best Available Control Technology (BACT) or equivalent to BACT.

3.16 Confined Animal Facility (CAF): a facility where animals are corralled, penned, or otherwise caused to remain in restricted areas for commercial purposes and

primarily fed by a means other than grazing for at least forty-five (45) days in any twelve (12) month period.

3.17 Contiguous or Adjacent Property: as defined in Rule 2201 (New and Modified Stationary Source Review).

3.18 Corral/Drylot/Exercise Pen/Loafing Barns/Open Lots: an area where animals are confined without separate stalls in which the animals may rest.

3.19 Dairy: a CAF that is primarily concerned with the production of milk, butter, or cheese for commercial purposes.

3.20 Day: a twenty-four hour period beginning at 12:00 a.m. and ending at midnight.

3.21 District: as defined in Rule 1020 (Definitions).

3.22 Dry Animal Waste/Dry Separated Solids: animal waste with less than 50%, by weight, moisture.

3.23 Emission Mitigation Plan: a document that lists and describes all VOC mitigation measures to be implemented at the CAF. The description shall be sufficiently detailed, such that another person could duplicate the measure by reading the description (e.g. for feed additives the description shall include the name of the additive used and the amount of the additive used).

3.24 EPA: the United States Environmental Protection Agency or any person designated to act on its behalf.

3.25 Facility: a source or group of air pollution sources located on one or more properties that are contiguous, adjacent, or separated only by a public right-of-way and are under common ownership, common control, or operated by entities that are under common ownership or control. A facility includes, but is not limited to, all barns, buildings, coops, corrals, feed storage areas, installations, milking parlors, structures, and systems for the collection, distribution, storage, and treatment of animal waste on the properties.

3.26 Feed Bunk: the area where feed is placed for the animals to eat the feed.

3.27 Freestall: a structure for housing animals in which the animals are contained in pens under a roof and have free access to feed bunks, waterers, and stalls for resting.

3.28 In-corral Mounds: mounds of animal waste and/or soil which are constructed, designed, maintained, and operated by the owner/operator to allow animals to have a dry area to lay and rest during the wet season.

3.29 Lagoon: a basin constructed, maintained, and operated to store and treat animal waste. This does not include basins primarily used to collect runoff and stormwater.

3.30 Land Incorporate: use of a method, such as tilling, injecting, or plowing, that covers animal waste with soil.

3.31 Licensed Veterinarian: a veterinarian licensed by the State of California or a veterinarian that is approved by the APCO, ARB, and EPA.

3.32 Livestock: any domesticated animal kept or raised for the production of eggs, milk, or meat.

3.33 Milking Cow: a cow that is currently producing milk (lactating).

3.34 Mitigation Measure: an activity, practice, or technology that reduces VOC air pollutants emitted by or associated with a CAF.

3.35 NRC: the National Research Council of the United States of America.

3.36 NRCS: the Natural Resource Conservation Service operated under the United State Department of Agriculture.

3.37 Other Cattle Facility: a CAF housing cattle that does not meet the definition of a Beef Feedlot or Dairy.

3.38 Owner/Operator: any person who owns, leases, supervises, or operates a Confined Animal Facility or equipment on such a facility.

3.39 Phototropic Lagoon: a lagoon where at least 10% of the bacteria in the lagoon are photosynthetic bacterium; the bacteriochlorophyll *a* concentration is above 1081μg/L; or that is designed, constructed, maintained, and operated according to other standards approved by the APCO, ARB, and EPA.

3.40 Poultry: any domesticated birds kept or raised for eggs or meat.

3.41 Separated Solids: solid removed from animal waste by a solid separator system.

3.42 Shade Structure: a structure designed, constructed, installed, maintained, and operated to provide shade for livestock.

3.43 Solid Separator System: a system for separating solid animal waste from liquid animal waste products that is designed, installed, constructed, operated, and maintained in accordance with the applicable standards in California NRCS Field Office Technical Guide Code 632 or other applicable standards approved by the APCO, ARB, and EPA. Solid separator systems may include, but are not limited

to, flat belt separators, roller press separators, vibrating screen separators, stationary inclined screen separators, and settling basins.

3.44 Storage Pond: a basin constructed, maintained, and operated, to store animal waste, after it has been treated or processed in a lagoon.

3.45 USDA: the United States Department of Agriculture or any person designated to act on its behalf.

3.46 VOC Control Device: a device, into which captured air is vented, that reduces the VOC content in the air prior to the air being released into the atmosphere.

3.47 Volatile Organic Compounds (VOC): as defined in Rule 1020 (Definitions).

3.48 Weatherproof Covering/Storage Structure: A covering, such as a building or tarp, constructed, installed, maintained, and operated such that the material inside or underneath the covering is not moved or moistened by weather conditions outside of the covering including, but not limited, to wind and rain. The covering shall be maintained according to manufacturer recommendations and adhere applicable standards in NRCS California Field Office Technical Guide (FOTG) Codes 313 or other applicable standards approved by the ARB, APCO, and EPA.

3.49 Year: any consecutive 365-day period.

4.0 Exemptions

4.1 Except for the recordkeeping requirements of Section 7.1.1.1, the provisions of this rule shall not apply to a CAF, which remains at all times below all of the thresholds in Table 1:

Table 1- CAF Thresholds for Regulation

Livestock Category	Threshold
Dairy	1,000 milking cows
Beef Feedlots	3,500 beef cattle
Other Cattle Facility	7,500 calves, heifers, or other cattle
Poultry Facilities	
Chicken	650,000 head
Duck	650,000 head
Turkey	100,000 head
Swine Facility	3,000 head
Horses Facility	3,000 head
Sheep and Goat Facilities	15,000 head of sheep, goats, or any

	combination of the two
Any livestock facility not listed above	30,000 head

5.0 Requirements

5.1 Owners/operators of any CAF shall submit, for approval by the APCO, a permit application for each Confined Animal Facility.

5.2 Owners/operators of any CAF shall include an emission mitigation plan within the permit application that lists the VOC mitigation measures that the facility will use to comply with all applicable requirements of Sections 5.6 through 5.13.

5.3 Owners/operators of any CAF shall implement all VOC emission mitigation measures, as contained in the permit application, on and after 365 days from the permit issuance date.

5.4 Notwithstanding Section 5.3, an owner/operator may temporarily suspend use of mitigation measure(s) provided all of the following requirements are met:

5.4.1 It is determined by a licensed veterinarian, certified nutritionist, CDFA, or USDA that any mitigation measure being suspended is detrimental to animal health,

5.4.2 The owner/operator notifies the District, within forty-eight (48) hours of the determination that the mitigation measure is being temporarily suspended; the specific health condition requiring the mitigation measure to be suspended; and the duration that the measure must be suspended for animal health reasons,

5.4.3 The emission mitigation measure is not suspended for longer than recommended by the licensed veterinarian or certified nutritionist for animal health reasons,

5.4.4 If such a situation exists, or is expected to exist for longer than thirty (30) days, the owners/operators shall, within that thirty (30) day period, submit a new emission mitigation plan designating a mitigation measure to be implemented in lieu of the mitigation measure that was suspended, and

5.4.5 The APCO, ARB, and EPA approve the temporary suspension of the mitigation measure for the time period requested by the owner/operator.

5.5 Notwithstanding Sections 5.3 and 5.4, poultry CAF owners/operators may temporarily suspend utilization of a feed mitigation measure(s) for poultry producing eggs for commercial purposes provided all of the following requirements are met:

5.5.1 It is determined by a certified nutritionist or licensed veterinarian that suspension of the mitigation measure is necessary for the animal to molt.

5.5.2 The owners/operators notify the District, within forty-eight (48) hours of the determination that a measure is being temporarily suspended and the duration for which the measure must be suspended for the animal to molt (shed a significant portion of their feathers),

5.5.3 If such a situation exists, or is expected to exist for longer than twenty (20) days, the owners/operators shall, within that twenty (20) day period, submit a new emission mitigation plan designating a mitigation measure to be implemented in lieu of the mitigation measure that was suspended,

5.5.4 The emission mitigation measure is not suspended for longer than recommended by the licensed veterinarian or certified nutritionist for the animal to molt, and

5.5.5 The APCO, ARB, and EPA approve the temporary suspension of the mitigation measure for the time period requested by the owner/operator.

5.6 Dairy CAF: Owners/operators of a Dairy shall also comply with the following applicable requirements:

Table 2 - Dairy CAF Mitigation Measure Requirements

A. Owners/operators shall incorporate at least four (4) of the following feed mitigation measures:	
Class One Mitigation Measures	
1.	a. Feed according to National Research Council (NRC) guidelines.
2.	a. Feed animals high moisture corn or steam-flaked corn and not feed animals dry rolled corn.
3.	a. At least once every fourteen (14) days remove feed from the area where animals stand to eat feed.
4.	a. At least once every fourteen (14) days remove spilled feed from the area where equipment travels to place feed in the feed bunk.
5.	a. Remove uneaten wet feed from feed bunks within twenty-four (24) hours of a rain event.
6.	a. Feed or dispose of rations within forty-eight (48) hours of grinding and mixing rations.
7.	a. Store grain in a weatherproof storage structure from October through May.
8.	a. Implement an alternative mitigation measure(s), not listed above.
B. Owners/operators shall incorporate at least one (1) of the following feed mitigation measures:	

Class One Mitigation Measures	
1.	a. Cover the horizontal surface of silage piles, except for the area where feed is being removed from the pile.
2.	a. Collect leachate from the silage piles and send it to a waste treatment system such as a lagoon at least once every twenty-four (24) hours.
3.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
4.	a. Enclose silage in a bag and vent to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%, or b. Enclose silage in a weatherproof structure and vent to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%, or c. Eliminate silage from animal diet.
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Table 2 – Dairy Mitigation Measures (continued)	
C.	Owners/operators shall incorporate at least one (1) of the following mitigation measures in each milk parlor:
Class One Mitigation Measures	
1.	a. Flush or hose milk parlor immediately prior to, immediately after, or during each milking.
2.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
3.	a. Enclose and vent the milk parlor to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80% when animals are in the parlor.
D.	Owners/operators housing animals in freestalls shall incorporate at least two (2) of the following mitigation measures in each freestall barn.
Class One Mitigation Measures	
1.	a. Vacuum or scrape freestall flush lanes immediately prior to, immediately after, or during each milking.
2.	a. Inspect water pipes and troughs and repair leaks at least once every fourteen (14) days.
3.	a. Use non-animal waste-based bedding and non-separated solids based bedding for at least 90% of the bedding material, by weight, for freestalls (e.g. rubber

	mats, almond hulls, sand, or waterbeds).
4.	a. Remove animal waste that is not dry from individual cow freestall beds at least once every fourteen (14) days.
5.	a. Rake, harrow, scrape, or grade bedding in freestalls at least once every fourteen (14) days.
6.	a. Use a dry animal waste handling system, such as scraping, instead of a liquid animal waste handling system, such as a flush system.
7.	a. Have no animals in exercise pens, corrals, or drylots at any time.
8.	a. Flush freestalls more frequently than the milking schedule.
9.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
10.	a. Vacuum animal waste instead of flushing or scraping and apply animal waste directly to land either through injection or incorporation within seventy-two hours of removal from animal housing or vacuum truck.
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Table 2 – Dairy Mitigation Measures (continued)	
E.	Owners/operators housing animals in corrals shall incorporate at least six (6) of the following mitigation measures in each corral where animals have been housed in the last thirty (30) days.
Class One Mitigation Measures	
1.	a. Clean animal waste from corrals at least four (4) times per year with at least sixty (60) days between cleaning, or b. Clean corrals at least once between April and July and at least once between October and December, or c. Clean concreted areas such that the depth of animal waste does not exceed twelve (12) inches at any point or time, except for in-corral mounding.
2.	a. Manage corrals such that the animal waste depth in the corral does not exceed twelve (12) inches at any time or point, except for in-corral mounding.
3.	a. Knockdown fence line animal waste build-up prior to it exceeding a height of twelve (12) inches at any time or point.
4.	a. Scrape or flush feed aprons in corrals at least once every seven (7) days.
5.	a. Slope the surface of the pens at least 3% where the available space for each animal is 400 square feet or less. Slope the surface of the pens at least 1.5% where the available space for each animal is more than 400 square feet per animal.
6.	a. Maintain corrals to ensure drainage and prevent water from standing more than forty-eight (48) hours after a storm, or b. Maintain corrals and drylots so that there are not indentions in the surface where puddles may form and remain for more than forty-eight (48) hours.
7.	a. Install floats on the troughs or use another method approved by the APCO,

	ARB, and EPA to ensure that the water in the troughs does not intentionally or unintentionally overflow or spill onto an earthen ground.
8.	a. Inspect water pipes and troughs and repair leaks at least once every fourteen (14) days.
9.	a. Harrow, rake, or scrape pens sufficiently to maintain a dry surface.
10.	a. Install no shade structures in the corrals, or b. Install shade structures such that they are constructed with a light permeable roofing material, or c. Install all shade structures uphill of any slope in the corral.
11.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
12.	a. Use lime or a similar absorbent material in the pens according to the manufacturer's recommendations to minimize moisture in the pens, or b. Apply thymol to corral soil in accordance with the manufacturer's recommendation.
13.	a. House animals in an enclosure vented to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%.
	….continues on next page

Table 2 – Dairy Mitigation Measures (continued)	
F.	Owners/operators that handle or store solid animal waste or separated solids outside the animal housing shall incorporate at least two (2) of the following mitigation measures:
Class One Mitigation Measures	
1.	a. Cover dry animal waste piles outside the pens with a weatherproof covering from October through May, except for times, not to exceed twenty-four (24) hours per event, when wind events remove the covering.
2.	a. Cover dry separated solids outside the pens with a weatherproof covering from October through May, except for times, not to exceed twenty-four (24) hours per event, when wind events remove the covering.
3.	a. Remove animal waste from the facility within seventy-two (72) hours of removal from the pens or corrals.
4.	a. Remove separated solids from the facility within seventy-two (72) hours of separation with a solid separation system, or b. Store no separated solids outside of anaerobic digesters or aerobic digesters.
5.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
6.	a. Compost animal waste removed from pens with an aerated static pile vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
7.	a. Store all removed animal waste in an enclosure vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
8.	a. Send at least 51% of the animal waste removed from animal housing to a digester, with a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.

G.	Owners/operators that handle animal waste in a liquid form shall incorporate at least one (1) of the following mitigation measures:
Class One Mitigation Measures	
1.	a. Manage the facility such that there are no lagoons, as defined in Section 3.29, at the facility.
2.	a. Use phototrophic lagoon, or b. Use an anaerobic treatment lagoon that is not mechanically aerated.
3.	a. Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon.
4.	a. Maintain lagoon pH between 6.5 and 7.5.
5.	a. Implement an alternative mitigation measure(s), not listed above.
	…continues on next page

Table 2 – Dairy Mitigation Measures (continued)	
Class Two Mitigation Measures	
6.	a. Use an aerobic lagoon, or b. Use an anaerobic treatment lagoon that is mechanically aerated.
7.	a. Maintain organic loading in the lagoon such that the total solids is less than 3.5 mg (dry weight)/mL, or total volatile solids is less than 3.5 mg/mL.
8.	a. Use additional non-standard equipment or chemicals on the solid separator system, such as roller or screw presses or chemical coagulants and flocculants, that increase the percent of solid separation achieved by the separator and that is approved by the APCO, ARB, and EPA.
9.	a. Cover the lagoon or storage pond and vent to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
H.	Owners/operators who land apply dry or liquid animal waste to crop land on the facility shall incorporate at least two (2) of the following mitigation measures:
Class One Mitigation Measures	
1.	a. Land incorporate all solid animal waste within seventy-two (72) hours of removal from animal housing.
2.	a. Only apply solid or liquid animal waste that has been treated with an anaerobic or aerobic lagoon or digester system.
3.	a. Allow liquid animal waste to stand in the fields no more than twenty-four (24) hours after irrigation, or b. Apply no liquid animal waste.
4.	a. Apply no solid animal waste with a moisture content of more than 50%, or b. Apply no solid animal waste.
5.	a. Implement an alternative mitigation measure(s), not listed above.

5.7 Beef Feedlots: Owners/operators of a CAF that is a Beef Feedlot shall also comply with the following applicable requirements:

Table 3 - Beef Feedlot Mitigation Measure Requirements	
A. Owners/operators shall incorporate at least five (5) of the following feed mitigation measures:	
Class One Mitigation Measures	
1.	a. Feed according to National Research Council (NRC) guidelines.
2.	a. Feed animals with high moisture corn or steam-flaked corn and not feed animals dry rolled corn.
3.	a. At least once every fourteen (14) days remove feed from the area where animals stand to eat.
4.	a. At least once every fourteen (14) days remove spilled feed from the area where equipment travels to place feed in the feed bunk.
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Table 3 – Beef Feedlot Mitigation Measure Requirements (continued)	
5.	a. Remove uneaten wet feed from feed bunks within twenty-four (24) hours of a rain event.
6.	a. Feed or dispose of rations within forty-eight (48) hour of grinding and mixing rations.
7.	a. Store grain in a weatherproof storage structure from October through May.
8.	a. Implement an alternative mitigation measure(s), not listed above.
B. Owners/operators shall incorporate at least one (1) of the following feed mitigation measures:	
1.	a. Cover the horizontal surface of silage piles, except for the area where feed is being removed from the pile.
2.	a. Collect leachate from the silage piles and send it to a waste treatment system, such as a lagoon, at least once every twenty-four (24) hours.
3.	a. Implement an alternative mitigation measure(s) not listed above.
Class Two Mitigation Measures	
4.	a. Enclose silage in a bag and vent to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%, or b. Enclose silage in a weatherproof structure and vent to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%, or c. Eliminate silage from animal diet.
C. Owners/operators shall incorporate at least seven (7) of the following mitigation measures in each of the animal housing structures (e.g. each corral, pen, etc.):	
Class One Mitigation Measures	
1.	a. Clean animal waste from pens at least once between April and July and at least once between October and December of each year.
2.	a. Manage pens such that the animal waste depth in the pen does not exceed eighteen (18) inches at any time or point, except for in-corral mounds.
3.	a. Knockdown fence line animal waste build-up prior to it exceeding a height of twelve (12) inches at any time or point.
4.	a. Slope the surface of the pens at least 3% where the available space for each animal is 400 square feet or less. Slope the surface of the pens at least 1.5% where the available space for each animal is more than 400 square feet per animal.
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Table 3 – Beef Feedlot Mitigation Measure Requirements (continued)

5.	a. Maintain pens to ensure drainage and prevent water from standing more than forty-eight (48) hours after a storm, or b. Prior to placing cattle in pens, scrape or smooth the pen floors such that there are not indentions where puddles may form and remain for more than forty-eight (48) hours.
6.	a. Install floats on the troughs or use another method approved by the APCO, ARB, and EPA to ensure that the water in the troughs does not intentionally or unintentionally overflow or spill onto an earthen ground.
7.	a. Inspect water pipes and troughs and repair leaks at least once every fourteen (14) days.
8.	a. Harrow, rake, or scrape pens sufficiently to maintain a dry surface, unless the corrals have not held animals in the last thirty (30) days.
9.	a. Clean the area where the animals stand to consume feed such that the depth of animal waste in this area does not exceed twelve (12) inches at any time or point.
10.	a. Use a dry animal waste handling system, such as scraping, instead of a liquid animal waste handling system, such as a flush system.
11.	a. Install no shade structures in the corrals, or b. Install shade structures such that they are constructed with a light permeable roofing material, or c. Install shade structures such that situated so that they are uphill of any slope in the corral.
12.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
13.	a. Use lime or a similar absorbent material in the pens according to the manufacturer's recommendation to minimize moisture in the pens, or b. Apply thymol to the feedlot soil in accordance with the manufacturer's recommendation.
D.	Owners/operators that handle or store solid animal waste or separated solids outside the animal housing shall incorporate at least one (1) of the following mitigation measures:
Class One Mitigation Measures	
1.	a. Cover dry animal waste piles outside the pens with a weatherproof covering from October through May, except for times, not to exceed twenty-four (24) hours per event, when wind events remove the covering, or b. Store no dry animal waste piles outside the pens from October through May.
2.	a. Remove animal waste from the facility within seventy-two (72) hours of removal from the pens.
3.	a. Implement an alternative mitigation measure(s), not listed above.
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Table 3 – Beef Feedlot Mitigation Measure Requirements (continued)	
Class Two Mitigation Measures	
4.	a. Compost animal waste removed from pens with an aerated static pile vented to a VOC control device with an overall VOC capture and VOC control

	efficiency of at least 80%.
5.	a. Store all removed animal waste in an enclosure vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
6.	a. Send at least 51% of the animal waste removed from the animal housing to a digester, with a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
7.	a. Use a slatted floor system (slatted floors over deep pits or shallow flush alleys), with daily animal waste removal.
E.	Owners/operators that handle animal waste in a liquid form shall incorporate at least one (1) of the following mitigation measures:
	Class One Mitigation Measures
1.	a. Manage the facility such that there are no lagoons, as defined in Section 3.29, at the facility.
2.	a. Use phototrophic lagoon, or b. Use an anaerobic treatment lagoon that is not mechanically aerated.
3.	a. Remove solids from the waste system with a solid separator system, prior to the waste stream entering the lagoon.
4.	a. Maintain lagoon pH between 6.5 and 7.5.
5.	a. Implement an alternative mitigation measure(s), not listed above.
	Class Two Mitigation Measures
6.	a. Use an aerobic lagoon, or b. Use an anaerobic treatment lagoon that is mechanically aerated.
7.	a. Maintain organic loading in the lagoon that is less than 3.5 mg (dry weight)/mL, or total volatile solids is less than 3.5 mg/mL.
8.	a. Use additional non-standard equipment or chemicals on the solid separator system, such as roller or screw presses or chemical coagulants and flocculants, that increase the percent of solid separation achieved by the separator and that is approved by the APCO, ARB, and EPA.
9.	a. Cover the lagoon and vent to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
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Table 3 – Beef Feedlot Mitigation Measure Requirements (continued)	
F.	Owners/operators who land apply dry or liquid animal waste to crop land on the facility shall incorporate at least (2) two of the following mitigation measures:
	Class One Mitigation Measures
1.	a. Land incorporate all animal waste within seventy-two (72) hours of removal from animal housing.

2.	a. Only apply solid or liquid animal waste that has been treated with an anaerobic or aerobic lagoon or digester system.
3.	a. Allow liquid animal waste to stand in the fields no more than twenty-four (24) hours after irrigation, or b. Apply no liquid animal waste.
4.	a. Apply no solid animal waste with a moisture content of more than 50%, or b. Apply no solid animal waste.
5.	a. Implement an alternative mitigation measure(s), not listed above.

5.8 Other Cattle CAF: Owners/operators of a CAF that is an Other Cattle Facility shall also comply with the following applicable requirements:

Table 4 – Other Cattle Mitigation Measure Requirements	
A. Owners/operators shall incorporate at least five (5) of the following feed and silage mitigation measures:	
Class One Mitigation Measures	
1.	a. Feed according to National Research Council (NRC) guidelines.
2.	a. Feed animals high moisture corn or steam-flaked corn and not feed animals with dry rolled corn.
3.	a. At least once every fourteen (14) days remove feed from the area where animals stand to eat feed.
4.	a. At least once every fourteen (14) days remove spilled feed from the area where equipment travels to place feed in the feed bunk.
5.	a. Remove uneaten wet feed from feed bunks within twenty-four (24) hours of a rain event.
6.	a. Feed or dispose of rations within forty-eight (48) hour of grinding and mixing rations.
7.	a. Store grain in a weatherproof storage structure from October through May.
8.	a. Implement an alternative mitigation measure(s), not listed above.
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Table 4 – Other Cattle Mitigation Measure Requirements (continued)	
B. Owners/operators shall incorporate at least one (1) of the following feed mitigation measures:	
Class One Mitigation Measures	
1.	a. Cover the horizontal surface of silage piles, except for the area where feed is being removed from the pile.
2.	a. Collect leachate from the silage piles and send it to a waste treatment system such as a lagoon at least once every twenty-four (24) hours.

3.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
4.	a. Enclose silage in a bag and vent to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%, or b. Enclose silage in a weatherproof structure and vent to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%, or c. Eliminate silage from animal diet.
C. Owners/operators shall incorporate at least seven (7) of the following mitigation measures in each animal housing structure (e.g. corral, freestalls, pens, etc.):	
Class One Mitigation Measures	
1.	a. Vacuum, scrape, or flush freestalls at least once every fourteen (14) days (only applies to facilities with freestalls).
2.	a. Inspect water pipes and troughs and repair leaks at least once every fourteen (14) days.
3.	a. Use non-animal waste-based bedding and non-separated solids based bedding for at least 90% of the bedding material, by weight, for freestalls (e.g. rubber mats, almond hulls, sand, or waterbeds).
4.	a. Remove animal waste that is not dry from individual cow freestall beds daily (only applies to facilities with freestalls).
5.	a. Rake, harrow, scrape, or grade bedding in freestalls at least once every fourteen (14) days (only applies to facilities with freestalls).
6.	a. Use a dry animal waste handling system, such as scraping, instead of a liquid animal waste handling system such as flushing.
7.	a. Have no animals in exercise pens, corrals, or drylots at any time.
8.	a. Clean animal waste from corrals and pens at least once between April and July and at least once between October and December of each year.
9.	a. Manage pens such that the animal waste depth in the pen does not exceed eighteen (18) inches at any time or point, except for in-corral mounds.
10.	a. Knockdown fence line animal waste build-up prior to it exceeding a height of twelve (12) inches at any time or point.
11.	a. Scrape or flush feed aprons in all corrals at least once every seven (7) days.
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Table 4 – Other Cattle Mitigation Measure Requirements (continued)	
12.	a. Slope the surface of the pens at least 3% where the available space for each animal is 400 square feet or less. Slope the surface of the pens at least 1.5% where the available space for each animal is more than 400 square feet per animal.
13.	a. Maintain pens and corrals to ensure drainage and prevent water from standing more than forty-eight (48) hours after a storm, or b. Prior to placing cattle in pens or corrals, scrape or smooth the pen floors such that there are not indentions where puddles may form and remain for over forty-eight (48) hours.

14.	a. Install floats on the troughs or use another method approved by the APCO, ARB, and EPA to ensure that the water in the troughs does not intentionally or unintentionally overflow or spill onto the earthen ground.
15.	a. Harrow, rake, or scrape pens and corrals sufficiently to maintain a dry surface, unless the pens have not held animals in the last thirty (30) days.
16.	a. Clean the area where the animals stand to consume feed such that the depth of animal waste does not exceed twelve (12) inches at any time or point.
17.	a. Use a dry animal waste handling system, such as scraping, instead of a liquid animal waste handling system such as a flush system.
18.	a. Install no shade structures in the corrals, or b. Install shade structures such that they are constructed with a light permeable roofing material, or c. Install shade structures such that situated so that they are uphill of any slope in the corral.
19.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
20.	a. Vacuum animal waste instead of flushing or scraping and apply animal waste directly to land either through injection or incorporation.
21.	a. Use lime or a similar absorbent material in the pens and corrals according to the manufacturer's recommendations to minimize moisture in the pens, or b. Apply thymol to the pen and corral soil in accordance with the manufacturer's recommendation.
22.	a. House animals in an enclosure vented to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%.
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Table 4 – Other Cattle Mitigation Measure Requirements (continued)	
D. Owners/operators that handle or store solid animal waste or separated solids outside the animal housing shall incorporate at least one (1) of the following mitigation measures:	
Class One Mitigation Measures	
1.	a. Cover dry animal waste piles outside the pens with a weatherproof covering from October through May, except for times, not to exceed twenty-four (24) hours per event, when wind events remove the covering, or b. Store no dry animal waste piles outside of animal housing from October through May.
2.	a. Remove animal waste from the facility within seventy-two (72) hours of removal from the pens.

3.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
4.	a. Compost animal waste removed from pens with an aerated static pile vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
5.	a. Store all removed animal waste in an enclosure vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
6.	a. Send at least 51% of the animal waste removed from the animal housing to a digester with a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
7.	a. Use a slatted floor system (slatted floors over deep pits or shallow flush alleys), with daily animal waste removal.
E.	Owners/operators that handle animal waste in a liquid form shall incorporate at least one (1) of the following mitigation measures:
Class One Mitigation Measures	
1.	a. Manage the facility such that there are no lagoons, as defined in Section 3.29, at the facility.
2.	a. Use phototrophic lagoon, or b. Use an anaerobic treatment lagoon that is not mechanically aerated.
3.	a. Remove solids from the waste system with a solid separator separation system.
4.	a. Maintain lagoon pH between 6.5 and 7.5.
5.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
6.	a. Use an aerobic lagoon, or b. Use an anaerobic treatment lagoon that is mechanically aerated.
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Table 4 – Other Cattle Mitigation Measure Requirements (continued)	
7.	a. Maintain organic loading in the lagoon that is less than 3.5 mg (dry weight)/mL, or total volatile solids is less than 3.5 mg/mL.
8.	a. Use additional non-standard equipment or chemicals on the solid separator system, such as roller or screw presses or chemical coagulants and flocculants, that increase the percent of solid separation achieved by the separator and that is approved by the APCO, ARB, and EPA.
9.	a. Cover the lagoon and vent to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
F.	Owners/operators who land apply dry or liquid animal waste to crop land on the facility shall incorporate at least (2) two of the following mitigation measures:
Class One Mitigation Measures	
1.	a. Land incorporate all animal waste within seventy-two (72) hours of removal from animal housing.

2.	a. Only apply animal waste that has been treated with an anaerobic or aerobic lagoon or digester system.
3.	a. Allow liquid manure to stand in the fields no more than twenty-four (24) hours after irrigation, or b. Apply no liquid animal waste.
4.	a. Apply no solid animal waste with a moisture content of more than 50%, or b. Apply no solid animal waste.
5.	a. Implement an alternative mitigation measure(s), not listed above.

5.9 Swine CAF: Owners/operators of a CAF that is a Swine Facility shall also comply with the following applicable requirements:

Table 5– Swine Mitigation Measure Requirements	
A.	Owners/operators shall incorporate at least five (5) of the following feed and silage mitigation measures:
Class One Mitigation Measures	
1.	a. Feed according to National Research Council (NRC) guidelines.
2.	a. Feed animals probiotics designed to improve digestion according to manufacturer recommendations.
3.	a. Feed animals at least 5% cellulose.
4.	a. Feed animals a casein based diet.
5.	a. Feed animals an amino acid supplemented diet with 2% sucrose thermal oligosaccharide caramel.
6.	a. Feed animals a diet with no more than ten percent (10%) crude protein with supplemented lysine, threonine, tryptophan, and methionine.
7.	a. Feed animals 10 ppm anthraquinone.
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Table 5– Swine Mitigation Measure Requirements (continued)	
8.	a. Remove spilled from the facility at least once every fourteen (14) days.
9.	a. Remove uneaten wet feed from the housing within twenty-four (24) hours of a rain event.
10.	a. Feed or dispose of rations within forty-eight (48) hour of grinding and mixing rations.
11.	a. Store grain in a weatherproof storage structure from October through May.
12.	a. Implement an alternative mitigation measure(s), not listed above.
B.	Owners/operators shall incorporate at least five (5) of the following mitigation measures in each animal housing unit:
Class One Mitigation Measures	
1.	a. Clean animal waste from the housing at least twice every fourteen (14) days.
2.	a. Manage pens such that the animal waste depth in the pen does not exceed eighteen (18) inches at any time or point.
3.	a. Slope the surface of the pens at least 3% where the available space for each animal is 400 square feet or less. Slope the surface of the pens at least 1.5% where the available space for each animal is more than 400 square feet per

	animal.
4.	a. Install floats on the troughs or use drinkers that do not drip or another method approved by the APCO, ARB, and EPA to ensure that the water in the troughs does not intentionally or unintentionally overflow or spill onto an earthen ground.
5.	a. Inspect water pipes and troughs and repair leaks at least once every fourteen (14) days.
6.	a. Use a slatted floor system (slatted floors over deep pits or shallow flush alleys), with daily animal waste removal.
7.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
8.	a. Use lime or a similar absorbent material in the pens according to the manufacturer's recommendations to minimize moisture in the pens.
9.	a. House animals in an enclosure vented to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%
10.	a. House animals in a tunnel ventilated house with mechanical ventilation.
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Table 5– Swine Mitigation Measure Requirements (continued)	
C.	Owners/operators that handle or store solid animal waste or separated solids outside the animal housing shall incorporate at least one (1) of the following mitigation measures:
Class One Mitigation Measures	
1.	a. Cover dry animal waste and separated solids outside the pens with a weatherproof covering from October through May except for times, not to exceed twenty-four (24) hours per event, when wind events remove the covering.
2.	a. Remove animal waste from the facility within seventy-two (72) hours of removal from the pens or corrals.
3.	a. Use a dry animal waste handling system, such as stockpiles or solid land application, instead of a liquid system such as a flush system.
4.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
5.	a. Compost animal waste removed from pens with an aerated static pile vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
6.	a. Store all removed animal waste in an enclosure vented to a VOC control

	device with an overall VOC capture and VOC control efficiency of at least 80%.
7.	a. Send at least 51% of the animal waste removed from site to a digester with a VOC control device with an overall VOC capture and VOC control efficiency of at least 80% control efficiency.
D. Owners/operators that handle animal waste in a liquid form shall incorporate at least one (1) of the following mitigation measures:	
Class One Mitigation Measures	
1.	a. Manage the facility such that there are no lagoons, as defined in Section 3.29, at the facility.
2.	a. Use phototrophic lagoon, or b. Use an anaerobic treatment lagoon.
3.	a. Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon.
4.	a. Maintain lagoon pH between 6.5 and 7.5.
5.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
6.	a. Use an aerobic lagoon, or b. Use a mechanically aerated lagoon.
7.	a. Maintain organic loading in the lagoon that is less than 3.5 mg (dry weight)/mL, or total volatile solids is less than 3.5 mg/mL.
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Table 5– Swine Mitigation Measure Requirements (continued)	
8.	a. Use additional non-standard equipment or chemicals on the solid separator system, such as roller or screw presses or chemical coagulants and flocculants, that increase the percent of solid separation achieved by the separator and that is approved by the APCO, ARB, and EPA.
9.	a. Cover the lagoon and vent to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
E. Owners/operators who land apply dry or liquid animal waste to crop land on the facility shall incorporate at least (2) two of the following mitigation measures:	
Class One Mitigation Measures	
1.	a. Land incorporate all solid animal waste within seventy-two (72) hours of removal from animal housing, or
2.	a. Only apply animal waste that has been treated with an anaerobic or aerobic lagoon or digester system.
3.	a. Allow liquid animal waste to stand in the fields no more than twenty-four (24) hours after irrigation, or b. Apply no liquid animal waste.
4.	a. Apply no solid animal waste with a moisture content of more than 50%, or b. Apply no solid animal waste.
5.	a. Implement an alternative mitigation measure(s), not listed above.

5.10 Poultry CAF: Owners/operators of a CAF that is a Poultry Facility shall also comply with the following applicable requirements:

Table 6– Poultry Mitigation Measure Requirements	
A.	Owners/operators shall incorporate at least five (5) of the following feed mitigation measures:
Class One Mitigation Measures	
1.	a. Feed according to NRC guidelines.
2.	a. Feed animals probiotics designed to improve digestion according to manufacturer recommendations, or
3.	a. Feed animals an amino acid supplemented diet to meet their nutrient requirements, or
4.	a. Feed animals feed additives such as amylase, xylanase, and protease, designed to maximize digestive efficiency according to manufacturer recommendations.
5.	a. Remove spilled feed from housing at least once every seven (7) days.
6.	a. Enclose grain in a weatherproof storage structure from October through May.
7.	a. Feed or dispose of feed within forty-eight (48) hour of grinding and mixing feed.
8.	a. Use feed additives designed to reduce feed decomposition or oxidization (the process were one or more electrons are removed from a molecule).
9.	a. Remove uneaten wet feed from the housing within twenty-four (24) hours of a rain event.
10.	a. Implement an alternative mitigation measure(s), not listed above.
B.	Each poultry house shall incorporate at least four (4) of the following mitigation measures:
Class One Mitigation Measures	
1.	a. Remove caked animal waste at least once every fourteen (14) days.
2.	a. Clean under poultry cages at least once every fourteen (14) days.
3.	a. Use poultry litter additives designed to reduce air emissions or moisture content in litter, such as aluminum sulfate or sodium bisulfate, according to manufacturer recommendations.
4.	a. Use a dry housing cleaning method at all times, except when a wet cleaning method is required for animal health or biosecurity issues.
5.	a. Use drinkers that do not drip.
6.	a. Adjust the height, volume, and location of drinkers at least once every fourteen (14) days.
7.	a. Use no foggers in the house.
8.	a. Only use fogger systems designed, operated and maintained according to manufacturer recommendations that provide water droplets with an average size of 50 microns or less.
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Table 6– Poultry Mitigation Measure Requirements (continued)	
9.	a. Slope the surface of the house at least 3% where the available space for each animal is 400 square feet or less. Slope the surface of the house at least 1.5%

	where the available space for each animal is more than 400 square feet per animal.
10.	a. Install mounds or berms up gradient to prevent the runoff of stormwater into pens (only an option for animals allowed to freely move between indoor housing structures and outdoor pens).
11.	a. Inspect water pipes and drinkers and repair leaks at least once every fourteen (14) days.
12.	a. Maintain the roof structure and manage roof runoff in accordance with the applicable standards in NRCS Field Office Technical Guide Code 558 or other applicable standards approved by the APCO, ARB, and EPA
13.	a. Implement an alternative mitigation measure(s), not listed above.
Class Two Mitigation Measures	
14.	a. Vent housing to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
15.	a. Use a belt litter removal system that dries the litter.
16.	a. House animals in a tunnel ventilated houses with mechanical ventilation.
17.	a. Use a litter drying system, such as a flat bed drying system.
C.	Owners/operators that handle or store solid animal waste or separated solids outside the animal housing shall incorporate at least one (1) of the following mitigation measures:
Class One Mitigation Measures	
1.	a. Remove all animal waste from the facility within seventy-two (72) hours of removal from housing, or b. Send all animal waste to a lagoon within seventy-two (72) hours of removal from housing.
2.	a. Cover animal waste outside the housing with a weatherproof covering from October through May, except for times, not to exceed twenty-four (24) hours per event, when wind events remove the covering.
3.	a. Use a solid animal waste handling system in housing, such as stockpiles, solid land application, or a thin bed animal waste drying system, instead of a liquid system such as flushing, animal waste storage ponds, or animal waste treatment lagoons.
4.	a. Implement an alternative mitigation measure(s), not listed above.
	…continues on next page

Table 6– Poultry Mitigation Measure Requirements (continued)	
Class Two Mitigation Measures	
6.	a. Send at least 51% of the animal waste removed from site to a digester, with a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.

7.	a. Compost animal waste removed from the housing with an aerated static pile vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.
D.	Owners/operators that handle animal waste in a liquid form shall incorporate at least one (1) of the following mitigation measures:
	Class One Mitigation Measures
1.	a. Manage the facility such that there are no lagoons, as defined in Section 3.29, at the facility.
2.	a. Use phototrophic lagoon, or b. Use an anaerobic treatment lagoon.
3.	a. Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon.
4.	a. Maintain lagoon pH between 6.5 and 7.5.
5.	a. Implement an alternative mitigation measure(s), not listed above.
	Class Two Mitigation Measures
6.	a. Use an aerobic lagoon, or b. Use a mechanically aerated lagoon.
7.	a. Maintain organic loading in the lagoon that is less than 3.5 mg (dry weight)/mL, or total volatile solids is less than 3.5 mg/mL.
8.	a. Use additional non-standard equipment or chemicals on the solid separator system, such as roller or screw presses or chemical coagulants and flocculants, that increase the percent of solid separation achieved by the separator and is approved by the APCO, ARB, and EPA.
9.	a. Cover the lagoon or storage pond and vent to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.

5.11 Owners/operators may substitute a mitigation measure from one section in the applicable table (tables 2 through 6) for a mitigation measure in another section of the applicable table, provided it is demonstrated that the substitution would result in equal or greater emission reductions. Substituted measures shall be requested as part of the requirements of Section 6.0 and shall be included as permit requirements.

5.12 CAF facilities that are not dairies, beef feedlots, other cattle facilities, swine facilities, or poultry facilities shall submit an emission mitigation plan demonstrating reductions of at least 30% or adhere to all of the requirements of either Section 5.6, 5.7, 5.8, or 5.9.

5.13 CAF facilities listed in Sections 5.6 to 5.10 may submit an emission mitigation plan demonstrating facility wide reductions of at least 30% in lieu of complying with all of the requirements of either Section 5.6, 5.7, 5.8, 5.9, or 5.10.

6.0 Permit Requirements

6.1 Owners/operators of any facility shall submit an Authority to Construct or Permit to Operate application by December 15, 2006 that includes the following:

6.1.1 The name, business address, and phone number of the owners/operators responsible for the preparation and the implementation of the mitigation measures listed in the permit.

6.1.2 The signature of the owners/operators attesting to the accuracy of the information provided and adherence to implementing the activities specified in the CAF Plan at all times and the date that the application was signed.

6.1.3 An emission mitigation plan including a list of all mitigation measures chosen to comply with Rule 4570 requirements and the location of these mitigation measures.

6.1.4 The number of animals at the facility in each production stage.

6.1.5 Any other information necessary for the District to prepare an emission inventory of all regulated air pollutants emitted from the facility, as determined by the APCO.

6.1.6 A thirty-day public noticing and commenting period on the permit application.

6.2 Owners/operators shall submit an update of the permit application to the District for review at least once every three (3) years. The update shall reflect changes in the operation and feasibility of mitigation measures.

6.3 The District shall act upon the Authority to Construct application or Permit to Operate application within six (6) months of receiving a complete application.

7.0 Administrative Requirements

7.1 Recordkeeping

7.1.1 The following records shall be kept and maintained for a minimum of five (5) years and shall be made available to the APCO, ARB, and EPA upon request:

7.1.1.1 Owners/operators claiming any exemption pursuant to Section 4.0 shall maintain records demonstrating that the CAF meets the exemption criteria of this rule,

7.1.1.2 Owners/operators subject to the requirements of Section 5.0 shall maintain:

7.1.1.2.1 Copies of all of the facility's permits,

7.1.1.2.2 Copies of all laboratory tests, calculations, logs, records, and other information required to demonstrate compliance with all applicable requirements of this rule, as determined by the APCO, ARB, EPA,

7.1.1.2.3 Records of the number of animals of each species and production group at the facility on the permit issuance date. Quarterly records of any changes to this information shall also be maintained, (e.g. Dairy Herd Improvement Association records, animal inventories done for financial purposes, etc.),

7.1.1.2.4 Feed Content: owners/operators shall maintain records of feed content, formulation, quantity of feed additive utilized, sufficient to demonstrate compliance with any mitigation measures chosen (e.g. feed sheets),

7.1.1.2.5 Feed Processing: owners/operators shall maintain records demonstrating that feed was fed to animals (e.g. put in feed bunks) or disposed of within forty-eight (48) hours of grinding and mixing sufficient to demonstrate compliance with any mitigation measures chosen,

7.1.1.2.6 Feed Removal: owners/operators shall maintain records sufficient to demonstrate that feed was removed and disposed of in compliance with any mitigation measures chosen,

7.1.1.2.7 Silage: owners/operators shall maintain records demonstrating that silage was covered in compliance with any mitigation measures chosen (i.e. invoices demonstrating that silage covers were installed and maintained at the facility and maintenance records for repair or replacement of damaged covers),

7.1.1.2.8 Leachate: owners/operators choosing a mitigation measure relating to leachate collection shall maintain

records demonstrating that the leachate was collected either by an active or passive system and the system was maintained in a manner approved by the APCO, ARB, and EPA (such as design specification for the system and a maintenance checklist for inspections and repairs),

7.1.1.2.9 Housing Cleaning: owners/operators shall maintain records sufficient to demonstrate management practices listed in the facility's emission mitigation plan were performed and manure height limits in the facility's emission mitigation plan were not exceeded. This may be a log when owners/operators initial that they performed all applicable practices and visually inspected manure buildup to ensure it does not exceed the height limits.

7.1.1.2.10 Floats: owners/operators choosing mitigation measures relating to floats on troughs shall maintain sufficient records to demonstrate that the floats are maintained in a manner to ensure that water does not intentionally or unintentionally spill onto an earthen ground,

7.1.1.2.11 Lime, thymol, and eugenol: owners/operators choosing mitigation measuring relating to lime, thymol, or eugenol shall maintain records including manufacture product application recommendations and product application records that demonstrate lime, thymol, or eugenol was applied in accordance with manufacturer recommendations,

7.1.1.2.12 Animal waste depth: owners/operators shall measure and record the depth of manure at its deepest depth at least one every ninety (90) days in each area that they chose a mitigation measure limiting animal waste depth,

7.1.1.2.13 Corral maintenance: owners/operators shall maintain records sufficient to demonstrate all housing management practices (including but not limited to harrowing and sloping of corrals) used to comply with rule requirements are implemented as required in the rule,

7.1.1.2.14 Records, such as design specifications, demonstrating that any shade structures used to comply with rule requirements meet the required standards,

7.1.1.2.15 Records such as design specifications and maintenance logs demonstrating that any roof runoff structures used to comply with rule are in compliance with applicable standards in NRCS Field Office Technical Guide Code 558 or other applicable standards approved by the APCO, ARB, and EPA,

7.1.1.2.16 Records, including a copy of the manufactures' recommendations, that demonstrate any animal waste additives used to comply with rule requirements are administered in accordance with manufacturer's specifications,

7.1.1.2.17 Records, such as manufacturer warranties or other documentation, demonstrating that any covers used, such as lagoon covers, weatherproof covering over solid animal waste, and weatherproof covering over separated solids, are installed, used, and maintained in accordance with manufacturer recommendations and applicable standards listed in NRCS Field Office Technical Guide Code 313 or 367, or any other applicable standard approved by the APCO, ARB, and EPA,

7.1.1.2.18 Records, such as design specifications and maintenance logs, demonstrating that any anaerobic digesters used to comply with rule requirements meetings the standards in NRCS Field Office Technical Guide Code 366 or 365 or other applicable standards approved by the APCO, ARB, and EPA,

7.1.1.2.19 Records, such as design specifications, demonstrating that any aerobic, anaerobic, or mechanically aerated lagoon used to comply with rule requirements meets the dimension requirements listed in the NRCS Field Office Technical Guide Code 359,

7.1.1.2.20 Records, such as calculations, demonstrating that any aerobic, anaerobic, or mechanically aerated lagoon used to comply with rule requirements meets the dimension requirements listed in the NRCS Field Office Technical Guide Code 359, and

7.1.1.2.21 Records, such as design specifications and maintenance logs, demonstrating that any solid separation system complies with the applicable standards in NRCS Field Office Technical Guide 632 or other applicable standard approved by the APCO, ARB, and EPA.

7.2 Compliance Testing, Monitoring, and Calculations

7.2.1 Owners/operators shall conduct an initial source test of all VOC control devices and aerated static piles used to comply with rule requirements not later than six (6) months after the date of installation, and at least once every twelve (12) months thereafter unless the APCO, ARB, and EPA determines more frequent testing is required to demonstrate compliance with rule requirements.

7.2.2 Owners/operators using phototrophic lagoons as a mitigation measure in their emission mitigation plan shall test lagoons for bacteria concentration, bacteriochlorophyll concentration, or a surrogate parameter determined by the APCO, ARB, and EPA not later than six (6) months after the date of issuance of the permit, and least once every twelve (12) months thereafter unless the APCO, ARB, and EPA determines more frequent testing is required to demonstrate compliance with rule requirements.

7.2.3 Owners/operators using aerobic lagoons as a mitigation measure in their emission mitigation plan shall test lagoons for dissolved oxygen content not later than six (6) months after the date of issuance of the permit, and at least once every twelve (12) months thereafter, unless the APCO, ARB, and EPA determines more frequent testing is required to demonstrate compliance with rule requirements.

7.2.4 Owners/operators using mechanically aerated lagoons as a mitigation measure in their emission mitigation plan shall test lagoons for biological oxygen demand within six (6) months after the date of issuance of the permit, and at least once every twelve (12) months thereafter, unless the APCO, ARB, and EPA determines more frequent testing is required to demonstrate compliance with rule requirements.

7.2.5 Owners/operators using lagoon pH as a mitigation measure in their emission mitigation plan shall test lagoons for pH within six (6) months after the date of issuance of the permit, and at least once every twelve (12) months thereafter, unless the APCO, ARB, and EPA determines more frequent testing is required to demonstrate compliance with rule requirements.

7.2.6 Owners/operators shall test any other parameters determined necessary by the APCO, ARB, and EPA to demonstrate compliance with rule requirements as frequently as determined necessary by the APCO, ARB, and EPA.

7.3 Test Methods

Owners/operators shall conduct applicable testing using the following methods or any other alternative test method approved by the APCO, ARB, and EPA. Test methods referenced shall be the latest approved version.

7.3.1 EPA Method 405.1- Biological Oxygen Demand

7.3.2 Control Efficiency or Emissions Determination:

7.3.2.1 South Coast Air Quality Management District (SCAQMD) Method 25.3 - Non-methane, Non-ethane Organic Compound Emissions from Clean Fueled Combustion Sources,

7.3.2.2 SCAQMD Method 1.1 - Sample and Velocity Traverses for Stationary Sources,

7.3.2.3 SCAQMD Method 1.2 - Sample and Velocity Traverses for Stationary Sources with Small Stacks or Ducts,

7.3.2.4 SCAQMD Method 2.1 - Determination of Stack Gas Velocity and Volumetric Flow Rate (S-Type Pitot Tube),

7.3.2.5 SCAQMD Method 2.2 - Direct Measurement of Gas Volume Through Pipes and Small Ducts,

7.3.2.6 SCAQMD Method 2.3 - Determination of Gas Velocity and Volumetric Flow Rate,

7.3.3 Dissolved Oxygen- EPA Method 360.1 or 360.2,

7.3.4 Moisture- Test Methods for the Examination of Compost and Composting (TMECC) Method 3.09, and

7.3.5 Organic Loading- Standard Methods of the Examination of Water and Wastewater Method 2540 G – Solids.

8.0 Compliance Schedule

8.1 Owners/operators of facilities existing on and before June 15, 2006 shall submit an Authority to Construct or Permit to Operate application by December 15, 2006 that complies with all applicable provisions of this rule.

8.2 Owners/operators of facilities that commence operation after June 15, 2006 shall submit an Authority to Construct or Permit to Operate application prior to commencing operation or by December 15, 2006, whichever is later, that complies with all applicable provisions of this rule.

8.3 Owners/operators shall comply with all provisions of this rule and applicable permits on and after 365 days from the permit issuance date.

8.4 Loss of Exemption

Owners/operators of a CAF that is exempt pursuant to Section 4.0 and which becomes subject to this rule through the loss of exemption status shall comply with all applicable provisions of this rule on and after the date the exemption status is lost.

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4694 - WINE FERMENTATION AND STORAGE TANKS
(Adopted December 15, 2005)

1.0 Purpose

The purpose of this rule is to reduce emissions of volatile organic compounds (VOC) from the fermentation and bulk storage of wine, or achieve equivalent reductions from alternative emission sources.

2.0 Applicability

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This rule applies to any winery fermenting wine and/or storing wine in bulk containers.

3.0 Definitions

3.1 Air Pollution Control Officer (APCO): as defined in Rule 1020 (Definitions).

3.2 Air Resources Board (ARB or CARB) as defined in Rule 1020 (Definitions).

3.3 Baseline Fermentation Emissions (BFE): the average Uncontrolled Fermentation Emissions from wine fermentation, occurring at the winery during a given Baseline Period pursuant to Section 3.4, or as established by the Operator pursuant to section 3.3.3. For wineries with less than three consecutive years of fermentation activities, the baseline shall be established pursuant to Section 3.3.2 or Section 3.3.3.

3.3.1 The BFE shall be calculated as follows:

$$BFE = \frac{\sum UFE}{CY}$$

Where,

BFE = Baseline Fermentation Emissions

$\sum UFE$ = The sum of annual Uncontrolled Fermentation Emissions for a given Baseline Period

CY = The number of consecutive years used to establish the BFE for a given Baseline Period

3.3.2 If the winery does not have three consecutive years of fermentation data, CY shall equal the number of consecutive years of available fermentation data.

3.3.3 Operators may voluntarily establish their BFE provided that the BFE shall not be less than the BFE calculated pursuant to Section 3.3.1, and that the BFE shall not be greater than the operator's Potential to Emit for fermentation VOC emissions

3.4 Baseline Period: the three consecutive calendar years, immediately before the year of calculation of the Baseline Fermentation Emissions.

3.5 Batch: a quantity of must fermented at the same time in a fermenter.

3.6 Brix: the sugar content of grapes, juice, or wine. Each degree Brix is equivalent to 1 gram of sugar per 100 grams of grape juice.

3.7 Capture System: equipment, including but not limited to, hoods, ducts, fans, booths, and vents which are used to contain, capture, or transport an air pollutant to an emissions control device.

3.8 Certified Emissions Reductions (CER): the reduction of VOC or NOx emissions, from mobile, stationary, or area sources, which are actual, quantifiable, enforceable, and surplus at the time of use, as determined by the APCO.

3.9 Combined Capture and Control Efficiency (CCCE): the percent reduction in emissions achieved by an emissions control system. CCCE shall be calculated as follows:

$$CCCE = \%CSE \ X \ \%CDE$$

Where,

CCCE = Combined Capture and Control Efficiency

%CSE = Capture System Efficiency, as established in the Permit To Operate

%CDE = Control Device Efficiency as established in the Permit To Operate

3.10 Compliance Period: the three consecutive calendar years immediately following the year of calculation of the Baseline Fermentation Emissions.

3.11 Continuous or Adjacent Property: a property consisting of two or more parcels of land with a common point or boundary, or separated solely by a public roadway or other public right-of-way.

3.12 Control Device: equipment that is used to reduce the amount of air pollutants in an exhaust stream before discharge to the ambient air.

3.13 Emission Control System: a system consisting of a capture system and control device.

3.14 Emission Reduction Duration: the period of time during which the action generating an emission reduction results in Certified Emission Reductions.

3.15 Fermentation: the action of yeast upon sugar to produce ethyl alcohol. Fermentation begins within a given fermenter when an operator inoculates the must with yeast or when the operator allows fermentation to begin naturally. Fermentation ends when the operator stops fermentation, when fermentation stops naturally, or when the fermenting juice reaches a sugar content of 4 degrees Brix, or less.

3.16 Fermentation Emission Reduction (FER): the reduction in VOC emissions from the total volume of must fermented in tanks equipped and operated with an emissions control system. FER shall be calculated as follows:

$$FER = \frac{(Q \times EF)}{1{,}000\ gal} \ x \ \frac{1\ ton}{2{,}000\ lb} \ x \ CCCE$$

Where,

FER = Fermentation Emission Reduction

Q = Volume of must, in gallons, fermented into red wine or white wine in the controlled tank

EF = Emissions Factor for the type of wine being fermented in the controlled tank. EF equals 6.2 lb for red wine, and 2.5 lb for white wine

CCCE = Combined Capture and Control Efficiency of the VOC emissions control system

3.17 Fermenter: any tank used to ferment must into wine.

3.18 Gas Leak: a reading in excess of 1,000 ppmv, above background, measured on a portable hydrocarbon detection instrument that is calibrated with methane.

3.19 Gas-Tight: a condition without a gas leak.

3.20 Higher Heating Value (hhv): the total heat liberated per mass of fuel burned (Btu per pound), when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to the standard states at standard conditions.

3.21 Must: any unfermented juice or mixture of juice, pulp, skins, and seeds prepared from grapes or other fruit. Must fermented to produce white wines is considered to be juice. Must fermented to produce red wines is considered to be a mixture of juice and solids, such as pulp, skins, and seeds.

3.22 Operator: includes but is not limited to any person who leases, supervises, or operates equipment, in addition to the normal meaning of ownership.

3.23 Potential To Emit: as defined in District Rule 2201 (New and Modified Stationary Source Review Rule).

3.24 Red Wine: any wine produced by a process that separates the wine from the must solids (skins, pulp, seeds) after fermentation begins.

3.25 Required Annual Emissions Reductions (RAER): the sum of all emission reductions rounded to the nearest 0.1 ton, achieved by the operator during the calendar year. Required Annual Emissions Reductions shall be calculated as follows:

$$RAER = \sum FER + \sum CER + \sum DOER$$

Where,

$RAER$ = Required Annual Emissions Reductions

$\sum FER$ = Sum of all Fermentation Emission Reductions from controlled wine fermenters in operation at the winery during the calendar year

$\sum CER$ = Sum of all Certified Emission Reductions obtained by the operator during the calendar year

$\sum DOER$ = Sum of all District Obtained Emission Reductions achieved through payment of Air Quality Impact Mitigation Fees for the calendar year

3.26 Stationary Source: as defined in District Rule 2201 (New and Modified Stationary Source Review Rule).

3.27 Storage Tank: any container having an internal volume greater than 250 gallons, used to hold wine.

3.28 Surplus: emission reductions which have not been relied upon or required by any local, state, or federal permit, rule, regulation, law, ordinance, or approved air quality plan.

3.29 Tank: any vessel, with a volume greater than 250 gallons, used as a fermenter or as a storage tank.

3.30 Time Of Use: the date on which an emission reduction is received by the District in a winery's Three-year Compliance Plan pursuant to Section 6.1, or Annual Compliance Demonstration pursuant to Section 6.3.

3.31 Uncontrolled Fermentation Emissions (UFE): the VOC emissions that occur in a calendar year from the fermentation of must before emission mitigation or use of an emissions control system. Uncontrolled Fermentation Emissions shall be calculated as follows:

$$UFE = \frac{(Q_{red}\ \text{gal/yr} \times 6.2\ \text{lb}) + (Q_{white}\ \text{gal/yr} \times 2.5\ \text{lb})}{1{,}000\ \text{gal}} \times \frac{1\ \text{ton}}{2{,}000\ \text{lb}}$$

Where,

UFE = Uncontrolled Fermentation Emissions

Q_{red} = Total gallons of must fermented to produce red wine during the calendar year

Q_{white} = Total gallons of must fermented to produce white wine during the calendar year

3.32 US EPA: the United States Environmental Protection Agency.

3.33 Volatile Organic Compound (VOC): as defined in Rule 1020 (Definitions).

3.34 White Wine: any wine produced by a process that separates the juice from the must solids (skins, pulp, seeds) before fermentation begins.

3.35 Wine: the liquid product obtained from fermented must.

3.36 Winery: a facility used to produce and/or store wine.

3.37 Winery Premises: a property that is contiguous to or adjacent to the winery, and that is under the ownership and control of the winery operator.

4.0 Exemptions

4.1 Except for recordkeeping requirements specified in Section 6.4.4, this rule shall not apply to any winery which has a BFE of less than 10 tons per year, or is limited by a District permit condition to a Potential To Emit of less than 10 tons VOC emissions from fermentation.

4.2 Section 5.2 shall not apply to storage tanks constructed primarily of concrete or wood.

5.0 Requirements

5.1 Fermentation Tanks

Operators of any winery shall achieve Required Annual Emissions Reductions (RAER) equal to at least 35% of the winery's Baseline Fermentation Emissions (BFE).

5.2 Storage Tanks

Operators of any wine storage tank having an internal volume equal to or greater than 5,000 gallons shall comply with all of the following requirements when storing wine:

5.2.1 The tank shall be equipped and operated with a pressure-vacuum relief valve meeting all of the following requirements:

5.2.1.1 The pressure-vacuum relief valve shall operate within 10% of the maximum allowable working pressure of the tank,

5.2.1.2 The pressure-vacuum relief valve shall operate in accordance with the manufacturer's instructions, and

5.2.1.3 The pressure-vacuum relief valve shall be permanently labeled with the operating pressure settings.

5.2.1.4 The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21.

5.2.2 The temperature of the stored wine shall be maintained at or below 75° Fahrenheit.

5.2.2.1 Temperature of the stored wine shall be determined and recorded at least once per week.

5.2.2.2 For each batch of wine, operators shall achieve the storage temperature of 75°F or less within 60 days after completing fermentation.

6.0 Administrative Requirements

6.1 Three-year Compliance Plan

By no later than December 1, 2006, and every three years thereafter, each winery operator subject to the requirements of Section 5.1 shall submit to the District, a Three-Year Compliance Plan that demonstrates compliance with the applicable requirements of this rule for each year of the applicable compliance period. The Three-year Compliance Plan shall include the following information:

6.1.1 Name and address of the winery.

6.1.2 Name, title, and contact information for the operator and the operator's signature certifying the accuracy of all information presented in the Three-Year Compliance Plan.

6.1.3 Calculation of the BFE, and the volumes of red wine and white wine fermented at the winery for each year of the Baseline Period. For the Three-Year Compliance Plan due December 1, 2006, the Baseline Period shall be the years 2003, 2004, and 2005.

6.1.4 Calculation of the RAER to be achieved for each year covered by the Three-year Compliance Plan. For the Three-Year Compliance Plan due pursuant to section 6.1, the compliance period shall be for the three-year period following the Plan submittal due date.

6.1.5 Demonstration of how the operator will achieve the RAER necessary to satisfy Section 5.1, using any combination of the following compliance options:

6.1.5.1 Fermentation Emission Reduction (FER): Reductions of VOC emissions from wine fermentation. For each FER source the Three-Year Compliance Plan shall include the following information:

6.1.5.1.1 Calculation of FER for each controlled fermentation tank, identified by a Permit To Operate number. FER shall be calculated for the annual throughput of each controlled fermenter using the following:

$$FER = \frac{(Q \times EF)}{1{,}000\ gal}\ x\ \frac{1\ ton}{2{,}000\ lb}\ x\ CCCE$$

Where,

FER = Fermentation Emission Reduction

Q = Volume of must, in gallons, fermented into red wine or white wine in the controlled tank

EF = Emissions Factor for the type of wine being fermented in the controlled tank. EF equals 6.2 lb for red wine, and 2.5 lb for white wine

CCCE = Combined Capture and Control Efficiency of the VOC emissions control system

6.1.5.1.2 Reductions in annual emissions from wine fermentation resulting from changes in production volumes shall not be considered FER or result in CER.

6.1.5.2 Certified Emission Reductions (CER): Reductions in surplus emissions from mobile, area, or stationary sources.

6.1.5.2.1 CER shall have an emissions reduction duration equal to the approved life of the emission reduction activity, provided that the CER is continuously committed to the District within any operator's Three-year Compliance Plan and the CER is achieved consistent with the plan.

6.1.5.2.2 An emission reduction activity that loses CER status, for any reason, may be resubmitted to the District for re-approval. The emission reduction will be evaluated at the time of use, without consideration of previous CER status.

6.1.5.2.3 For each CER source the Three-Year Compliance Plan shall include the following information:

6.1.5.2.3.1 Details of the CER to be controlled, including: starting date and duration of the CER; emissions reductions to be achieved per unit of activity; technical information demonstrating that the emissions reduction meets the definition of CER; and a plan for

monitoring all emissions reductions.

6.1.5.2.3.2 The Permit To Operate number for permitted sources of CER. The CER shall be made enforceable as one or more permit conditions that establish the emission unit's daily emissions limitation.

6.1.5.2.3.3 A legally binding contract for non-permitted sources of CER. This rule is part of the San Joaquin Valley portion of the California State Implementation Plan. Each contract entered into pursuant to this rule shall be federally enforceable under Section 304 of the Federal Clean Air Act, 42 U.S.C. 7604. The CER shall be made enforceable by a legally binding contract between the operator of the winery, the operator of the emissions source, and the District. All contracts executed to comply with the provisions of this rule shall contain adequate monitoring, recordkeeping, and reporting requirements to demonstrate that the required emissions reduction and the applicable performance standards are achieved during the Emission Reduction Duration.

6.1.5.2.3.4 If the emission source operates exclusively on the Winery Premises during the compliance period, the CER shall be offset at a ratio of 1.0 ton CER per 1.0 ton of fermentation VOC emissions.

6.1.5.2.3.5 If the emission source is not operated exclusively on the Winery Premises during the compliance period, the CER shall be offset at a

ratio of 1.2 ton CER per 1.0 ton of fermentation VOC emissions.

6.1.5.3 District Obtained Emissions Reductions (DOER) obtained by payments to the District Air Quality Impact Mitigation Fund (AQIMF) for a Three-Year Compliance Plan shall include the following information:

6.1.5.3.1 The amount of requested DOER. DOER shall be calculated as follows:

$$DOER = RAER - \sum CER - \sum FER$$

Where,

DOER = The amount of District Obtained Emission Reductions.

RAER = 35% of the operator's Baseline Fermentation Emissions.

$\sum CER$ = Sum of all CER to be obtained by the operator.

$\sum FER$ = Sum of all FER to be achieved by the operator.

6.1.5.3.2 The payment amount for DOER shall be an amount sufficient to cover the District's costs of obtaining emission reductions having an Emission Reduction Duration (ERD) of three years in aggregate, plus an administrative fee.

6.1.5.3.3 Payment shall calculated as follows:

$$AQIMF = DOER \times FR \times AF$$

Where,

AQIMF = Air Quality Impact Mitigation Fund payment.

DOER = District Obtained Emissions Reductions.

FR = Fund Rate. As of January 1, 2006, the Fund Rate is established at $11,778 per ton.

AF = District's administrative fee. As of January 1, 2006, the administrated fee is established at 1.04.

6.1.5.3.4 Beginning January 1, 2007, the Fund Rate and the administrative fee shall be established by the APCO in accordance with Section 6.5.

6.1.5.3.5 Payment of DOER and administrative fees shall be made to the District no later than March 1, of the first year in the applicable compliance period. For the Three-Year Compliance Plan due December 1, 2006, the payment of DOER and administrative fees shall be made no later than March 1, 2007.

6.1.6 Emission reductions achieved in excess to RAER may not be banked or credited for use to satisfy RAER requirements in any year other than the year of their generation.

6.1.7 New Source Review Emission Reduction Credits are not eligible for use to satisfy RAER requirements.

6.1.8 For fermentation tanks subject to emission controls from New Source Review requirements, the maximum allowable FER shall be the lesser of either the actual emission reduction generated by the NSR review control, or 35% of the uncontrolled emissions.

6.2 Three-Year Compliance Plan Verification

By no later than July 1, 2007, and every three years thereafter, winery operators shall submit to the District a Three-Year Compliance Plan Verification that demonstrates that the Three-Year Compliance Plan elements are in effect. The Compliance Plan Verification shall include the following information:

6.2.1 Name and address of the winery.

6.2.2 Name, title, and contact information for the operator, and the operator's signature certifying the accuracy of all submitted information.

6.2.3 Certification that the required control equipment to generate FER are installed and operating consistent with their Permit To Operate conditions.

6.2.4 Certification stating that the required emissions reduction commitments to generate CER have been implemented.

6.2.5 Certification that AQIMF payments to obtain DOER have been made.

6.3 Annual Compliance Plan Demonstration

By no later than February 1, 2008, and every year thereafter, each winery operator shall submit to the District an Annual Compliance Plan Demonstration that shows compliance with the applicable requirements of this rule. The Compliance Plan Demonstration shall include the following information:

6.3.1 Name and address of the winery.

6.3.2 Name, title, and contact information for the operator, and the operator's signature certifying the accuracy of all information presented in the Three-Year Compliance Plan.

6.3.3 Calculation of the Uncontrolled Fermentation Emissions (UFE) for the prior calendar year.

6.3.4 Certification that all CER commitments were met and calculations of the resulting emission reductions.

6.3.5 Certification that all FER controls were installed and operated, and calculations of the resulting emission reductions.

6.3.6 If the UFE is less than or equal to the BFE, the operator shall demonstrate that the RAER is greater than or equal to 35% of the BFE indicated in the Three-Year Compliance Plan, for the year covered by the demonstration.

6.3.7 If the UFE is greater than the BFE, the operator shall demonstrate that the RAER is greater than or equal to 35% of the UFE for the year covered by the demonstration. If the RAER are less than 35% of the UFE the operator shall identify how they will obtain additional RAER sufficient to satisfy this section.

6.3.7.1 Additional RAER may be obtained from any source of FER, CER or DOER.

6.3.7.2 All additional RAER shall be obtained by April 1 of the year of the Annual Compliance Demonstration.

6.4 Monitoring and Recordkeeping

Commencing January 1, 2007, the following records shall be maintained, retained on-site for a minimum of five years, and made available to the APCO upon request:

6.4.1 For each fermentation batch, operators shall record the following information by Permit To Operate number and by wine type, stated as either red wine or white wine:

6.4.1.1 Total gallons of must fermented,

6.4.1.2 Uncontrolled Fermentation Emissions, and

6.4.1.3 Fermentation Emission Reductions.

6.4.2 For each storage tank, operators shall record the following information on a weekly basis:

6.4.2.1 Total gallons of wine contained in the tank, and

6.4.2.2 Maximum temperature of the stored wine.

6.4.3 Operators using CER to mitigate fermentation emissions shall perform all monitoring and recordkeeping, as established in their approved Three-Year Compliance Plan, and shall maintain all records necessary to demonstrate compliance.

6.4.4 Operators claiming exemption pursuant to Section 4.0 shall maintain annual records of the total gallons of red wine and the total gallons of white wine fermented at the winery, and total gallons of wine in storage tanks. Records submitted to the United States Department of Treasury - Alcohol and Tobacco Tax and Trade Bureau for the purpose of tax determination shall be adequate, provided the operator indicates the volumes of red and white wines fermented.

6.5 Air Quality Impact Mitigation Fund Fees Review

The District shall review the AQIMF and administrative fees on an annual basis to determine their appropriateness and to establish fee levels that are not less than the District's cost to obtain emission reductions and administer the program. The APCO may adjust the cost of reductions according to the following process:

6.5.1 An analysis shall be performed that details:

6.5.1.1 The cost effectiveness of projects funded to date;

6.5.1.2 The rule effectiveness of achieving the required emission reductions to date; and

6.5.1.3 The availability of off-site emission reduction projects.

6.5.2 The APCO shall provide a draft revised cost effectiveness based on the analysis.

6.5.3 The process shall included at least one public workshop.

6.6 Test Methods

6.6.1 Operators of an emission unit identified in a District prohibitory rule shall comply with the test methods specified in the applicable District prohibitory rule.

6.6.2 Operators of an emission unit not identified in a District prohibitory rule shall use the following test methods to quantify emission reductions. Alternative test methods may be used provided they are approved by the APCO, ARB, and US EPA.

6.6.2.1 VOC Control

6.6.2.1.1 The control efficiency of any VOC destruction device, measured and calculated as carbon, shall be determined by US EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case US EPA Method 25a may be used.

6.6.2.1.2 US EPA Method 18 may be used in lieu of US EPA Method 25 or US EPA Method 25A provided the identity and approximate concentrations of the analytes/compounds in the sample gas stream are known before analysis with the gas chromatograph and the gas chromatograph is calibrated for each of the known analytes/compounds to ensure that the VOC concentrations are neither under- or over-reported.

6.6.2.2 NOx Control

6.6.2.2.1 Fuel hhv shall be certified by a third party fuel supplier or determined by:

6.6.2.2.1.1 ASTM D 240-87 or D 2382-88 for liquid hydrocarbon fuels;

6.6.2.2.1.2 ASTM D 1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels.

6.6.2.3 Oxides of nitrogen (ppmv) – US EPA Method 7E, or ARB Method 100.

6.6.2.4 Carbon monoxide (ppmv) – US EPA Method 10, or ARB Method 100.

6.6.2.5 Stack gas oxygen – US EPA Method 3 or 3A, or ARB Method 100.

6.6.2.6 NOx Emission Rate (Heat Input Basis) – US EPA Method 19.

6.6.2.7 Stack gas velocities – US EPA Method 2.

6.6.2.8 Stack gas moisture content – US EPA Method 4.

6.7 Compliance Testing

Operators of an emission unit identified in a District prohibitory rule shall comply with the compliance test methods specified in the applicable District prohibitory rule. Operators of an emission unit not identified in a District prohibitory rule shall comply with compliance test requirements approved by the APCO, ARB, and US EPA.

7.0 Compliance Schedule

Operators shall comply with the applicable requirements of this rule by the dates indicated in Table 1 Rule Compliance Schedule.

Table1 Rule Compliance Schedule

Initial Compliance Date	**Subsequent Compliance Dates**	**Requirement**	**Reference**
December 1, 2006	Every three years	Submit Three-year Compliance Plan to District	Section 6.1
January 1, 2007	Continuously, as appropriate	Commencing monitoring and recordkeeping	Section 6.4
March 1, 2007	Every three years	Submit AQIMF & Administrative fees for DOER pursuant to the Three-Year Compliance Plan	Section 6.1.5.3.4
July 1, 2007	Every three years	Submit Three-year Compliance Plan Verification	Section 6.2
March 1, 2008	Annually	Submit Annual Compliance Plan Demonstration	Section 6.3
May 1, 2008	Annually, as appropriate	Provide additional RAER, as required	Section 6.3.5.2

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4702 - INTERNAL COMBUSTION ENGINES – PHASE 2
(Adopted August 21, 2003)(Amended June 16, 2005; April 20, 2006; January 18, 2007)

1.0 Purpose

The purpose of this rule is to limit the emissions of nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOC) from internal combustion engines.

2.0 Applicability

This rule applies to any internal combustion engine with a rated brake horsepower greater than 50 horsepower.

3.0 Definitions

3.1 Agreement to Electrify: a binding, non-cancelable contract written by the APCO and signed by the operator and the APCO prior to January 1, 2008 that commits the operator to complying with the requirements of Section 5.1.1 or Section 5.1.2 of this rule by electrifying.

3.2 Agriculture Operations (AO): as defined in Rule 4550 (Conservation Management Practices).

3.3 Beam-balanced Pumping Engine: a cyclic loaded engine powering an oil well pump, with the pump counterweight on the back end of the walking beam. The counterweight is moved mechanically without a cylinder supplying air pressure.

3.4 California Reformulated Gasoline: gasoline meeting California Air Resources Board requirements for motor vehicle fuel in accordance with California Code of Regulations, Chapter 5, Article 1, Subarticle 2 - Standards for gasoline sold beginning March 1, 1996.

3.5 Certified Compression-Ignited Engine: a Tier 1, Tier 2, Tier 3, or Tier 4 compression-ignited engine that is EPA certified as specified in Title 40 Code of Federal Regulations Part 89 or in Title 40 Code of Federal Regulations Part 1039.

3.6 Certified Spark-Ignited Engine: a spark-ignited engine that is used exclusively in agricultural operations and that is ARB certified as specified in Title 13, Division 3, Chapter 9, Article 4.5, Section 2433 of the California Code of Regulations and that has been certified to meet a Certification Level for hydrocarbon plus NOx emissions of 0.6 grams/bhp-hr (40.2 ppmv) or less.

3.7 CO: carbon monoxide.

3.8 Compression-Ignited Internal Combustion Engine: an engine that uses the heat of compression to initiate combustion.

3.9 Crank-balanced Pumping Engine: a cyclic loaded engine powering an oil well pump, with the pump counterweight attached to a gearbox which is attached to the walking beam with a pitman arm. The counterweight is moved mechanically, in a circular motion, without a cylinder supplying air pressure.

3.10 Cyclic Loaded Engine: an internal combustion engine that, under normal operating conditions, varies in shaft load by 40% or more of rated brake horsepower during recurrent periods of 30 seconds or less or is used to power an oil well reciprocating pump unit.

3.11 De-rated Engine: an internal combustion engine which has been physically limited and restricted by permit condition to an operational level of less than 50 horsepower.

3.12 Diesel Engine: a compression-ignited internal combustion engine.

3.13 Disaster or State of Emergency: a fire, flood, earthquake, or other similar natural catastrophe.

3.14 Distributed Generation (DG): relatively small power plants, such as internal combustion engine generator sets, which are used to generate electrical power that is either fed into the power grid or used on-site. DG units are located throughout the grid and are usually sited in or close to load centers or utility customers' sites. Distributed Generation also refers to a mechanical drive system consisting of one or more internal combustion engines and electric motors, where use of the internal combustion engines or electric motors is interchangeable.

3.15 Emergency Standby Engine: an internal combustion engine which operates as a temporary replacement for primary mechanical or electrical power during an unscheduled outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the operator. An engine shall be considered to be an emergency standby engine if it is used only for the following purposes: (1) periodic maintenance, periodic readiness testing, or readiness testing during and after repair work; (2) unscheduled outages, or to supply power while maintenance is performed or repairs are made to the primary power supply; and (3) if it is limited to operate 100 hours or less per calendar year for non-emergency purposes. An engine shall not be considered to be an emergency standby engine if it is used: (1) to reduce the demand for electrical power when normal electrical power line service has not failed, or (2) to produce power for the utility electrical distribution system, or (3) in conjunction with a voluntary utility demand reduction program or interruptible power contract.

3.16 Exhaust Control: device or technique used to treat an engine's exhaust to reduce NOx, VOC, or CO emissions, and include, but is not limited to, catalysts, afterburners, reaction chambers, and chemical injectors.

3.17 Flood: a sudden and reasonably unforeseen rising and overflowing of a body of water especially onto normally dry land.

3.18 Gaseous Fuel: a fuel which is a gas at standard conditions including but not limited to natural gas, methane, ethane, propane, butane and liquefied petroleum gas (LPG).

3.19 Installation Date: the date that an internal combustion engine is initially placed at a location in order to be operated for the first time in its lifetime.

3.20 Internal Combustion Engine: any spark- or compression-ignited reciprocating engine.

3.21 Lean-Burn Engine: any spark-ignited internal combustion engine that is operated with an exhaust stream oxygen concentration of four (4) percent by volume, or greater prior to any exhaust stream control device.

3.22 Location: any single site at a building, structure, facility, or installation.

3.23 Military Tactical Equipment: a transportable engine operated by the United States armed forces or National Guard which is designed specifically for military use in an off-road, dense terrain; hostile environment; or aboard military combat vessels.

3.24 Mobile Agricultural Equipment: equipment at an agricultural operation which is towed or mounted on a vehicle and is continuously moved during the operation of the equipment. Mobile Agricultural Equipment includes, but is not limited to sprayers, balers, and harvest equipment.

3.25 NOx: oxides of nitrogen, calculated as equivalent nitrogen dioxide (NO_2).

3.26 Public Utilities Commission (PUC) Quality Natural Gas: PUC quality natural gas means high methane gas (at least 80% methane by volume) as specified in PUC General order 58-A.

3.27 Rated Brake Horsepower: the continuous brake horsepower rating specified for the engine by the manufacturer or listed on the nameplate of the unit, unless otherwise physically limited and specified by a condition on the engine's Permit-to-Operate or Permit-Exempt Equipment Registration.

3.28 Replacement Engine: an engine that is installed to replace an engine that was in place as of June 16, 2005 and that such replacement is performed solely for the purpose of complying with the requirements of Section 5.1 of this rule.

3.29 Rich-Burn Engine: any spark-ignited internal combustion engine that is operated with an exhaust stream oxygen concentration of less than four (4) percent by volume prior to any exhaust stream control device.

3.30 Spark-ignited Internal Combustion Engine: a liquid or gaseous fueled engine designed to ignite its air/fuel mixture by a spark across a spark plug.

3.31 Stationary Source: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).

3.32 Tier 1 Engine, Tier 2 Engine, Tier 3 Engine, and Tier 4 Engine: an EPA certified compression-ignited engine that meets the Tier 1, Tier 2, or Tier 3 emission standards of Table 1 on page 56970 of the Final Rule (October 23, 1998) or the Tier 4 emission standards of Table II.A.2 (Tier 4 NOx and NMHC Standards and Schedule) on page 38971 of the Final Rule (June 29, 2004) or Table II.A.4 (Tier 4 Standards for Engines Over 750 HP (G/BHP-HR)) on page 38980 of the Final Rule (June 29, 2004), respectively.

3.33 VOC: volatile organic compounds, as defined in Rule 1020 (Definitions).

3.34 Waste Gas: an untreated, raw gas derived through a natural process, such as anaerobic digestion, from the decomposition of organic waste at municipal solid waste landfills or publicly owned wastewater treatment facility. Waste gas includes landfill gas which is generated at landfills, digester gas which is generated at sewage treatment facilities, or a combination of the two.

3.35 Wind Machine: a machine consisting of a large fan mounted on a tower powered by an internal combustion engine, used exclusively to provide protection to crops, including, but not limited to oranges, lemons, and grapes, from cold weather by effecting a heat transfer by moving warmer atmospheric air downward and mixing it with the colder air surrounding a crop.

4.0 Exemptions

4.1 The requirements of this rule shall not apply to the following engines:

4.1.1 An engine used to propel implements of husbandry, as that term is defined in Section 36000 of the California Vehicle Code, as that section existed on January 1, 2003.

4.1.2 An engine used exclusively to power a wind machine.

4.1.3 A de-rated spark-ignited engine not used in agricultural operations, provided the de-rating occurred before June 1, 2004.

4.1.4 A de-rated spark-ignited engine used in agricultural operations or a de-rated compression-ignited engine, provided the de-rating occurred before June 1, 2005.

4.1.5 An engine used exclusively to power Mobile Agricultural Equipment.

4.2 Except for the requirements of Section 5.7 and Section 6.2.3, the requirements of this rule shall not apply to:

4.2.1 An emergency standby engine as defined in Section 3.0 of this rule, and provided that it is operated with a nonresettable elapsed operating time meter. In lieu of a nonresettable time meter, the owner of an emergency engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

4.2.2 An internal combustion engine that is operated no more than 200 hours per calendar year as determined by an operational nonresettable elapsed operating time meter and provided the engine is not used to perform any of the functions specified in Section 4.2.2.1 through Section 4.2.2.3 below. In lieu of a nonresettable time meter, the owner of an engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

4.2.2.1 To generate electrical power that is either fed into the electrical utility power grid or used to reduce electrical power purchased by a stationary source,

4.2.2.2 To generate mechanical power that is used to reduce electrical power purchased by a stationary source, or

4.2.2.3 In a distributed generation application.

4.3 Except for the administrative requirements of Section 6.2.3, the requirements of this rule shall not apply to:

4.3.1 An internal combustion engine that meets the following conditions:

4.3.1.1 The engine is operated exclusively to preserve or protect property, human life, or public health during a disaster or state of emergency, such as a fire or flood, and

4.3.1.2 Except for operations associated with Section 4.3.1.1, the engine is limited to operate no more than 100 hours per calendar year as determined by an operational nonresettable elapsed operating time meter, for periodic maintenance, periodic readiness testing, and readiness testing during and after repair work of the engine, and

4.3.1.3 The engine is operated with a nonresettable elapsed operating time meter. In lieu of installing a nonresettable time meter, the owner of an engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

4.3.2 An internal combustion engine registered as a portable emissions unit under Rule 2280 (Portable Equipment Registration) or the Statewide Portable Equipment Registration Program pursuant to Sections 2450-2465, Article 5, Title 13, California Code of Regulations.

4.3.3 Military Tactical Equipment and engines used to retract military aircraft arresting gear cables.

4.4. A replacement engine installed for the sole purpose of complying with the requirements of this rule shall be exempt from the Best Available Control Technology (BACT) and Offsets requirements of District Rule 2201 (New and Modified Stationary Source Review Rule) provided that all of the following conditions are met:

4.4.1 The replacement engine is of equal or lesser horsepower rating of the engine being replaced,

4.4.2 The replacement engine is subject to the same operational parameters (e.g. hours of operation, fuel use limitations, etc.) as the engine being replaced,

4.4.3 The replacement engine performs the same function as the engine being replaced, and

4.4.4 The emissions of the replacement engine are no greater than the emissions of the engine being replaced.

5.0 Requirements

5.1 Engine Emission Limits/Standards

5.1.1 Spark-Ignited Internal Combustion Engine Emission Limits/Standards - The owner of a spark-ignited internal combustion engine shall not operate it in such a manner that results in emissions exceeding the limits in Table 1 below for the appropriate engine type according to the compliance schedules listed in Section 7.0 or according to the compliance dates specified in Table 1 below. A spark-ignited engine shall comply with the applicable emission limits pursuant to Section 5.1 or Section 8.0.

Table 1 Emission Limits/Standards for a Spark-Ignited Internal Combustion Engine and Emission Limits/Standards and Compliance Schedule for a Spark-Ignited Engine Used Exclusively in Agricultural Operations (corrected to 15% oxygen on a dry basis)

Engine Type	NOx	CO	VOC
1. Rich-Burn			
a. Waste gas fueled	50 ppmv or 90% reduction	2000 ppmv	250 ppmv
b. Cyclic loaded, field gas fueled	50 ppmv	2000 ppmv	250 ppmv
c. All other engines	25 ppmv or 96% reduction	2000 ppmv	250 ppmv
2. Lean-Burn			
a. Two stroke, gaseous fueled, less than 100 horsepower	75 ppmv or 85% reduction	2000 ppmv	750 ppmv
b. All other engines	65 ppmv or 90% reduction	2000 ppmv	750 ppmv
3. Rich-Burn Engine Used Exclusively in Agricultural Operations			
a. Comply by 1/1/2009, or if owner has an agreement to electrify, comply by 1/1/2010	90 ppmv or 80% reduction	2000 ppmv	250 ppmv
4. Lean-Burn Engine Used Exclusively in Agricultural Operations			
a. Comply by 1/1/2009 or if owner has an agreement to electrify comply by 1/1/2010	150 ppmv or 70% reduction	2000 ppmv	750 ppmv
5. Certified Spark-Ignited Engine Used Exclusively in AO and installed on or before June 16, 2005			
a. Comply by 6/1/2006	Meet Certified Spark-Ignited Engine Standard of HC+NOx < 0.6 g/bhp-hr		

5.1.2 Compression-Ignited Internal Combustion Engine Emission Limits/Standards and Compliance Schedules – The owner of a compression-ignited internal combustion engine shall repower, replace or control the engine to comply with the applicable limits/standards and compliance dates in Table 2 below. The annual hours of operation shall be determined on a calendar year basis. A compression-ignited engine shall comply with the applicable emission limits/standards pursuant to Section 5.1.2 or Section 8.0.

Table 2 Emission Limits/Standards and Compliance Schedule for a Compression-Ignited Internal Combustion Engine (corrected to 15% oxygen on a dry basis)

Engine Type	Emission Limit/ Standard	Compliance Date
1. Non-Certified Compression-Ignited Engine		
a. Greater than 50 bhp but not more than 500 bhp	EPA Tier 3 or Tier 4	1/1/2010
b. Greater than 500 bhp but not more than 750 bhp and less than 1000 annual operating hours	EPA Tier 3	1/1/2010
c. Greater than 750 bhp and less than 1000 annual operating hours	EPA Tier 4	7/1/2011
d. Greater than 500 bhp and greater than or equal to 1000 annual operating hours	80 ppm NOx, 2,000 ppm CO, 750 ppm VOC	1/1/2008 or, if owner has an agreement to electrify, comply by 1/1/2010
2. Certified Compression-Ignited Engine		
a. EPA Certified Tier 1 or Tier 2 Engine	EPA Tier 4	1/1/2015 or 12 years after installation date, whichever is later
b. EPA Certified Tier 3 or Tier 4 Engine	Meet Certified Compression-Ignited Engine Standard in effect at time of installation	At time of installation

5.1.3 On and after June 1, 2006, the owner of an AO rich-burn spark-ignited engine, AO lean-burn spark-ignited engine, or AO compression-ignited engine that is subject to the requirements of Section 5.1 shall not replace such engine with a rich-burn spark-ignited, lean-burn spark-ignited, or compression-ignited engine, respectively, that emits more emissions of NOx, VOC, and CO, on a ppmv basis, (corrected to 15% oxygen on a dry basis) than the engine being replaced.

5.1.4 The owner of a non-certified compression-ignited engine, in place on June 1, 2006, shall comply with the Emission Limit/Standard and Compliance Date in Table 2 based on the non-certified compression-ignited engine that

was in place on June 1, 2006, unless the owner meets one of the following conditions:

5.1.4.1 Replaces the non-certified compression-ignited engine with a non-modified Tier 3 or a non-modified Tier 4 engine after June 1, 2006,

5.1.4.2 Controls the non-certified compression-ignited engine after June 1, 2006, to emit emissions less than, or equal to, 80 ppm NOx, 2,000 ppm CO, and 750 ppm VOC, (corrected to 15% oxygen on a dry basis), or

5.1.4.3 Replaces the non-certified compression-ignited engine after June 1, 2006, with an engine or other source with emissions less than, or equal to, 80 ppm NOx, 2,000 ppm CO, and 750 ppm VOC (corrected to 15% oxygen on a dry basis).

5.2 All continuous emission monitoring systems (CEMS) emissions measurements shall be averaged over a period of 15 consecutive minutes. Any 15-consecutive-minute block average CEMS measurement exceeding the applicable emission limits of this rule shall constitute a violation of this rule.

5.3 Percent emission reductions, if used to comply with the NOx emission limits of Section 5.1, shall be calculated as follows:

5.3.1 For engines with external control devices that are not operated in combination with a second emission control device or technique, percent reduction shall be calculated using emission samples taken at the inlet and outlet of the control device.

5.3.2 For engines without external control devices and for engines with an external control device in combination with a second emission control device or technique, percent reduction shall be based on source test results for the uncontrolled engine and the engine after the control device or technique has been employed. In this situation, the engine's typical operating parameters, loading, and duty cycle shall be documented and repeated at each successive post-control source test to ensure that the engine is meeting the percent reduction limit. When representative source sampling prior to the application of an emissions control technology or technique is not available, the APCO may approve the use of a manufacturer's uncontrolled emissions information or source sampling from a similar, uncontrolled engine.

5.4 The owner of an internal combustion engine that uses percent emission reduction to comply with the NOx emission limits of Section 5.1 shall provide an accessible inlet and outlet on the external control device or the engine as appropriate for taking emission samples and as approved by the APCO.

5.5 California Reformulated Gasoline shall be used as the fuel for all gasoline-fired, spark-ignited internal combustion engines.

5.6 Monitoring Requirements A

The owner of a non-AO spark-ignited engine subject to the requirements of Section 5.1 or any engine subject to the requirements of Section 8.0 shall comply with the following requirements:

5.6.1 For each engine with a rated brake horsepower of 1,000 hp or greater and which is allowed by Permit-to-Operate or Permit-Exempt Equipment Registration condition to operate more than 2,000 hours per calendar year, or with an external emission control device, either install, operate, and maintain continuous monitoring equipment for NOx, CO, and oxygen, as identified in Rule 1080 (Stack Monitoring), or install, operate, and maintain APCO-approved alternate monitoring. The monitoring system may be a continuous emissions monitoring system (CEMS), a parametric emissions monitoring system (PEMS), or an alternative monitoring system approved by the APCO. APCO-approved alternate monitoring shall consist of one or more of the following:

5.6.1.1 Periodic NOx and CO emission concentrations,
5.6.1.2 Engine exhaust oxygen concentration,
5.6.1.3 Air-to-fuel ratio,
5.6.1.4 Flow rate of reducing agents added to engine exhaust,
5.6.1.5 Catalyst inlet and exhaust temperature,
5.6.1.6 Catalyst inlet and exhaust oxygen concentration,
5.6.1.7 Other operational characteristics.

5.6.2 For each engine not subject to Section 5.6.1, monitor operational characteristics recommended by the engine manufacturer or emission control system supplier, and approved by the APCO.

5.6.3 For each engine with an alternative monitoring system, submit to, and receive approval from the APCO, adequate verification of the alternative monitoring system's acceptability. This would include data demonstrating the system's accuracy under typical operating conditions for the specific application and any other information or data deemed necessary in assessing the acceptability of the alternative monitoring system.

5.6.4 For each engine with an APCO approved CEMS, operate the CEMS in compliance with the requirements of 40 Code of Federal Regulations (CFR) Part 51, 40 CFR Parts 60.7 and 60.13 (except subsection h), 40 CFR Appendix B (Performance Specifications), 40 CFR Appendix F (Quality Assurance Procedures), and applicable provisions of Rule 1080 (Stack Monitoring).

5.6.5 For each engine, have the data gathering and retrieval capabilities of an installed monitoring system described in Section 5.6 approved by the APCO.

5.6.6 For each engine, install and operate a nonresettable elapsed operating time meter. In lieu of installing a nonresettable time meter, the owner of an engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO and is allowed by Permit-to-Operate or Permit-Exempt Equipment Registration condition. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

5.6.7 For each engine, implement the Inspection and Monitoring (I&M) plan, if any, submitted to and approved by the APCO pursuant to Section 6.5.

5.6.8 For each engine, collect data through the I&M plan in a form approved by the APCO.

5.6.9 For each engine use a portable NOx analyzer to take NOx emission readings to verify compliance with the emission requirements of Section 5.1 or Section 8.0 during each calendar quarter in which a source test is not performed and the engine is operated. All emission readings shall be taken with the engine operating either at conditions representative of normal operations or conditions specified in the Permit-to-Operate or Permit-Exempt Equipment Registration. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. All NOx emissions readings shall be reported to the APCO in a manner approved by the APCO. NOx emission readings taken pursuant to this section shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15 consecutive-minute period.

5.6.10 The APCO shall not approve an alternative monitoring system unless it is documented that continued operation within ranges of specified emissions-related performance indicators or operational characteristics provides a reasonable assurance of compliance with applicable emission limits. The operator shall source test over the proposed range of surrogate operating parameters to demonstrate compliance with the applicable emission standards.

5.6.11 For each engine subject to Section 8.0, install and operate a nonresettable fuel meter. In lieu of installing a nonresettable fuel meter, the owner may use an alternative device, method, or technique in determining daily fuel consumption provided that the alternative is approved by the APCO. The owner shall properly maintain, operate, and calibrate the required fuel meter in accordance with the manufacturer's instructions.

5.7 Monitoring Requirements B

5.7.1 The owner of any of the following engines shall comply with the requirements specified in Section 5.7.2 through Section 5.7.5 below:

5.7.1.1 An AO spark-ignited engine subject to the requirements of Section 5.1,

5.7.1.2 A compression-ignited engine subject to the requirements of Section 5.1, or

5.7.1.3 An engine subject to Section 4.2.

5.7.2 Properly operate and maintain each engine as recommended by the engine manufacturer or emission control system supplier.

5.7.3 Monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.

5.7.4 Install and operate a nonresettable elapsed operating time meter. In lieu of installing a nonresettable time meter, the owner of an engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO and is allowed by Permit-to-Operate or Permit-Exempt Equipment Registration condition. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

5.7.5 The owner of an AO spark-ignited engine that has been retro-fitted with a NOx exhaust control that has not been certified in accordance with Section 9.0 Exhaust Control System Certification Requirements, or a compression-ignited engine that has been retro-fitted with a NOx exhaust control shall comply with the following:

5.7.5.1 Use a portable NOx analyzer to take NOx emission readings to demonstrate compliance with the emission requirements of Section 5.1.

5.7.5.2 The owner of a compression-ignited engine that is subject to the limits/standards of Section 5.1.2 Table 2 Category 1.d shall use a portable NOx analyzer to take NOx emission readings at least once every six months that the engine is operated.

5.7.5.3 The owner of any other engine that has been retro-fitted with a NOx exhaust control shall use a portable NOx analyzer to take NOx emission readings at least once every 24 months that the engine is operated.

5.7.5.4 All emission readings shall be taken with the engine operating either at conditions representative of normal operations or conditions specified in the Permit-to-Operate or Permit-Exempt Equipment Registration.

5.7.5.5 The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO.

5.7.5.6 All NOx emissions readings shall be reported to the APCO in a manner approved by the APCO.

5.7.5.7 NOx emission readings taken pursuant to this section shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15 consecutive-minute period.

5.8 Permit-Exempt Equipment Registration Requirements

The owner of an engine used exclusively in agricultural operations shall register such engine pursuant to Rule 2250 (Permit-Exempt Equipment Registration), except for an engine that meets any one of the following conditions:

5.8.1 The engine is required to have a Permit-to-Operate pursuant to California Health and Safety Code Section 42301.16, or

5.8.2 The engine is not required to comply with Section 5.1 of this rule.

6.0 Administrative Requirements

6.1 Emission Control Plan

The owner of an engine subject to the requirements of Section 5.1 or Section 8.0, except for an engine specified in Section 6.1.1, of this rule shall submit to the APCO an APCO-approvable emission control plan of all actions to be taken to satisfy the emission requirements of Section 5.1 and the compliance schedules of Section 7.0.

6.1.1 The requirement to submit an emission control plan shall not apply to an engine specified below:

6.1.1.1 A certified compression-ignited engine that has not been retro-fitted with an exhaust control and is not subject to the requirements of Section 8.0,

6.1.1.2 A certified spark-ignited engine that has not been retro-fitted with an exhaust control and is not subject to the requirements of Section 8.0,

6.1.1.3 An AO spark-ignited engine that has not been retro-fitted with a catalytic emission control device and is not subject to the requirements of Section 8.0,

6.1.1.4 An engine subject to Section 4.2, or

6.1.1.5 An engine subject to Section 4.3.

6.1.1.6 An engine with an operating exhaust control system that has been certified in accordance with Section 9.0 Exhaust Control System Certification Requirements.

6.1.2 Such emission control plan shall contain the following information, as applicable for each engine:

6.1.2.1 Permit-to-Operate number, Authority-to-Construct number, or Permit-Exempt Equipment Registration number
6.1.2.2 Engine manufacturer
6.1.2.3 Model designation and engine serial number
6.1.2.4 Rated brake horsepower
6.1.2.5 Type of fuel and type of ignition
6.1.2.6 Combustion type: rich-burn or lean-burn
6.1.2.7 Total hours of operation in the previous one-year period, including typical daily operating schedule
6.1.2.8 Fuel consumption (cubic feet for gas or gallons for liquid) for the previous one-year period
6.1.2.9 Stack modifications to facilitate continuous in-stack monitoring and to facilitate source testing
6.1.2.10 Type of control to be applied, including in-stack monitoring specifications
6.1.2.11 Applicable emission limits
6.1.2.12 Documentation showing existing emissions of NOx, VOC, and CO, and
6.1.2.13 Date that the engine will be in full compliance with Rule 4702.

6.1.3 The emission control plan shall identify the type of emission control device or technique to be applied to each engine and a construction/removal schedule, or shall provide support documentation sufficient to demonstrate that the engine is in compliance with the emission requirements of this rule.

6.1.4 For an engine being permanently removed from service, the emission control plan shall include a letter of intent pursuant to Section 7.2.

6.2 Recordkeeping

6.2.1 Except for engines subject to Section 4.0, the owner of an engine subject to the requirements of Section 5.1 of this rule shall maintain an engine

operating log to demonstrate compliance with this rule. This information shall be retained for a period of at least five years, shall be readily available, and be made available to the APCO upon request. The engine operating log shall include, on a monthly basis, the following information:

6.2.1.1 Total hours of operation,
6.2.1.2 Type of fuel used,
6.2.1.3 Maintenance or modifications performed,
6.2.1.4 Monitoring data,
6.2.1.5 Compliance source test results, and
6.2.1.6 Any other information necessary to demonstrate compliance with this rule.
6.2.1.7 For an engine subject to Section 8.0, the quantity (cubic feet of gas or gallons of liquid) of fuel used on a daily basis.

6.2.2 The data collected pursuant to the requirements of Section 5.6 and Section 5.7 shall be maintained for at least five years, shall be readily available, and made available to the APCO upon request.

6.2.3 An owner claiming an exemption under Section 4.2 or Section 4.3 shall maintain annual operating records. This information shall be retained for at least five years, shall be readily available, and provided to the APCO upon request. The records shall include, but are not limited to, the following:

6.2.3.1 Total hours of operation,
6.2.3.2 The type of fuel used,
6.2.3.3 The purpose for operating the engine,
6.2.3.4 For emergency standby engines, all hours of non-emergency and emergency operation shall be reported, and
6.2.3.5 Other support documentation necessary to demonstrate claim to the exemption.

6.3 Compliance Testing

The owner of an engine subject to the requirements of Section 5.1 or the requirements of Section 8.0, shall comply with the following requirements, except for an engine specified in Section 6.3.1:

6.3.1 The requirements of Section 6.3.2 through Section 6.3.4 shall not apply to any of the following engines:

6.3.1.1 A certified compression-ignited engine that has not been retro-fitted with an exhaust control and is not subject to the requirements of Section 8.0.

6.3.1.2 A certified spark-ignited engine that has not been retro-fitted with an exhaust control and is not subject to the requirements of Section 8.0.

6.3.1.3 An AO spark-ignited engine that has not been retro-fitted with a catalytic emission control device and is not subject to the requirements of Section 8.0.

6.3.1.4 An engine subject to Section 4.2.

6.3.1.5 An engine subject to Section 4.3.

6.3.1.6 An engine with an operating exhaust control system that has been certified in accordance with Section 9.0 Exhaust Control System Certification Requirements.

6.3.2 Demonstrate compliance with applicable limits, ppmv or percent reduction, in accordance with the test methods in Section 6.4, as specified below:

6.3.2.1 By the applicable date specified in Section 5.1.1, Section 5.1.2, Section 7.3, Section 7.4, Section 7.5, or Section 7.6 and at least once every 24 months thereafter, except for an engine subject to Section 6.3.2.2.

6.3.2.2 By the applicable date specified in Section 5.1.1, Section 5.1.2, Section 7.3, Section 7.4, Section 7.5, or Section 7.6 and at least once every 60 months thereafter, for an AO spark-ignited engine that has been retro-fitted with a catalytic emission control device and is not subject to the requirements of Section 8.0.

6.3.2.3 A portable NOx analyzer may be used to show initial compliance with the applicable limits/standards in Section 5.1 for AO spark-ignited engines, provided the criteria specified in Sections 6.3.2.3.1 to 6.3.2.3.5 are met, and a source test is conducted in accordance with Section 6.3.2 within 12 months from the required compliance date.

6.3.2.3.1. A minimum of 15 minutes of runtime must be measured with data recorded at a minimum of 15, evenly spaced time intervals. Compliance is to be determined with the arithmetic average of the oxygen-corrected data.

6.3.2.3.2. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Analyzer calibration records shall be made available at the District's request.

6.3.2.3.3. The analyzer shall be checked with EPA protocol span gas at the beginning and end of each test day. The results of these checks shall be recorded and

copies submitted to the District with each engine test. If the analyzer exhibits more than a 10% deviation from the span check, the instrument must be re-calibrated. Any analysis performed prior to an end-of-day span check failure shall be void.

6.3.2.3.4. The test results of each engine, including span check results, shall be submitted to the District within 30 days of the test date. Test results shall clearly identify the engine tested including owner, location, permit or registration number, manufacturer, model, and serial number.

6.3.2.3.5. The analyzer utilized for each check shall be clearly identified in the material submitted with the test results. Identification shall include manufacturer and serial number of the analyzer used, and the last calibration date.

6.3.3 Conduct emissions source testing with the engine operating either at conditions representative of normal operations or conditions specified in the Permit-to-Operate or Permit-Exempt Equipment Registration. For emissions source testing performed pursuant to Section 6.3.2 for the purpose of determining compliance with an applicable standard or numerical limitation, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit. VOC shall be reported as methane. VOC, NOx, and CO concentrations shall be reported in ppmv, corrected to 15 percent oxygen. For engines that comply with a percent reduction limit in Table 1, the percent reduction of NOx emissions shall also be reported.

6.3.4 In addition to other information, the source test protocol shall describe which critical parameters will be measured and how the appropriate range for these parameters shall be established. The range for these parameters shall be incorporated into the I&M plan.

6.3.5 Engines that are limited by Permit-to-Operate or Permit-Exempt Equipment Registration condition to be fueled exclusively with PUC quality natural gas shall not be subject to the reoccurring source test requirements of Section 6.3.2 for VOC emissions.

6.3.6 Representative Testing

For spark-ignited engines, in lieu of compliance with the applicable requirements of Section 6.3.2, compliance with the applicable emission limits in Section 5.1 shall be demonstrated by submittal of annual emission

test results, within 30 days of the test date, to the District, from a unit or units that represents a specified group of units, provided all of the following are requirements are satisfied:

6.3.6.1 The units are located at the same stationary source;

6.3.6.2 The units were produced by the same manufacturer, have the same model number or other manufacturer's designation in common, and have the same rated capacity and operating specifications;

6.3.6.3 The units are operated and maintained in a similar manner; and

6.3.6.4 At least 20% of the total number of units are tested during each annual test cycle.

6.3.6.5 The District, based on documentation submitted by the stationary source:

6.3.6.5.1 Determines that the margin of compliance for the identical units tested is significant and can be maintained on an on-going basis; or

6.3.6.5.2 Determines based on a review of sufficient emissions data that, though the margin of compliance is not substantial, other factors allow for the determination that the variability of emissions for identical tested units is low enough for confidence that the untested unit will be in compliance. These factors may include, but are not limited to, the following:

6.3.6.5.2.1 Historical records at the tested unit showing consistent invariant load;

6.3.6.5.2.2 Fuel characteristics yielding low variability and therefore assurance that emissions will be constant and below allowable levels;

6.3.6.5.2.3 Statistical analysis of a robust emissions data set demonstrate sufficiently low variability to convey assurance that the margin of compliance, though small, is reliable.

6.3.6.6 Should any of the representative units exceed the required emission limits, or if the District notifies the operator that the criteria in Sections 6.3.6.1 through 6.3.6.5 have not been fulfilled, each of the units in the group shall individually demonstrate compliance by

emissions testing. Failure to complete emissions testing within 90 days of the failed test shall result in the untested units being in violation of this rule. After compliance with the requirements of Section 6.3.6.6 has been demonstrated, subsequent source testing shall be performed pursuant to Sections 6.3.2 or 6.3.6.

6.4 Test Methods

Compliance with the requirements of Section 5.0 shall be determined, as required, in accordance with the following test procedures or any other method approved by EPA and the APCO:

6.4.1 Oxides of nitrogen - EPA Method 7E, or ARB Method 100.

6.4.2 Carbon monoxide - EPA Method 10, or ARB Method 100.

6.4.3 Stack gas oxygen - EPA Method 3 or 3A, or ARB Method 100.

6.4.4 Volatile organic compounds - EPA Method 25A or 25B, or ARB Method 100.

6.4.5 Operating horsepower determination - any method approved by EPA and the APCO.

6.5 Inspection and Monitoring (I&M) Plan

The owner of an engine that is subject to the requirements of Section 5.1 or the requirements of Section 8.0, except for an engine specified in Section 6.5.1, shall submit to the APCO for approval, an I&M plan that specifies all actions to be taken to satisfy the following requirements and the requirements of Section 5.6. The actions to be identified in the I&M plan shall include, but are not limited to, the information specified below:

6.5.1 The requirements of Section 6.5.2 through Section 6.5.9 shall not apply to any of the following engines:

6.5.1.1 A certified compression-ignited engine that has not been retro-fitted with an exhaust control and is not subject to the requirements of Section 8.0.

6.5.1.2 A certified spark-ignited engine that has not been retro-fitted with an exhaust control and is not subject to the requirements of Section 8.0.

6.5.1.3 An AO spark-ignited engine that has not been retro-fitted with a catalytic emission control device and is not subject to the requirements of Section 8.0.

6.5.1.4 An engine subject to Section 4.2.

6.5.1.5 An engine subject to Section 4.3.

6.5.1.6 An engine with an operating exhaust control system that has been certified in accordance with Section 9.0 Exhaust Control System Certification Requirements.

6.5.2 Procedures requiring the owner or operator to establish ranges for control equipment parameters, engine operating parameters, and engine exhaust oxygen concentrations that source testing has shown result in pollutant concentrations within the rule limits.

6.5.3 Procedures for monthly inspections as approved by the APCO. The applicable control equipment parameters and engine operating parameters will be inspected and monitored monthly in conformance with a regular inspection schedule listed in the I&M plan.

6.5.4 Procedures for the corrective actions on the noncompliant parameter(s) that the owner or operator will take when an engine is found to be operating outside the acceptable range for control equipment parameters, engine operating parameters, and engine exhaust NOx, CO, VOC, or oxygen concentrations.

6.5.5 Procedures for the owner or operator to notify the APCO when an engine is found to be operating outside the acceptable range for control equipment parameters, engine operating parameters, and engine exhaust NOx, CO, VOC, or oxygen concentrations.

6.5.6 Procedures for preventive and corrective maintenance performed for the purpose of maintaining an engine in proper operating condition.

6.5.7 Procedures and a schedule for using a portable NOx analyzer to take NOx emission readings pursuant to Section 5.6.9.

6.5.8 Procedures for collecting and recording required data and other information in a form approved by the APCO including, but not limited to, data collected through the I&M plan and the monitoring systems described in Sections 5.6.1 and 5.6.2. Data collected through the I&M plan shall have retrieval capabilities as approved by the APCO.

6.5.9 Procedures for revising the I&M plan. The I&M plan shall be updated to reflect any change in operation. The I&M plan shall be updated prior to any planned change in operation. An engine owner that changes significant I&M plan elements must notify the District no later than seven days after the change and must submit an updated I&M plan to the APCO no later than 14 days after the change for approval. The date and time of the change to the I&M plan shall be recorded in the engine operating log.

For new engines and modifications to existing engines, the I&M plan shall be submitted to and approved by the APCO prior to issuance of the Permit-to-Operate or Permit-Exempt Equipment Registration. The owner of an engine may request a change to the I&M plan at any time.

7.0 Compliance Schedules

7.1 Loss of Exemption

The owner of an engine which becomes subject to the emission limits/standards of this rule through loss of exemption shall not operate the subject engine, except as required for obtaining a new or modified Permit-to-Operate or Permit-Exempt Equipment Registration for the engine, until the owner demonstrates that the subject engine is in full compliance with the requirements of this rule.

7.2 Permanent Removal of an Engine

The owner of an engine who elects to permanently remove the engine from service shall comply with all of the following conditions:

7.2.1 Comply with all applicable requirements of this rule until the engine is permanently removed from service;

7.2.2 Submit a letter to the APCO no later than 14 days before the engine is permanently removed from service, stating the intent to permanently remove the engine from service. The engine removal letter can be submitted with the emission control plan, if any; and

7.2.3 Permanently remove the engine from service and officially surrender the Permit-to-Operate or Permit-Exempt Equipment Registration, if any, to the APCO no later than 30 days after the engine is permanently removed from service.

7.3 Compliance Schedule for an AO Compression-Ignited Engine

7.3.1 Compliance Schedule - Submission of Emission Control Plan, I&M Plan, Permit-Exempt Equipment Registration Application and Authority-to-Construct for an AO Compression-Ignited Engine

7.3.1.1 The owner of an engine that is subject to Section 4.2 or Section 4.3 and that is required to submit an Emission Control Plan, an I&M Plan, or an Authority-to-Construct in order to comply with the requirements of Rule 4702, shall submit such document(s) no later than January 1, 2006.

7.3.1.2 The owner of an engine that is subject to Section 5.1 and that is required to submit an Authority-to-Construct application in order to comply with the requirements of Rule 4702, shall submit the

Authority-to-Construct application, and any required Emission Control Plan or I&M Plan, no later than six months before the engine is required to be in compliance with the requirements of Section 5.1 of Rule 4702.

7.3.1.3 The owner of an engine that is subject to Section 5.1 and that is required to submit a Permit-Exempt Equipment Registration application in order to comply with the requirements of Rule 4702, shall submit the Permit-Exempt Equipment Registration application, and any required Emission Control Plan or I&M Plan, no later than three months before the engine is required to be in compliance with the requirements of Section 5.1 of Rule 4702.

7.3.2 Compliance Schedule - Monitoring and Recordkeeping for an AO Compression-Ignited Engine Subject to Section 5.1 and Section 5.7

On and after June 1, 2006, the owner of an engine that is subject to Section 5.1 and Section 5.7 of Rule 4702 shall be in compliance with the requirements of Section 5.7, Section 6.2.1.1, and Section 6.2.1.2.

7.3.3 Compliance Schedule - General for an AO Compression-Ignited Engine

7.3.3.1 On and after January 1, 2006, unless otherwise specified, the owner of an engine that is subject to the requirements of Section 4.2 or Section 4.3 of Rule 4702 shall be in full compliance with Rule 4702.

7.3.3.2 Unless otherwise specified, the owner of an engine that is subject to the requirements of Section 5.1 of Rule 4702 shall be in full compliance with Rule 4702 by the indicated dates pursuant to Section 5.1.2.

7.4 Compliance Schedule for an AO Spark-Ignited Engine

7.4.1 Compliance Schedule - Submission of Emission Control Plan, I&M Plan, Permit-Exempt Equipment Registration Application and Authority-to-Construct for an AO Spark-Ignited Engine

7.4.1.1 The owner of an engine that is subject to Section 4.2 or Section 4.3 and that is required to submit an Emission Control Plan, an I&M Plan, or an Authority-to-Construct in order to comply with the requirements of Rule 4702, shall submit such document(s) no later than January 1, 2006.

7.4.1.2 The owner of an engine that is subject to Section 5.1 and that is required to submit an Authority-to-Construct application in order to comply with the requirements of Rule 4702, shall submit the

Authority-to-Construct application, and any required Emission Control Plan or I&M Plan, by June 1, 2006, or six months before the engine is required to be in compliance with the requirements of Section 5.1 of Rule 4702, whichever is later.

7.4.1.3 The owner of an engine that is subject to Section 5.1 and that is required to submit a Permit-Exempt Equipment Registration application in order to comply with the requirements of Rule 4702, shall submit the Permit-Exempt Equipment Registration application, and any required Emission Control Plan or I&M Plan by January 1, 2007, or three months before the engine is required to be in compliance with the requirements of Section 5.1 of Rule 4702, whichever is later.

7.4.2 Compliance Schedule - Monitoring and Recordkeeping for an AO Spark-Ignited Engine Subject to Section 5.1 and Section 5.7

On and after June 1, 2006, the owner of an engine that is subject to Section 5.1 and Section 5.7 of Rule 4702 shall be in compliance with the requirements of Section 5.7.3 through Section 5.7.5, Section 6.2.1.1, and Section 6.2.1.2.

7.4.3 Compliance Schedule - General for an AO Spark-Ignited Engine

7.4.3.1 On and after June 1, 2006, unless otherwise specified, the owner of an engine that is subject to the requirements of Section 4.2 or Section 4.3 of Rule 4702 shall be in full compliance with Rule 4702.

7.4.3.2 Unless otherwise specified, the owner of an engine that is subject to the requirements of Section 5.1 of Rule 4702 shall be in full compliance with Rule 4702 by the indicated dates pursuant to Section 5.1.1.

7.5 Compliance Schedule for a Non-AO Compression-Ignited Engine

7.5.1 Compliance Schedule - Submission of Emission Control Plan, I&M Plan, and Authority-to-Construct for a Non-AO Compression-Ignited Engine

7.5.1.1 The owner of an engine that is subject to Section 4.2 or Section 4.3 and that is required to submit an Emission Control Plan, an I&M Plan, or an Authority-to-Construct in order to comply with the requirements of Rule 4702, shall submit such document(s) no later than June 1, 2006.

7.5.1.2 The owner of an engine that is subject to Section 5.1 and that is required to submit an Emission Control Plan, an I&M Plan, or an Authority-to-Construct in order to comply with the requirements

of Rule 4702, shall submit such document(s) by June 1, 2006 or six months before the engine is required to be in compliance with the requirements of Section 5.1 of Rule 4702, whichever is later.

7.5.2 Compliance Schedule - General for a Non-AO Compression-Ignited Engine

7.5.2.1 On and after June 1, 2006, unless otherwise specified, the owner of an engine that is subject to the requirements of Section 4.1, Section 4.2, or Section 4.3 of Rule 4702 shall be in full compliance with Rule 4702.

7.5.2.2 Unless otherwise specified, the owner of an engine that is subject to the requirements of Section 5.1 of Rule 4702 shall be in full compliance with Rule 4702 by the indicated dates pursuant to Section 5.1.2.

7.5.2.3 The owner of an engine that is subject to the requirements of Section 4.0 or Section 5.0 of Rule 4701 (Internal Combustion Engines – Phase 1) shall no longer be subject to the requirements of Rule 4701 pursuant to the following requirements:

7.5.2.3.1 For an engine that is subject to the requirements of Section 4.1, Section 4.2, or Section 4.3 of Rule 4702, the requirements of Rule 4701 shall not apply effective on the date that such engine is required to be in full compliance with Rule 4702, or

7.5.2.3.2 For an engine that is subject to the requirements of Section 5.1 of Rule 4702, the requirements of Rule 4701 shall not apply effective on the date that such engine is required to be in full compliance with Rule 4702.

7.6 Compliance Schedule for a Non-AO Spark-Ignited Engine

7.6.1 Compliance Schedule - Submission of Emission Control Plan, I&M Plan, and Authority-to-Construct for a Non-AO Spark-Ignited Engine

Effective on and after June 16, 2005, the owner of an engine that is required to submit an Emission Control Plan, an I&M Plan, or an Authority-to-Construct in order to comply with the requirements of Rule 4702, shall submit such document(s) no later than six months before the engine is required to be in full compliance with Rule 4702.

7.6.2 Compliance Schedule – Emission Limits for a Non-AO Spark-Ignited Engine

The owner of a non-AO spark-ignited engine subject to the requirements of Rule 4702 shall not operate the engine unless the owner demonstrates and maintains the engine in compliance with the applicable requirements of Rule 4702 by the indicated dates below.

Compliance Schedule 1 – Non-AO Spark-Ignited Engine

Quantity of Non-AO Spark-Ignited Engines to be in Compliance at a Stationary Source	Compliance Date
a. 25% or more of the total number of non-AO spark-ignited engines at a stationary source on June 1, 2005	6/1/05
b. 62.5% or more of the total number of non-AO spark-ignited engines at a stationary source on June 1, 2006	6/1/06
c. 100% of the total number of non-AO spark-ignited engines at a stationary source on June 1, 2007	6/1/07

For the purposes of Section 7.6, the total number of non-AO spark-ignited engines at a stationary source on a specified date includes those non-AO spark-ignited engines subject to Rule 4702 pursuant to Section 2.0 and excludes any engines exempt from Rule 4702 pursuant to Section 4.1 on the specified date.

7.6.3 Compliance Schedule - General for a Non-AO Spark-Ignited Engine

7.6.3.1 On and after January 1, 2006, unless otherwise specified, the owner of an engine that is subject to the requirements of Section 4.1 of Rule 4702 shall be in full compliance with Rule 4702.

7.6.3.2 Unless otherwise specified, the owner of an engine subject to the requirements of Rule 4702 shall be in full compliance with Rule 4702 by the applicable compliance date pursuant to Section 7.6.2.

7.6.3.3 The owner of an engine that is subject to the requirements of Rule 4701 shall no longer be subject to the requirements of Rule 4701 pursuant to the following requirements:

7.6.3.3.1 For an engine that is subject to the requirements of Section 4.1 of Rule 4702, the requirements of Rule 4701 shall not apply effective on and after January 1, 2006, or

7.6.3.3.2 For an engine that is subject to the requirements of Section 4.2, Section 4.3, or Section 5.1 of Rule 4702, the requirements of Rule 4701 shall not apply

effective on the date that such engine is required to be in full compliance with Rule 4702.

8.0 Alternative Emission Control Plan (AECP)

An owner may comply with the NOx emission requirements of Section 5.1 for a group of engines by meeting the requirements below. An owner that is subject to the requirements below shall also comply with all the applicable requirements of Sections 5.0, 6.0, and 7.0. An engine that is not subject to Section 5.1 is not eligible for inclusion in an AECP.

8.1 During any 7 (seven) consecutive calendar day period, the owner shall operate all engines in the AECP to achieve an actual aggregate NOx emission level that is not greater than 90 percent of the NOx emissions that would be obtained by controlling the engines to comply individually with the NOx limits in Section 5.1. The owner shall operate engines in the AECP such that

$$AE_{Actual} <= 0.90\ (AE_{Limit})$$

and shall notify the APCO within 24 hours of any violation of this section.

8.1.1 The actual aggregate NOx emissions (AE_{Actual}) is the sum of the actual NOX emissions, over a 7 (seven) consecutive calendar day period, from all engines in the AECP which were actually operated during that period. AE_{Actual} shall be calculated as follows:

$$AE_{Actual} = \sum_i (EF_i)(F_i)(k_i)$$

where:

i identifies each engine in the AECP.

EF_i is the NOx emission factor of the engine established pursuant to Section 8.2 and approved by the APCO.

F_i is the actual total fuel used by the engine during the 7 (seven) consecutive calendar day period.

k_i is a constant used to convert an engine's fuel use and NOx emission factor to the amount of NOx emitted. k_i is dependent on the engine and the pollutant emitted. Calculation of k_i shall be accomplished using 40 CFR Part 60, Appendix A, Method 19, or an equivalent method approved by EPA, ARB and the APCO.

8.1.2 The estimated aggregate NOx emissions limit (AE_{Limit}) is the sum of the NOx emissions, over a 7 (seven) consecutive calendar day period, for the same engines in the AECP which were actually operated during the same

period as considered in Section 8.1.1, calculated with the NOx limits of Section 5.1 and the actual fuel usage during that 7 (seven) consecutive calendar day period. AE_{Limit} shall be calculated as follows:

$$AE_{Limit} = \sum_{i} (EL_i)(F_i)(k_i)$$

where:

i identifies each engine in the AECP.

EL_i is the NOx emission limit from Section 5.1 for each engine.

F_i is the actual total fuel used by the engine during the 7 (seven) consecutive calendar day period.

k_i is a constant used to convert an engine's fuel use and NOx emission limit to the amount of NOx emitted. k_i is dependent on the engine and the pollutant emitted. Calculation of k_i shall be accomplished using 40 CFR Part 60, Appendix A, Method 19, or an equivalent method approved by EPA, ARB and the APCO.

8.1.3 Only engines in the AECP which were operated during the 7 (seven) consecutive calendar day period shall be included in the calculations of AE_{Limit} and AE_{Actual}.

8.1.4 The owner shall, at least one time each day the AECP is used, calculate and record the actual aggregate NOx emissions (AE_{Actual}) and the aggregate NOx emission limit (AE_{Limit}) for the preceding 7 (seven) consecutive calendar day period.

8.2 The owner shall establish a NOx emission factor limit for each engine. The established NOx emission factor of an engine shall be no less than the NOx emission factor of the engine from the most recent source test conducted pursuant to Section 6.3 and approved by the APCO. The owner shall not operate an AECP engine in such a manner that NOx emissions exceed the established NOx emission factor of the engine.

8.3 The owner shall submit the AECP to the APCO at least 18 months before compliance with the emission limits in Section 5.1 is required. The AECP shall:

8.3.1 Not be implemented prior to APCO approval.

8.3.2 Be enforceable on a daily basis by the District.

8.3.3 Contain any information necessary to determine eligibility of the engines for alternative emission control, including, but not limited to:

8.3.3.1 A list of engines subject to the AECP. All engines in an AECP shall be under the operational control of a single owner and shall be located at a single stationary source.

8.3.3.2 The NOx emission factor established by the engine owner for each engine pursuant to Section 8.2.

8.3.3.3 The estimated aggregate NOx emissions calculated according to Section 8.1.2.

8.3.4 Present the methodology for determining equivalency of actual NOx emissions under the proposed AECP as compared to the estimated NOx emissions allowed by this rule.

8.3.5 Detail the method of recording and verifying daily compliance with the AECP.

8.3.6 Demonstrate to the satisfaction of the APCO that the difference between the NOx emission limits of this rule and any lower actual NOx emissions will not be used to increase emissions from the same or another source.

8.3.7 Demonstrate that the engines subject to the requirements of Section 5.1 are in compliance with or on an approved schedule for compliance with all applicable District rules.

8.4 The owner shall submit an updated or modified AECP for approval by the APCO prior to any of the following:

8.4.1 Modification of the engine(s) which would require an Authority-to-Construct.

8.4.2 When new or amended rules are adopted which regulate the emissions from the engines.

8.4.3 When the NOx emission factor established by the engine owner for an engine pursuant to Section 8.2 is modified.

8.5 In addition to the records kept pursuant to Section 6.2, the owner shall maintain records, on a daily basis, of the parameters needed to demonstrate compliance with the applicable NOx emission limits when operating under the AECP. These records shall be retained for at least five years, shall be readily available, and be made available to the APCO upon request. The records shall include, but are not limited to, the following for each engine unless otherwise indicated:

8.5.1 Total hours of operation.

8.5.2 Type and quantity (cubic feet of gas or gallons of liquid) of fuel used.

8.5.3 The actual NOx emissions limits to be included in the calculation of AE_{Actual} pursuant to Section 8.1.1.

8.5.4 The actual aggregate NOx emissions (AE_{Actual}) for all the engines in the AECP calculated pursuant to Section 8.1.1.

8.5.5 The estimated NOx emissions limits to be included in the calculation of AE_{Limit} pursuant to Section 8.1.2.

8.5.6 The estimated aggregate NOx emissions (AE_{Limit}) for all the engines in the AECP calculated pursuant to Section 8.1.2.

8.5.7 The comparison of the actual aggregate NOx emissions (AE_{Actual}) for all the engines in the AECP and 90 percent of the estimated aggregate NOx emissions (AE_{Limit}) for all the engines in the AECP to demonstrate compliance with Section 8.1.

8.5.8 Any other parameters needed to demonstrate daily compliance with the applicable NOx emission limits when operating under the AECP.

8.6 For the purpose of determining the quantity of spark-ignited engines in compliance pursuant to Section 7.6, a spark-ignited engine in an AECP shall not be considered to be in compliance until all spark-ignited engines in the AECP that have been designated to meet more stringent NOx emission factors pursuant to Section 8.2 are in compliance with the rule.

9.0 Exhaust Control System Certification Requirements

9.1 To be considered for APCO certification, the manufacturer or operator shall comply with all of the following requirements:

9.1.1 Certification shall be based upon the emission source testing results of a specific exhaust control system.

9.1.2 A source testing protocol shall be submitted in accordance with the provisions of Rule 1081 (Source Sampling) for approval by the APCO prior to conducting the source test. The source testing protocol approved by the APCO shall be strictly adhered to during certification source testing.

9.1.3 Source testing shall be conducted over the range of operating parameters for which the unit(s) will be operated.

9.1.4 The source testing results shall demonstrate compliance with the emission limits of this rule for each model of exhaust control system(s) to be certified.

9.1.5 The source testing procedure and reports shall be prepared by an ARB-approved independent testing laboratory, and shall contain all the elements identified in the APCO-approved source testing protocol.

9.1.6 Source testing shall be conducted no more than 90 days prior to the date of submission of request for certification by the APCO.

9.1.7 Any additional supporting information required by the APCO to address other performance parameters.

9.2 The manufacturer or operator requesting certification shall submit to the APCO the following information:

9.2.1 Copies of the source testing results conducted pursuant to the requirements of Section 9.1, and other pertinent technical data to demonstrate compliance with the emission limits of this rule.

9.2.2 The applicant shall sign and date the statement attesting to the accuracy of all information in the statement.

9.2.3 Name and address of the exhaust control system manufacturer or operator, brand name of the exhaust control unit, model number, and description of model of system(s) being certified.

9.3 The APCO will only approve an application for certification to the extent that the requirements of Sections 9.1 through 9.2 are met and the source testing results demonstrate that the emission limits of this rule are met.

9.4 The APCO-approved certification is valid only for the range of operating parameters and conditions for which certification is issued.

9.5 The APCO shall publish a list of certified exhaust control systems after the certification process is completed.

RULE 4703 STATIONARY GAS TURBINES (Adopted August 18, 1994; Amended March 16, 1995; Amended February 15, 1996; Amended October 16, 1997; Amended April 25, 2002; Amended August 17, 2006; Amended September 20, 2007)

1.0 Purpose

The purpose of this rule is to limit oxides of nitrogen (NOx) emissions from stationary gas turbine systems.

2.0 Applicability

The provisions of this rule apply to all stationary gas turbine systems, which are subject to District permitting requirements, and with ratings equal to or greater than 0.3 megawatt (MW) or a maximum heat input rating of more than 3,000,000 Btu per hour, except as provided in Section 4.0.

3.0 Definitions

3.1 Auxiliary Burner: any fuel burning device that increases the heat content of exhaust gas from a gas turbine. Duct burners, fired waste heat boilers, and fired heat recovery steam generators are considered auxiliary burners.

3.2 Bypass Transition Period: the duration of time that a gas turbine's operation transitions between the heat recovery steam generator and bypass exhaust stacks, provided all of the following conditions are met:

3.2.1 The selective catalytic reduction catalyst is not within the required temperature range or the required ammonia saturation level has not yet been achieved.

3.2.2 The duration of a bypass transition period shall not exceed two hours.

3.2.3 NOx emissions shall not exceed 15 ppmvd, corrected to 15% O_2, averaged over two (2) hours.

3.2.4 The applicable CO Compliance Limits in Section 5.0 shall not be exceeded.

3.3 Combined Cycle unit: any stationary gas turbine which recovers heat from the gas turbine exhaust gases to heat water, generate steam, or preheat the inlet combustion air to the gas turbine.

3.4 Commercially Available: any control technology or equipment which is offered by at least one vendor and guaranteed by the vendor to achieve the required emission control performance for a regular or full-scale operation within the United States.

3.5 Compliance Limit: maximum allowable oxides of nitrogen (NOx) or carbon monoxide (CO) emission levels.

3.6 Control System Operating Parameters: operating parameters that the APCO deems necessary to analyze when determining compliance, such as ammonia and exhaust gas flow rates and exhaust gas temperature for selective catalytic reduction; or humidity, water injection rate, exhaust gas flow rate and temperature for water injection.

3.7 Dry Low-NOx Combustion Technology (DLN): any turbine combustor design which uses multiple staging, air/fuel premixing or other modifications to achieve lower levels of NOx emissions as compared to conventional combustors.

3.8 Emergency Standby Unit: a stationary gas turbine system that is limited by permit condition to be operated only as a mechanical or electrical power source for a facility when the primary power source for a facility has been rendered inoperable due to failure beyond the reasonable control of the operator, except due to power interruption pursuant to an interruptible power supply agreement. Electricity generated by such a unit cannot be sold.

3.9 Gas Turbine: an internal combustion engine consisting of a compressor, a combustor, and a power turbine, that is gas and/or liquid fueled, with or without power augmentation. Two or more gas turbines powering one shaft shall be treated as one gas turbine.

3.10 Gas Fuel: any of the following fuels or fuels containing any of the following fuels: natural gas, LPG, propane, digester gas, and landfill gas.

3.11 HHV: higher heating value of fuel.

3.12 LHV: lower heating value of fuel.

3.13 Liquid Fuel: any of the following fuels: kerosene, jet fuel, and distillate fuel oils. Sulfur content of the fuel oil shall be less than 0.05 percent, by weight.

3.14 Major Overhaul: taking a stationary gas turbine out of service to replace or repair major components of the turbine. Major overhaul does not include taking a stationary gas turbine out of service exclusively to install emission control equipment.

3.15 Measured CO Emissions Concentration: measured carbon monoxide emissions corrected to 15 percent oxygen on a dry basis, ppm.

3.16 Measured NOx Emissions Concentration: measured oxides of nitrogen emissions corrected to 15 percent oxygen on a dry basis, ppm.

3.17 Non-Steady State Period: for a 3 MW to 10 MW pipeline gas turbine, any 15-minute period in which the fuel rate to the turbine differs from the reference fuel rate by more than +/- 3,000 standard cubic feet per 15-minute period. For this rule, a 15-minute Non-Steady State Period shall be zero (0) to 15 minutes after the hour, 15 to 30 minutes after the hour, 30 to 45 minutes after the hour, or 45 to 60 minutes after the hour.

3.18 Pipeline Gas Turbine: a simple cycle stationary gas turbine used to transport gases or liquids in a pipeline.

3.19 Power Augmentation: an increase in the gas turbine shaft output and/or the decrease in gas turbine fuel consumption by the addition of energy recovered from exhaust heat.

3.20 Primary Re-ignition Period: the duration of time during which a gas turbine is operated at less than rated capacity in order to reset the DLN combustion system following a primary re-ignition, provided all of the following conditions are met:

3.20.1 The duration of a primary re-ignition period shall not exceed one hour.

3.20.2 NOx emissions shall not exceed 15 ppmvd, corrected at 15% O_2, averaged over one (1) hour.

3.20.3 CO emissions shall not exceed 25 ppmvd, corrected at 15% O_2.

3.21 Public Service Unit: a stationary gas turbine system used to generate electricity for sale or for use in serving the public.

3.22 Rating: the continuous megawatt (MW) rating or mechanical equivalent by a manufacturer for a gas turbine without power augmentation.

3.23 Reduced Load Period: the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not to exceed one hour.

3.24 Reference Fuel Rate: the fuel rate, to a turbine, measured during the preceding 15-minute period.

3.25 SCR: selective catalytic reduction.

3.26 Shutdown: the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off.

3.27 Simple Cycle unit: any stationary gas turbine which does not recover heat from the gas turbine exhaust gases to preheat the inlet combustion air to the gas turbine, to heat water, or to generate steam.

3.28 Standard Conditions: defined in Rule 1020 (Definitions).

3.29 Start-up: the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation.

3.30 Stationary Gas Turbine: a gas turbine that is attached to a foundation, or a portable gas turbine that is operated at a facility for more than 90 days in any 12-month period.

3.31 Stationary Gas Turbine System: a stationary gas turbine, or a stationary gas turbine and the associated auxiliary burner.

3.32 Steady State Period: for a 3 MW to 10 MW pipeline gas turbine, the period which commences after any two consecutive 15-minute periods in which the fuel rate to the turbine does not differ from the reference fuel rate by more than +/- 3,000 standard cubic feet per 15-minute period and ends when a non-steady state period begins.

3.33 Transitional Operation Period: any of the following periods: bypass transition period, primary re-ignition period, reduced load period, start-up or shutdown.

3.34 Unit: a stationary gas turbine system.

4.0 Exemptions

4.1 The provisions of this rule, with the exception of Section 6.1, shall not apply to stationary gas turbine systems operated under the following conditions:

4.1.1 Laboratory units used in research and testing for the advancement of gas turbine technology,

4.1.2 Units limited by permit condition to be operated exclusively for firefighting and/or flood control.

4.2 The provisions of this rule, with the exception of Section 6.1 and the record keeping provisions of Section 6.2, shall not apply to emergency standby units limited by permit condition to operate less than 100 hours per calendar year for maintenance and testing purposes.

5.0 Requirements

5.1 NOx Emissions

NOx emissions concentrations measured for compliance with Section 5.0 shall be averaged, using consecutive 15-minute sampling periods, over a three-hour period. NOx emissions concentrations shall be measured in accordance with the applicable test method in Section 6.4 or, if continuous emission monitors are used, all applicable requirements of 40 CFR Part 60 as detailed in Section 6.2. Any variations from these measurement requirements are subject to APCO and EPA approval prior to implementation.

5.1.1 Tier 1 NOx Compliance Limits

The owner or operator of any stationary gas turbine system shall not operate such unit under load conditions, except as allowed by Section 5.3, which results in the measured emissions concentration exceeding the applicable emission limits below, according to the Tier 1 Compliance Schedules listed in Section 7.0.

Table 5-1: Tier 1 NOx Compliance Limits

Stationary Gas Turbine Rating	Operating hours per year	NOx Compliance Limit, ppmv at 15% O_2	
		Gas	Oil
4 MW and greater	< 877	42	65
> 0.3 MW but < 10.0 MW	≥ 877	42	65
10.0 MW and greater, without SCR	≥ 877	15 x EFF/25	42 x EFF/25
10.0 MW and greater, with SCR	≥ 877	9 x EFF/25	25 x EFF/25
General Electric Frame 7 with Quiet Combustors	Not applicable	18 x EFF/25	42 x EFF/25
Solar Saturn 1100 horsepower gas turbine powering centrifugal compressor	Not applicable	50	50

Where EFF (efficiency) is the higher of EFF_1 or EFF_2 below. An EFF that is less than 25 shall be assigned a value of 25.

$$EFF_1 = \frac{3412 \text{ Btu / kW - hr}}{\text{Actual Heat Rate at HHV (Btu / kW - hr)}} \times 100\%$$

EFF_1 is the demonstrated percent efficiency of the gas turbine only, as calculated without consideration of any downstream energy recovery from the actual heat rate (Btu/KW-hr); corrected to HHV and standard conditions, as measured at peak load for that facility.

$$EFF_2 = EFF_{mfr} \times \frac{LHV}{HHV}$$

EFF_2 is EFF_{mfr} after correction from LHV to HHV at peak load for that facility. EFF_{mfr} is the manufacturer's continuous rated percent efficiency of the gas turbine with air pollution control equipment at LHV.

5.1.2 Tier 2 NOx Compliance Limits

The owner or operator of any stationary gas turbine system shall not operate such unit under load conditions, except as allowed by Section 5.3, which results in the measured emissions concentration exceeding the applicable emission limits below, according to the Tier 2 Compliance Schedules listed in Section 7.2.

Table 5-2: Tier 2 NOx Compliance Limits

Turbine Classification Rating	Compliance Option (see Section 7.2)	NOx Compliance Limit, ppmvd at 15% O_2	
		Gas Fuel	Liquid Fuel
a) Less than 2.0 MW Solar Saturn, driving a centrifugal compressor	Standard	50	50
b) No greater than 10 MW, if a DLN System is commercially available for the specific unit, as of April 30, 2003.	Standard	25	65
c) No greater than 10 MW, if a DLN System is not commercially available for the specific unit, as of April 30, 2003.	Standard	35	65
d) Greater than 10 MW, Combined cycle.	Standard	5	25
	Enhanced	3	25
e) Greater than 10 MW, Simple cycle, and permit condition for greater than 877 hrs/yr operation.	Standard	5	25
	Enhanced	3	25
f) Greater than 10 MW, Simple cycle, and permit condition for no greater than 877 hr/yr operation.	Standard	25	42
	Enhanced	5	25

5.1.2.1 For units with a Standard Option and an Enhanced Option shown in Table 5-2, the operator shall choose which option will apply and shall demonstrate and maintain compliance with that NOx Compliance limit according to the applicable Tier 2 Compliance Schedule shown in Section 7.2. Units failing to demonstrate compliance with the applicable Standard Option limit by the applicable Standard Option Compliance Date, shall be required to meet the Enhanced Option Limit by the applicable Enhanced Option Compliance Date.

5.1.2.2 Any stationary gas turbine system equipped with a NOx emission control device which results in emission reductions of at least 95%, shall be considered to meet the Tier 2 NOx Compliance Limit. Percent emission reductions, if used to comply with Section 5.1.2, shall be calculated as follows:

5.1.2.2.1 For units with exhaust gas NOx control devices, percent reduction shall be calculated using emission samples taken at the inlet and outlet of the control device.

5.1.2.2.2 For units without exhaust gas NOx control devices and for units with an exhaust gas NOx control device in combination with a second emission control device or technique, percent reduction shall be based on source test results for the uncontrolled unit and the unit after the control device(s) or technique(s) has been employed. When representative source sampling prior to the application of an emissions control technology or technique is not available, the APCO may approve the use of manufacturer's uncontrolled emissions information or source sampling from a similar, uncontrolled unit.

5.1.3 Tier 3 NOx Compliance Limits

5.1.3.1 The owner or operator of any stationary gas turbine system listed in Table 5-3 shall not operate such unit under load conditions, except as allowed by Section 5.3, which results in the measured emissions concentration exceeding the applicable emission limits in Table 5-3, according to the Tier 3 Compliance Schedule listed in Section 7.3.

Table 5-3: Tier 3 NOx Compliance Limits

Turbine Classification Rating	NOx Compliance Limit, ppmvd at 15% O_2	
	Gas Fuel	Liquid Fuel
a) Less than 3 MW.	9	25
b) 3 MW to 10 MW pipeline gas turbine.	8 during steady state and 12 during non-steady state	25
c) 3 MW to 10 MW and permit condition for less than 877 hrs/yr operation and not listed above.	9	25
d) 3 MW to 10 MW and permit condition for 877 hrs/yr operation or greater and not listed above.	5	25
e) Greater than 10 MW, Simple cycle, and permit condition for no greater than 200 hrs/yr operation, except as provided in Section 5.1.3.3.	25	42
f) Greater than 10 MW, Simple cycle, and permit condition for greater than 200 hrs/yr operation but no greater than 877 hrs/yr operation.	5	25

5.1.3.2 Any stationary gas turbine system equipped with a NOx emission control device which results in emission reductions of at least 95%, shall be considered to meet the Tier 3 NOx Compliance Limit. Percent emission reductions, if used to comply with Section 5.1.3, shall be calculated as follows:

5.1.3.2.1 For units with exhaust gas NOx control devices, percent reduction shall be calculated using emission samples taken at the inlet and outlet of the control device.

5.1.3.2.2 For units without exhaust gas NOx control devices and for units with an exhaust gas NOx control device in

combination with a second emission control device or technique, percent reduction shall be based on source test results for the uncontrolled unit and the unit after the control device(s) or technique(s) has been employed. When representative source sampling prior to the application of an emissions control technology or technique is not available, the APCO may approve the use of manufacturer's uncontrolled emissions information or source sampling from a similar, uncontrolled unit.

5.1.3.3 Operators of turbines subject to the provisions of Table 5-3, subsection (e), shall also comply with the following provisions:

5.1.3.3.1 Units may be operated in response to a California Independent System Operator (ISO) - declared Stage One, Two, or Three Emergency, or a Transmission Emergency, or a Turlock Irrigation District (TID) - declared Alert Level One, Two, or Three Energy Emergency, provided the unit is located in the local area transmission system of the emergency. The operations for ISO - declared or TID - declared emergencies hours shall not count against the unit's 200 hrs/year operating limit.

5.1.3.3.2 On and after January 1, 2009, no later than April 1 each year, an operator, with a unit operating during an ISO - declared or TID - declared emergency in accordance with Section 5.1.3.3.1, shall pay a fee to the District. That fee will be calculated according to the following formula:

Fee = ISO or TID hrs/yr x EF x FR

Where:

ISO or TID = Total hours operated in response to an ISO - declared or TID - declared emergency, during the preceding calendar year.

EF = The unit's emission factor, which is equal to the permitted emission rate of NOx, in lb/hr, divided by 2,000 lb/ton.

FR = The fee rate, which shall be $75,000 per ton of NOx until December 31, 2014 and shall be $100,000 per ton of NOx, thereafter.

5.1.3.3.3 Except as provided in Section 6.5.2, in no event shall total operations, for any purpose, exceed 877 hours in any calendar year. Any operation of such units in excess of 877 hrs/year shall require the operator to comply with the emission limit of Table 5-2, subsection (e) – Standard Compliance Option, according to the compliance schedule in Section 6.5.1.

5.1.3.3.4 Any fees received by the District, pursuant to Section 5.1.3.3.2 shall be deposited into the District's account to fund air quality improvement projects.

5.2 CO Emissions

The owner or operator of any stationary gas turbine system shall not operate such unit under load conditions, except as allowed by Section 5.3, which results in the measured CO emissions concentration exceeding the compliance limits listed below:

Table 5-4 : CO Compliance Limits

Stationary Gas Turbine	CO Compliance Limit, ppmv at 15% O_2
Units not identified below	200
General Electric Frame 7	25
General Electric Frame 7 with Quiet Combustors	52
Less than 2.0 MW Solar Saturn gas turbine powering centrifugal compressor	250

5.3 Transitional Operation Periods

On and after the date a unit is required, pursuant to Section 7.0, to be in compliance with the emission limits requirements of Section 5.1 or Section 5.2, the applicable emission limits of Section 5.1 and Section 5.2 shall not apply during a transitional operation period, as defined in Section 3.0, provided an operator complies with the applicable requirements specified in Sections 5.3.1 and 5.3.2.

5.3.1 Except as provided in Section 5.3.3, the operator shall meet the following conditions:

5.3.1.1 The duration of each start-up or each shutdown shall not exceed two hours.

5.3.1.2 For each bypass transition period, the requirements specified in Section 3.2 shall be met.

5.3.1.3 For each primary re-ignition period, the requirements specified in Section 3.20 shall be met.

5.3.1.4 Each reduced load period shall not exceed one hour.

5.3.2 The emission control system shall be in operation and emissions shall be minimized insofar as technologically feasible during each transitional operation period.

5.3.3 Notwithstanding the requirement of Section 5.3.1, an operator may submit an application for a Permit to Operate condition to allow more than the duration of time specified in Section 5.3.1 for each transitional operation period provided the operator meets all of the conditions specified in Section 5.3.3.1 through Section 5.3.3.2.

5.3.3.1 The maximum allowable duration of a transitional operation period will be determined by the APCO, ARB, and EPA. An operator seeking approval pursuant to Section 5.3.3 shall submit a written request and supporting information to the APCO. The District shall evaluate the request and if approved by the APCO, the District shall provide EPA and ARB with a copy of the evaluation and shall request EPA and ARB approval. The District evaluation and the APCO request shall be deemed approved unless EPA or ARB objects to such approval in writing within 45 days of the receipt of the APCO request.

5.3.3.2 At a minimum, a justification for the increased duration shall include the following:

5.3.3.2.1 A clear identification of the control technologies or strategies to be utilized; and

5.3.3.2.2 A description of what physical conditions prevail during the period that prevent the controls from being effective; and

5.3.3.2.3 A reasonably precise estimate as to when the physical conditions will have reached a state that allows for the effective control of emissions; and

5.3.3.2.4 A detailed list of activities to be performed during the period and a reasonable explanation for the length of time needed to complete each activity; and

5.3.3.2.5 A description of the material process flow rates and system operating parameters, etc., the operator plans to evaluate during the process optimization; and an explanation of how the activities and process flow affect the operation of the emissions control equipment; and

5.3.3.2.6 The basis for the requested additional duration.

5.4 For existing facilities, a replacement unit installed for the sole purpose of complying with the requirements of this rule shall be considered to be an emission control technique and may be exempt from the Best Available Control Technology (BACT) and Offsets requirements of District Rule 2201 (New and Modified Stationary Source Review Rule) provided that all other requirements of Rule 2201 are met.

6.0 Administrative Requirements

6.1 Emission Control Plan

The owner or operator of any existing stationary gas turbine system, unless exempted in Section 6.1.5, shall submit, to the APCO for approval, an emissions control plan of all actions, including a schedule of increments of progress, which will be taken to comply with the requirements of the applicable NOx Compliance Limit in Section 5.0 and Compliance Schedule in Section 7.0.

6.1.1 Such plan shall contain a list that provides the following for each stationary gas turbine system:

6.1.1.1 Permit or identification number,
6.1.1.2 Name of gas turbine manufacturer,
6.1.1.3 Gas turbine model designation,
6.1.1.4 Rated shaft power output, (MW),
6.1.1.5 Name of auxiliary burner manufacturer,
6.1.1.6 Auxiliary burner model designation,
6.1.1.7 Rated heat input of the auxiliary burner, (MMBtu/hr)

6.1.1.8 Type of liquid fuel and/or type of gaseous fuel,
6.1.1.9 Fuel consumption (cubic feet of gas or gallons of liquid) of turbine and/or auxiliary burner,
6.1.1.10 Hours of operation in the previous one-year period,
6.1.1.11 Heat rate (Btu/KW-hr), corrected to HHV for each type of fueling (liquid/gas),
6.1.1.12 HHV for each fuel.

6.1.2 Such plan shall contain a list of all stationary gas turbine systems to be controlled, identifying the type of emission control to be applied to each unit, applicable emission standard from Section 5.0, and documentation showing current emissions of oxides of nitrogen.

6.1.3 Such plan shall contain support documentation for any systems exempt under the provisions of Section 4.0.

6.1.4 Such plan shall identify the applicable compliance schedule for each unit, as specified in Section 7.0. Each emission control plan for a unit subject to Section 7.2.2 or Section 7.3 shall include the owner/operator's overhaul schedule.

6.1.5 The owner or operator of any existing stationary gas turbine system shall be exempt from the requirements of Section 6.1 provided all such turbines under his ownership or control have NOx and CO emissions limits which are shown on the current Permit to Operate and which do not exceed the applicable Compliance Limits in Section 5.0.

6.2 Monitoring and Recordkeeping

The owner or operator of any stationary gas turbine system subject to the provisions of this rule shall perform the following actions:

6.2.1 Except for units subject to Section 6.2.3, for turbines with exhaust gas NOx control devices, the owner or operator shall either install, operate, and maintain continuous emissions monitoring equipment for NOx and oxygen, as identified in Rule 1080 (Stack Monitoring), or install and maintain APCO-approved alternate monitoring consisting of one or more of the following:

6.2.1.1 periodic NOx emission concentrations,
6.2.1.2 turbine exhaust oxygen concentration,
6.2.1.3 air-to-fuel ratio,
6.2.1.4 flow rate of reducing agents added to turbine exhaust,
6.2.1.5 catalyst inlet and exhaust temperature,
6.2.1.6 catalyst inlet and exhaust oxygen concentration,

6.2.1.7 other operational characteristics.

6.2.2 Except for units subject to Section 6.2.3, for turbines without exhaust-gas NOx control devices and without continuous emissions monitoring equipment, the owner or operator shall monitor operational characteristics recommended by the turbine manufacturer or emission control system supplier, and approved by the APCO.

6.2.3 For units 10 MW and greater that operated an average of more than 4,000 hours per year over the last three years before August 18, 1994, the owner or operator shall monitor the exhaust gas NOx emissions. The NOx monitoring system shall meet EPA requirements as specified in 40 CFR Part 60 App. B, Spec. 2, 40 CFR Part 60 App. F, and 40 CFR Part 60.7 (c), 60.7 (d), and 60.13, or other systems that are acceptable to the EPA. The owner or operator shall submit to the APCO information demonstrating that the emission monitoring system has data gathering and retrieval capability.

6.2.4 The owner or operator shall maintain all records for a period of five years from the date of data entry and shall make such records available to the APCO upon request.

6.2.5 The owner or operator shall submit to the APCO, before issuance of the Permit to Operate, information correlating the control system operating parameters to the associated measured NOx output. This information may be used by the APCO to determine compliance when there is no continuous emission monitoring system for NOx available or when the continuous emission monitoring system is not operating properly.

6.2.6 The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local start-up time and stop time, length and reason for reduced load periods, total hours of operation, type and quantity of fuel used (liquid/gas).

6.2.7 The owner or operator shall maintain a stationary gas turbine system operating log for units exempt under Section 4.2 that includes, on a daily basis, the actual local start-up time and stop time, total hours of operation, and cumulative hours of operation to date for the calendar year.

6.2.8 The operator performing start-up or shutdown of a unit shall keep records of the duration of start-up or shutdown.

6.2.9 On and after January 1, 2008, an operator of a unit subject to Section 5.1.3.3 shall also keep the following records:

6.2.9.1 A stationary gas turbine system operating log, which identifies the date, start time, and end time that the unit was operated pursuant to Section 5.1.3.3,

6.2.9.2 A copy of the ISO or TID emergency declaration for that operation and

6.2.9.3 A copy of the information used to determine the applicable Annual Emission Fee.

6.2.10 The operator of a unit subject to Section 6.5.2 shall identify in the stationary gas turbine system operating log the date and start time and end time that the unit was operated pursuant to Section 6.5.2 and keep a copy of the emergency declaration.

6.2.11 The operator of a unit shall keep records of the date, time and duration of each bypass transition period and each primary re-ignition period.

6.2.12 The operator of a unit subject to subsection (b) of Table 5-3 shall keep records of the date, time and duration of each steady state period and non-steady state period and the quantity of fuel used during each period.

6.3 Compliance Testing

6.3.1 The owner or operator of any stationary gas turbine systems subject to the provisions of Section 5.0 of this rule shall provide source test information annually regarding the exhaust gas NOx and CO concentrations, and, if used as a basis for Tier 1 emission limit calculations, the demonstrated percent efficiency (EFF) of the stationary gas turbine, or, for turbines complying with Section 5.1.2.2 or Section 5.1.3.2, the control efficiency of the emission control device.

6.3.2 The owner or operator of any stationary gas turbine system operating less than 877 hours per year shall provide source test information biennially regarding the exhaust gas NOx concentrations at standard conditions and if used as a basis for Tier 1 emission limit calculations, the percent efficiency (EFF) of the stationary gas turbine.

6.3.3 The owner or operator of any unit with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off.

6.4 Test Methods

The following test measures shall be used unless otherwise approved by the APCO and EPA.

6.4.1 Oxides of nitrogen emissions for compliance tests shall be determined by using EPA Method 7E or EPA Method 20.

6.4.2 Carbon monoxide emissions for compliance tests shall be determined by using EPA Test Methods 10 or 10B.

6.4.3 Oxygen content of the exhaust gas shall be determined by using EPA Methods 3, 3A, or 20.

6.4.4 HHV and LHV of distillate fuels shall be determined by using:

6.4.4.1 ASTM D240-87, Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter, or

6.4.4.2 ASTM D2382-88, Standard Test Method for Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-precision Method).

6.4.5 HHV and LHV of gaseous fuels shall be determined by using:

6.4.5.1 ASTM D3588-91, Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density (Specific Gravity) of Gaseous Fuels, or

6.4.5.2 ASTM 1826-88, Standard Test Method for Calorific (Heating) Value of Gases in Natural Gas Range by Continuous Recording Calorimeter, or

6.4.5.3 ASTM 1945-81, Standard Method for Analysis of Natural Gas by Gas Chromatography.

6.4.6 Demonstrated percent efficiency of the stationary gas turbine shall be determined using the facility instrumentation for gas turbine fuel consumption and power output. Power output values used to determine gas turbine efficiency shall be either:

6.4.6.1 the electrical power output of the gas turbine, provided the gas turbine generates electricity; or

6.4.6.2 the mechanical power output of the gas turbine, provided the gas turbine does not generate electricity.

6.5 Exempt and Emergency Standby Units

6.5.1 The owner or operator of any unit with an hour-per-year operation limit pursuant to Sections 4.2 or 5.0 must notify the APCO within seven days if the hour-per-year limit is exceeded. Except as provided in Section 6.5.2, if the hour per-year-limit is exceeded, the exemption shall be permanently withdrawn. Within 30 days after the exceedance, the owner or operator must submit a permit application detailing a plan to meet the appropriate compliance limit within 24 months. Included in this permit application, the owner or operator must submit an emission control plan including a schedule of increments of progress for the installation of the required control equipment. This schedule shall be subject to the review and approval of the APCO.

6.5.2 A public service unit operating during a state of emergency, when such emergency is declared by proclamation of the Governor and when the unit is located in the specific geographic location identified in the proclamation, shall be excluded from loss of exemption due to exceeding the hour-per-year limit for the operation during the state of emergency. If the unit exceeds the hour-per-year limit based solely on operation outside of the state of emergency, then loss of exemption shall apply according to Section 6.5.1.

7.0 Compliance Schedule

7.1 Tier 1 Compliance Schedule

All owner/operators shall be in compliance with the applicable provisions of Sections 5.0 and 6.0 on and after August 18, 2000.

7.2 Tier 2 Compliance Schedule

Owners or operators of all applicable stationary gas turbine systems shall submit the emission control plan required by Section 6.1 to the District by April 30, 2003. All owner/operators shall demonstrate and maintain compliance with the applicable provisions of Sections 5.0 and 6.0 in accordance with the following Compliance Schedules:

7.2.1 Operators complying with the Standard Option of Table 5-2 shall demonstrate and maintain compliance by the applicable Compliance Date:

Table 7-1: Tier 2 Standard Option Compliance Schedule

Turbine Classification Rating	Compliance Date
a) Less than 2.0 MW Solar Saturn, driving a centrifugal compressor	April 25, 2002
b) No greater than 10 MW, if a DLN System is commercially available for the specific unit, as of April 30, 2003.	April 30, 2004
c) No greater than 10 MW, if a DLN System is not commercially available for the specific unit, as of April 30, 2003.	April 30, 2003
d) Greater than 10 MW, Combined Cycle.	April 30, 2004
e) Greater than 10 MW, Simple cycle, and permit condition for greater than 877 hrs/yr operation.	April 30, 2005
f) Greater than 10 MW, Simple cycle, and permit condition for no greater than 877 hr/yr operation.	April 30, 2003

7.2.2 Notwithstanding Table 7-1, for an operator with multiple units no greater than 10 MW which will comply with the 25 ppmv Standard DLN Option for those units,

7.2.2.1 By April 30, 2004, demonstrate full compliance on at least 62% of those units which will comply with the Standard DLN Option.

7.2.2.2 By April 30, 2005 or 30 days after the completion of the next Major Overhaul following April 30, 2004 whichever is earliest, demonstrate full compliance on all remaining units which will comply with the Standard DLN Option.

7.2.3 Notwithstanding Table 7-1, for an operator with multiple units greater than 10 MW, which will comply with the Standard Option for those units,

7.2.3.1 By April 30, 2004, demonstrate full compliance on at least 62% of those units which will comply with the Standard Option.

7.2.3.2 By April 30, 2005, or 30 days after the completion of the next Major Overhaul following April 30, 2004, whichever is earliest, demonstrate full compliance on all remaining units which will comply with the Standard Option.

7.2.4 Operators complying with the Enhanced Option of Table 5-2 shall demonstrate and maintain compliance by the earlier of either

7.2.4.1 April 30, 2008, or

7.2.4.2 within 90 days following the next Major Overhaul, if that overhaul occurs after April 30, 2004.

7.3 Tier 3 Compliance Schedule

Owners or operators of all stationary gas turbine systems subject to Section 5.1.3 (Tier 3) shall submit the emission control plan required by Section 6.1 to the District by January 1, 2009. All owner/operators shall demonstrate and maintain compliance with the applicable provisions of Section 4.0 on and after January 1, 2009. All owner/operators shall demonstrate and maintain compliance with the applicable provisions of Sections 5.0 and 6.0 in accordance with the following Compliance Schedules:

7.3.1 Operators with no more than two (2) units subject to Section 5.1.3 on September 20, 2007 shall demonstrate and maintain compliance by the earlier of either of the following dates (the compliance date for any particular unit shall be determined independently of any other unit):

7.3.1.1 October 1, 2011, or

7.3.1.2 Within 90 days following the next Major Overhaul on or after July 1, 2009.

7.3.2 Operators with more than two (2) units subject to Section 5.1.3 on September 20, 2007 shall demonstrate and maintain compliance in accordance with the following Compliance Schedule:

7.3.2.1 Within 90 days following the next Major Overhaul, any unit that is overhauled on or after July 1, 2009, and

7.3.2.2 By January 1, 2010, at least 25% of the total number of units on January 1, 2010 subject to Tier 3 Compliance Limits, and

7.3.2.3 By January 1, 2011, at least 62.5% of the total number of units on January 1, 2011 subject to Tier 3 Compliance Limits, and

7.3.2.4 By January 1, 2012, 100% of the total number of units on January 1, 2012 subject to Tier 3 Compliance Limits.

7.3.3 Operators of turbines subject to the provisions of Table 5-3, subsection (e), shall demonstrate and maintain compliance on and after January 1, 2008.

7.3.4 Permanent Removal of a Unit

In lieu of compliance with the emission limits of Section 5.1.3 (Tier 3), an owner of any unit may elect to permanently remove it from service. The owner of a unit who elects to permanently remove the unit from service shall comply with all of the following conditions:

7.3.4.1 Comply with all applicable requirements of this rule, except for the Section 5.1.3 (Tier 3) limits, until the unit is permanently removed from service.

7.3.4.2 Submit a letter to the APCO no later than July 1, 2009, stating the intent to permanently remove the unit from service.

7.3.4.3 Officially surrender the Permit-to-Operate to the APCO no later than January 1, 2012.

7.3.4.4 For the purposes of Section 7.3.4, emission reductions achieved by removal of a unit in lieu of compliance with the emission requirements of Section 5.1.3 (Tier 3) shall not be available for emission reduction credit (ERC).

8.0 Alternative Emission Control Plan (AECP)

8.1 General

The owner of two or more units may comply with Section 5.1 (or Section 5.2 for CO) by controlling units in operation at the same stationary source, or at two contiguous stationary sources, to achieve an aggregated NOx (or CO) emission factor no higher than 90 percent of the aggregated NOx (or CO) emission factor limit that would result if each unit in operation were individually in compliance with the applicable NOx (or CO) emission limits in Section 5.1 (or Section 5.2 for CO). An operator that is subject to the AECP requirements below shall also comply with the applicable requirements of Sections 5.0, 6.0, and 7.0.

8.2 Eligibility

A unit subject to Section 5.1 is eligible for inclusion in an AECP.

8.3 Exclusion

No unit subject to Section 4.0 shall be included in an AECP.

8.4 AECP Definitions

For the purposes of Section 8.0, the following definitions shall apply:

8.4.1 Aggregated NOx (or CO) emission factor limit: the sum of the NOx (or CO) emissions, over seven consecutive calendar days, that would result if all units in the AECP were in compliance with the ppmvd limits in Section 5.1 and operating at their actual firing rates, divided by the sum of the heat input of all units in the AECP over seven consecutive calendar days. Aggregated emission factor limit is calculated as:

$$L_A = \frac{\Sigma L_i F_i}{\Sigma F_i}$$

where: L_A is the aggregated NOx emission factor limit (ppmvd)

L_i is the applicable NOx (or CO) emission factor limit (ppmvd) specified in Section 5.1 (or Section 5.2 for CO) for each category of unit in the AECP,

F_i is the total heat input (hhv basis) of fuel (MMBtu) combusted in each unit during seven consecutive calendar days, and

i identifies each unit in the AECP.

8.4.2 Aggregated NOx (or CO) emission factor: the sum of the actual NOx (or CO) emissions during seven consecutive calendar days from all units in the AECP, divided by the sum of the heat input of all units in the AECP during seven consecutive calendar days. The aggregated emission factor is calculated as:

$$E_A = \frac{\Sigma E_i F_i}{\Sigma F_i}$$

where: E_A is the aggregated NOx (or CO) emission factor (ppmvd),

E_i is the NOx (or CO) emission factor (ppmvd) for each unit in the AECP, established and verified by source testing or continuous emission monitors,

F_i is the total heat input (hhv basis) of fuel (MMBtu) combusted in each unit during seven consecutive calendar days, and

i identifies each unit in the AECP.

8.5 AECP Requirements

8.5.1 The aggregated NOx (or CO) emission factor (E_A) shall not exceed 90 percent of the aggregated emission limit (L_A). The owner of any unit in an AECP shall notify the APCO within 24 hours of any violation of this section.

$$E_A <= 0.90 \times L_A$$

8.5.2 Only units in the AECP which were operated during seven consecutive calendar days shall be included in the calculations of the aggregated NOx (or CO) emission factor (L_A) and the aggregated NOx (or CO) emission limit (E_A).

8.5.3 During each seven consecutive calendar days of operation that the AECP is used, the operator shall calculate and record the aggregated NOx (or CO) emission factor (L_A) and the aggregate NOx (or CO) emission limit (E_A).

8.5.4 The operator shall submit a NOx (or CO) emission factor for each unit that is included in the AECP. The established NOx (or CO) emission factor of the unit shall be no less than the emission factor of the unit from the most recent source test conducted pursuant to Section 6.3 and approved by the APCO. The operator shall not operate any AECP unit in such a manner that the NOx (or CO) emissions exceed the established NOx (or CO) emission factor of the unit.

8.5.5 The operator shall submit the AECP, for approval by the APCO, by January 1, 2009 or at least 18 months before compliance with the applicable emission limits in Section 5.1 is required pursuant to Section 7.3, whichever is later. The AECP shall be submitted with an application for an Authority to Construct pursuant to complying with Section 7.3 as applicable. The operator shall obtain a written approval of the AECP from the APCO prior to implementation.

8.5.6 It is a violation of each and every day within the averaging period if a source does not meet the requirements of Section 8.5.1 of the AECP (have sufficient emission reductions, etc.) for that averaging period.

8.6 AECP Administrative Requirements

8.6.1 The AECP shall:

8.6.1.1 Contain all data, records, and other information necessary to determine eligibility of the units for alternative emission control, including but not limited to:

8.6.1.1.1 A list of units subject to alternative emission control,

8.6.1.1.2 Daily average and maximum hours of utilization for each unit,

8.6.1.1.3 Rated heat input of each unit, and

8.6.1.1.4 Fuel type for each unit.

8.6.1.2 Present the methodology for recordkeeping and reporting required by Sections 8.6.3 and 8.6.4.

8.6.1.3 Demonstrate that the aggregated emission factor will meet the requirements of Section 8.5.

8.6.1.4 Demonstrate that the schedule for achieving AECP NOx (or CO) emission levels is at least as expeditious as the schedule if applicable units were to comply individually with the applicable emission levels in Section 5.1 (or Section 5.2 for CO) and the increments of progress in Section 7.0.

8.6.2 Revision of AECP

Owners shall demonstrate APCO approval of the AECP prior to applying for a modification to said AECP.

8.6.3 AECP Recordkeeping

In addition to the records kept pursuant to Section 6.2, the operator shall maintain records, on a daily basis, of the parameters needed to demonstrate compliance with the applicable NOx (or CO) emission limits when operating under the AECP. The records shall be retained for at least five years and shall be made available to the APCO upon request. For each unit included in the AECP the owner shall maintain, for each day, the records that include, but are not limited to, the following:

8.6.3.1 The fuel type and amount used for each unit (F_i),

8.6.3.2 The actual emission factor for each unit (E_i),

8.6.3.3 The total emissions for all units ($\Sigma E_i F_i$),

8.6.3.4 The aggregated emission factor (E_A),

8.6.3.5 The aggregated emission factor limit (L_A), and

8.6.3.6 Any other parameters needed to demonstrate daily compliance with the applicable NOx (or CO) emissions when operating the units under the AECP.

8.6.4 Reporting and Annual Updates

Notifications of any violation pursuant to Section 8.5 shall include:

8.6.4.1 The name and location of the facility,

8.6.4.2 A list of applicable units,

8.6.4.3 The cause and expected duration of exceedance,

8.6.4.4 The amount of excess emissions, and

8.6.4.5 The proposed corrective actions and schedule.

8.7 Compliance Schedule

The AECP schedule for achieving reduced NOx (or CO) emission levels shall be at least as expeditious as the schedule if applicable units were to comply individually with the emissions limits specified in Sections 5.1 and 5.2 and the applicable compliance schedule required by Section 7.0.

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4902 - RESIDENTIAL WATER HEATERS
(Adopted June 17, 1993)

1.0 Purpose

The purpose of this rule is to limit oxides of nitrogen emissions from residential water heaters.

1.0 Applicability

This rule applies to residential natural gas-fired water heaters.

2.0 Definitions

2.1 Natural Gas-Fired Water Heater: A closed vessel, in which water is heated by the combustion of natural gas and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary to prevent water temperatures from exceeding 210F

2.2 Natural Gas: A mixture of gaseous hydrocarbons containing at least 80 percent methane by volume as determined according to Standard Method ASTM D1945-64

2.3 Heat Output: The product obtained by multiplying the recovery efficiency, as defined by Section 6.1.3 of the Code of Federal Regulation, Title 10, Part 430, Subpart B, Appendix E, by the input rating of the water heater.

2.4 Input Rating: The amount of energy a water heater consumes in one hour (Btu/Hour).

3.0 Exemptions

3.1 Natural gas-fired water heaters with rated heat input of greater than 75,000 Btu per hour.

3.2 Water heaters using fuels other than natural gas.

3.3 Natural gas-fired heaters used exclusively to heat swimming pools or hot tubs.

3.4 Water heaters used exclusively in recreational vehicles.

4.0 Requirements

4.1 Natural Gas-Fired Water Heaters with a rated heat input less than or equal to 75,000 Btu/hr: No person shall sell, install or offer for sale within the District any natural gas-fired water heater manufactured after December 17, 1993 that emits more than 40 nanograms of nitrogen oxides (calculated as NO_2) per Joule of heat output.

4.2 Certification of Water Heaters: Water heaters subject to section 4.1 of this rule shall be certified in accordance with sections 5.1, 5.2 and 5.3.

5.0 Administrative Requirements

5.1 Each tested water heater shall be operated in accordance with Section 2.4 of American National Standards ANSI Z21.10.1-1990 at normal test pressure, input rates, and with a five-foot exhaust stack installed during the nitrogen oxides emission tests.

5.2 Certification: The manufacturer shall demonstrate that each water heater model subject to the requirements of section 4.1 has been tested in accordance with EPA Reference Test Method 7E, 40 CFR Part 60, Appendix A.

5.2.1 The following formula shall be used to calculate the emissions of NO_x in nanograms of NO_x per Joule of heat output:

$$\mathbf{N = (4.566 \times 10^4 \times P \times U)/(H \times C \times E)}$$

Where:

N = NO_X emission rate in nanograms of NO_X emitted per Joule of heat output

4.566×10^4 = unit conversion factor (ppm to nanograms and Btu to Joules)

P = Concentration of NO_X in the flue gas in parts per million (volume)

U = Dry volume percent of CO_2 in flue gas necessary for stoichiometric combustion

H = Gross heating value of the gas, Btu/Cu ft (at 60 F and 30" Hg)

C = Dry volume percent of CO_2 in flue gas

E = Recovery efficiency, percentage, as defined in Section 6.1.3 of the Code of Federal Regulation, Title 10, Part 430, Subpart B, Appendix E

5.2.2 The manufacturer may submit to the APCO an approved SCAQMD, Ventura County or BAAQMD certification in lieu of conducting duplicative certification tests.

5.3 Compliance Statement: Upon request of the APCO, each manufacturer shall submit to the APCO a statement certifying the water heaters subject to this rule are in compliance with the provisions of section 4.1. The statement shall be signed, dated and shall attest to the accuracy of all information. The statement shall include:

General Information:

Name and address of manufacturer,

Brand name,

Model number, as it appears on the water heater rating plate,

Heat input rating, Btu/hr.

5.4 Identification: The manufacturer shall display the model number of the water heater and date of manufacture on the shipping carton and rating plate of each unit.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4905 NATURAL GAS-FIRED, FAN-TYPE RESIDENTIAL CENTRAL FURNACES

(Adopted October 20, 2005)

1.0 Purpose

The purpose of this rule is to limit NOx emissions from natural gas-fired, fan-type residential central furnaces.

2.0 Applicability

The provisions of this rule shall apply to any person who supplies, sells, offers for sale, installs, or solicits the installation of natural gas-fired, fan-type residential central furnaces for use within the District with a rated heat input capacity of less than 175,000 British thermal units per hour and, for combination heating and cooling units, a rated cooling capacity of less than 65,000 British thermal units per hour.

3.0 Definitions

3.1 Air Pollution Control Officer (APCO): as defined in Rule 1020 (Definitions).

3.2 Annual Fuel Utilization Efficiency: the efficiency descriptor as defined by Section 430.2 of the Code of Federal Regulations, Title 10, Part 430, Subpart A.

3.3 District: as defined in Rule 1020 (Definitions).

3.4 Fan-type Residential Central Furnace: a self-contained space heater providing for circulation of heated air at pressures other than atmospheric through ducts more than 10 inches in length.

3.5 Heat Output (Central Furnace): the product obtained by multiplying the annual fuel utilization efficiency as defined by Section 430.2 of the Code of Federal Regulations (CFR), Title 10, Part 430, Subpart A, by the rated heat input capacity of the natural gas-fired central furnace.

3.6 Manufactured Home: as defined in 42 United States Code Section 5402 and California Health and Safety Code Section 18007, means a structure, transportable in one or more sections, which, in the traveling mode, is eight body feet or more in width, or 40 body feet or more in length, or, when erected on site, is 320 or more square feet, and which is built on a permanent chassis and designed to be used as a dwelling with or without a permanent foundation when connected to the required utilities, and includes the plumbing, heating, air conditioning, and electrical systems contained therein; except that such term shall

include any structure which meets all the requirements of this paragraph except the size requirements and with respect to which the manufacturer voluntarily files a certification and complies with the standards established under this part. "Manufactured home" includes a mobilehome subject to the National Manufactured Housing Construction and Safety Act of 1974 (42 U.S.C., Sec. 5401, et seq.).

3.7 Natural Gas: a mixture of gaseous hydrocarbons containing at least 80 percent methane by volume, as determined according to Standard Method ASTM D1945-64.

3.8 NOx: any oxides of nitrogen.

3.9 Rated Cooling Capacity: the cooling capacity specified on the nameplate of the cooling unit. Cooling capacity is the amount of heat energy the cooling system can displace in one hour (British thermal units per hour).

3.10 Rated Heat Input Capacity: the heat input capacity specified on the nameplate of the combustion unit. Heat input is the amount of energy consumed in one hour (British thermal units per hour).

4.0 Exemptions

The provisions of this rule shall not apply to:

4.1 Units installed in manufactured homes.

4.2 Units using fuels other than natural gas.

4.3 Nonfan-type residential central furnaces.

5.0 Requirements

No person shall supply, sell, offer for sale, install, or solicit the installation of any natural gas-fired, fan-type residential central furnace for use within the District unless it has certified emissions of oxides of nitrogen less than or equal to 0.093 pounds per million BTU of heat output or 55 ppm NOx at 3.00% O_2 stack gas by volume (dry).

6.0 Administrative Requirements

6.1 Emission Certification

6.1.1 Certified emissions levels shall be demonstrated by an emission certification approved under any of the following:

6 .1.1.1 Certification testing as described in Section 6.2 of this rule.

6.1.1.2 The South Coast Air Quality Management District Certification List for Rule 1111 (NOx Emissions From Natural-gas-fired, Fan-type Central Furnaces).

6.1.1.3 Other emission certification programs approved by the APCO and the United States Environmental Protection Agency.

6.1.2 The central furnace manufacturer shall display the model number of the appliance complying with Section 5.0 on the shipping carton and the rating plate of the appliance.

6.1.3 Upon request of the APCO, each manufacturer shall submit to the District a statement confirming the appliance subject to this rule is in compliance with the emission limit specified in Section 5.0. The statement shall be signed, dated, and shall attest to the accuracy of all information. The statement shall include:

6.1.3.2 Name and address of manufacturer,

6.1.3.3 Brand name,

6.1.3.4 Model number, as it appears on the appliance rating plate,

6.1.3.5 Heat input rating, British thermal units per hour, and

6.1.3.6 A source test report verifying compliance with Section 5.0.

6.2 Certification Testing

6.2.1 During testing, each tested central furnace shall be operated in accordance with the procedures specified in 10 CFR 430, Subpart B, Appendix N.

6.2.2 Compliance with the oxides of nitrogen emission requirement in Section 5.0 shall be determined using California Air Resources Board Method 100, or United States Environmental Protection Agency Methods 7E and 3A.

6.3 Recordkeeping

Compliance testing records shall be maintained for five years and made available to the APCO upon request.

7.0 Compliance Schedule

On and after January 1, 2007, no person shall supply, sell, offer for sale, install, or solicit the installation of a unit subject to this rule unless it meets the requirements of section 5.0.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 9510 - INDIRECT SOURCE REVIEW (ISR)
(Adopted December 15, 2005)

1.0 Purpose

The purposes of this rule are to:

1.1 Fulfill the District's emission reduction commitments in the PM10 and Ozone Attainment Plans.

1.2 Achieve emission reductions from the construction and use of development projects through design features and on-site measures.

1.3 Provide a mechanism for reducing emissions from the construction of and use of development projects through off-site measures.

2.0 Applicability

2.1 This rule shall apply to any applicant that seeks to gain a final discretionary approval for a development project, or any portion thereof, which upon full build-out will include any one of the following:

2.1.1 50 residential units;

2.1.2 2,000 square feet of commercial space;

2.1.3 25,000 square feet of light industrial space;

2.1.4 100,000 square feet of heavy industrial space;

2.1.5 20,000 square feet of medical office space;

2.1.6 39,000 square feet of general office space;

2.1.7 9,000 square feet of educational space;

2.1.8 10,000 square feet of government space;

2.1.9 20,000 square feet of recreational space; or

2.1.10 9,000 square feet of space not identified above.

2.2 This rule shall apply to any transportation or transit project where construction exhaust emissions equal or exceed two (2.0) tons of NOx or two (2.0) tons of PM10.

2.3 Projects on Contiguous or Adjacent Property

2.3.1 Residential projects with contiguous or adjacent property under common ownership of a single entity in whole or in part, that is designated and zoned for the same development density and land use, regardless of the number of tract maps, and has the capability to accommodate more than fifty (50) residential units are subject to this rule.

2.3.2 Nonresidential projects with contiguous or adjacent property under common ownership of a single entity in whole or in part, that is designated and zoned for the same development density and land use, and has the capability to accommodate development projects emitting more than two (2.0) tons per year of operational NOx or PM10 are subject to this rule. Single parcels where the individual building pads are to be developed in phases must base emissions on the potential development of all pads when determining the applicability of this rule.

3.0 Definitions

3.1 APCO: as defined in Rule 1020 (Definitions).

3.2 APCO-Approved Model: any computer model that estimates construction, area source and/or operational emissions of NOx and PM10 from potential land uses, using the most recent approved version of relevant ARB emissions models and emission factors, and has been approved by the APCO and EPA.

3.3 Air Impact Assessment (AIA): the calculation of emissions generated by the project and the emission reductions required by the provisions set forth in this rule. The AIA must be based solely on the information provided to the APCO in the AIA application, and must include all information listed in Section 5.6, et seq.

3.4 Air Impact Assessment (AIA) Application: the aggregate of documentation supporting the development of an AIA. This includes, but is not limited to, the information listed in Section 5.0, et seq.

3.5 Air Resources Board (ARB or CARB): as defined in Rule 1020 (Definitions).

3.6 Applicant: any person or entity that undertakes a development project.

3.7 Area Source: any multiple non-mobile emissions sources such as water heaters, gas furnaces, fireplaces, wood stoves, landscape equipment, architectural coatings, consumer product, etc., that are individually small but can be significant when combined in large numbers.

3.8 Baseline Emissions: the unmitigated NOx or PM10 emissions as calculated by the APCO-approved model.

3.9 Construction: any excavation, grading, demolition, vehicle travel on paved or unpaved surfaces, or vehicle exhaust that occurs for the sole purpose of building a development project.

3.10 Construction Baseline: the sum of baseline NOx or exhaust PM10 for the duration of construction activities for a project or any phase thereof, in total tons.

3.11 Construction Emissions: any NOx or exhaust PM10 emissions resulting from the use of internal combustion engines related to construction activity, which is under the control of the applicant through either ownership, rental, lease agreements, or contract.

3.12 Contiguous or Adjacent Property: a property consisting of two or more parcels of land with a common point or boundary, or separated solely by a public roadway or other public right-of-way.

3.13 Development Project: any project, or portion thereof, that is subject to a discretionary approval by a public agency, and will ultimately result in the construction of a new building, facility, or structure, or reconstruction of a building, facility, or structure for the purpose of increasing capacity or activity.

3.14 Discretionary Approval: a decision by a public agency that requires the exercise of judgment or deliberation when the public agency or body decides to approve or disapprove a particular development project, as distinguished from situations where the public agency merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations.

3.15 District: the San Joaquin Valley Unified Air Pollution Control District as defined in Rule 1020 (Definitions).

3.16 Emission Reduction Measure: an activity taken or conditions incorporated in a project to avoid, minimize, reduce, eliminate, or compensate emissions estimated to occur from new development projects.

3.16.1 On-Site Emission Reduction Measure: any feature activity, device, or control technology of a project, which is incorporated into the design of that project or through other means, which will avoid, minimize, reduce or eliminate the project's emissions. All on-site emission reductions achieved beyond District or state requirements shall count towards the mitigated baseline. City, County and other public agency requirements may also be credited towards emission reductions.

3.16.2 Off-Site Emission Reduction Measure: any feature, activity, or emission reduction project used, undertaken, or funded to compensate for a project's emission that is not part of the development project.

3.17 Indirect Source: any facility, building, structure, or installation, or combination thereof, which attracts or generates mobile source activity that results in emissions of any pollutant, or precursor thereof, for which there is a state ambient standard, as specified in Section 1.1.

3.18 Land Use: any facility, building, structure, installation, activity, or combination thereof, and the purpose, for which it is arranged, designed, intended, constructed, erected, moved, altered or enlarged on, or for which it is or may be occupied or maintained. Land use can be identified in the following categories:

3.18.1 Commercial: any facility, building, structure, installation, activity or combination thereof, that offers goods and services for sale. This can include but is not limited to wholesale and retail stores, food establishments, hotels or motels, and movie theatres.

3.18.2 Educational: any facility, building, structure, installation, activity or combination thereof, whose purpose is to develop knowledge, skill, and character. This can include but is not limited to: schools, day care centers, libraries, and churches.

3.18.3 General Office: any facility, building, structure, installation, activity or combination thereof, where the affairs of a non-medical business are conducted.

3.18.4 Governmental: any facility, building, structure, installation, activity or combination thereof, where the affairs of an entity that exercises authority over a country, or any subdivision thereof, are carried on.

3.18.5 Industrial: any facility, building, structure, installation, activity or combination thereof that creates, collects, extracts, packages, modifies, and/or distributes goods.

3.18.5.1 Light Industrial: Usually employs fewer than 500 persons, with an emphasis on activities other than manufacturing and typically have minimal office space. Typical light industrial activities include: print plants, material testing labs, and assemblers of data processing equipment. Light Industrial tends to be free-standing

3.18.5.2 Heavy Industrial: Also categorized as manufacturing facilities. Heavy Industrial usually has a high number of employees per industrial plant.

3.18.6 Medical Office: any facility, building, structure, installation, activity or combination thereof, where the affairs of a business related to the science and art of diagnosing, treating, and preventing diseases are carried on.

3.18.7 Recreational: any facility, building, structure, installation, activity or combination thereof, where individuals may relax or refresh the body or the mind. This can include but is not limited to: parks, fitness clubs, and golf courses.

3.18.8 Residential: any facility, building, structure, installation, activity or combination thereof, which provides a living space for an individual or group of individuals.

3.19 Mitigation: synonym of on-site emission reduction measure. For the purposes of this rule, mitigation is all on-site emission reductions achieved beyond District or state requirements. City, County and other public agency requirements may be counted as mitigation, and credited towards emission reductions for the mitigated baseline.

3.20 Mitigated Baseline: the NOx or PM10 emission generated by a project after on-site emission reduction measures have been applied.

3.21 Mobile Emissions: the NOx or PM10 emissions generated by motorized vehicles.

3.22 Monitoring and Reporting Schedule (MRS): a form listing on-site emission reduction measures committed to by the applicant that are not enforced by another public agency along with the implementation schedule and enforcement mechanism for each measure. The Construction Equipment Schedule constitutes a MRS for the construction phase of a development project. The format of the MRS shall be provided by the District. The format of the MRS shall be provided by the District.

3.23 NOx: any oxides of nitrogen.

3.24 Off-Site Emission Reduction Fee (Off-Site Fee): a fee to be paid by the applicant to the District for any emission reductions required by the rule that are not achieved through on-site emission reduction measures. Off-Site Fees shall only apply to off-site emission reductions required, and shall only be used for funding off-site emission reduction projects.

3.25 Off-Site Emission Reduction Fee Deferral Schedule (FDS): a payment schedule requested by the applicant and approved by the District for Off-Site Emission Reduction Fees that ensures contemporaneous off-site emission reductions for the development project. Fee payment shall be made prior to the issuance of a building permit. The District shall provide the FDS format.

3.26 On-Site Emission Reduction Checklist (On-Site Checklist): the list provided by the District that identifies potential on-site emission reduction measures. Project applicants must identify those measures that will be implemented and those that will not. There is no minimum required to be selected for implementation.

3.27 Operational Baseline: the baseline NOx or PM10 emissions, including area source and mobile emissions, calculated by the APCO-approved model, for the first year of buildout for that project, or any phase thereof, in tons per year.

3.28 Operational Emissions: for the purposes of this rule, the combination of area and mobile emissions associated with an indirect source.

3.29 Phase: a defined portion on a map, of a development project.

3.30 PM10 (or PM-10): as defined in Rule 1020 (Definitions).

3.31 Public Agency: any federal, state, local, or special agency that exercises discretionary powers on development activities within the San Joaquin Valley Air Basin.

3.32 San Joaquin Valley Air Basin (SJVAB): as defined in Rule 1020 (Definitions).

3.33 Transit: any passenger transportation service, local, metropolitan or regional in scope, that is available to any person who pays a prescribed fare. Transportation by bus, rail, or other conveyance, either publicly or privately owned, which is provided to the public or specialty service on a regular or continuing basis. Also known as "mass transit," "mass transportation," or "public transportation."

3.34 Transportation Projects: any project whose sole purpose is to create a new paved surface that is used for the transportation of motor vehicles, or any structural support thereof. Examples of transportation projects include: streets, highways and any related ramps, freeways and any related ramps, and bridges. This does not include development projects where traffic surfaces are a portion of the project, but not the main land-use.

3.35 URBEMIS: a computer model that is owned and modified by the local air pollution control districts and air quality management districts in the State of California. URBEMIS estimates construction, area source and operational emissions of NOx and PM10 from potential land uses, using the most recent approved version of relevant ARB emissions models and emission factors and/or District-specific emission factors; and estimates emissions reductions. The model has the capacity for changes to defaults when new or project specific information is known.

3.36 Vehicle Trip: a trip by a single vehicle regardless of the number of persons in the vehicle, which is one way starting at one point and ending at another. A 'round trip' is counted as two separate trips.

4.0 Exemptions

4.1 Transportation projects shall be exempt from the requirements in Sections 6.2 and 7.1.2.

4.2 Transit projects shall be exempt from the requirements in Sections 6.2 and 7.1.2

4.3 Development projects that have a mitigated baseline below two (2.0) tons per year of NOx and two (2.0) tons per year of PM10 shall be exempt from the requirements in Sections 6.0 and 7.0.

4.4 The following shall be exempt from the requirements of this rule:

4.4.1 Reconstruction of any development project that is damaged or destroyed and is rebuilt to essentially the same use and intensity.

4.4.2 Transportation Projects that consist solely of:

4.4.2.1 A modification of existing roads subject to District Rule 8061 that is not intended to increase single occupancy vehicle capacity, or,

4.4.2.2 Transportation control measures included in a District air quality attainment plan.

4.4.3 A development project on a facility whose primary functions are subject to Rule 2201 (New and Modified Stationary Source Review Rule) or Rule 2010 (Permits Required), including but not limited to the following industries:

4.4.3.1 Aggregate Mining or Processing;

4.4.3.2 Almond Hulling, Canning Operations, Food Manufacturing, Grain Processing and Storage, Vegetable Oil Manufacturing, and Wineries;

4.4.3.3 Animal Food Manufacturing;

4.4.3.4 Confined Animal Facilities;

4.4.3.5 Coatings and Graphic Arts;

4.4.3.6 Cotton Ginning Facilities;

4.4.3.7 Energy Production Plants;

4.4.3.8 Ethanol Manufacturing;

4.4.3.9 Gas Processing and Production, Oil Exploration, Production, Processing, and Refining;

4.4.3.10 Glass Plants;

4.4.3.11 Solid Waste Landfills;

4.4.3.12 Petroleum Product Transportation and Marketing Facilities.

5.0 Application Requirements

Any applicant subject to this rule shall submit an Air Impact Assessment (AIA) application no later than applying for a final discretionary approval with the public agency. An applicant for a project for which a discretionary approval is pending at the date of rule effectiveness, shall also submit an AIA application by 30 days after the rule effectiveness date. Nothing in this rule shall preclude an applicant from submitting an AIA application prior to filing an application for a final discretionary approval with the public agency. It is preferable for the applicant to submit an AIA application as early as possible in the process for that final discretionary approval. The AIA application shall be submitted on a form provided by the District and shall contain the following information:

5.1 Applicant name and address;

5.2 Detailed project description including, but not limited to:

5.2.1 Site Size;

5.2.2 Site Plans;

5.2.3 Proposed Project Schedule;

5.2.4 Associated Projects;

5.2.5 If residential, the number and type of dwelling units;

5.2.6 If commercial, the type, square footage and loading facilities;

5.2.7 If industrial, the type, estimated employment per shift, and loading facilities;

5.2.8 Amount of off-street parking provided for non-residential projects;

5.3 On-site Emission Reduction Checklist (On-Site Checklist): The District shall provide an On-Site Checklist that includes quantifiable on-site measures that reduce operational NOx and/or PM10 emissions.

5.3.1 The applicant shall identify measures voluntarily selected and how those measures will be enforced. On-Site measures must be fully enforceable through permit conditions, development agreements, or other legally binding instrument entered into by the applicant and the public agency; or, if the measure is not a requirement by another public agency, by a MRS contract with the District. Enforcement mechanisms can include:

5.3.1.1 Applicable local ordinance or section of a regulation that requires the measure, if any,

5.3.1.2 A District approved MRS, as identified in Section 5.4 below.

5.3.2 The applicant shall also include justification for those measures not selected.

5.3.3 All selected on-site measures, regardless of enforcement mechanism, shall count towards on-site emission reductions.

5.4 Monitoring and Reporting Schedule (MRS): The District shall provide a standardized MRS format. The applicant shall include in the AIA application a completed proposed MRS for on-site emission reduction measures selected that are not subject to other public agency enforcement, and the timeline for submittal of the construction equipment schedule. A proposed MRS shall outline how the measures will be implemented and enforced, and will include, at minimum, the following:

5.4.1 A list of on-site emission reduction measures included;

5.4.2 Standards for determining compliance, such as funding, record keeping, reporting, installation, and/or contracting;

5.4.3 A reporting schedule;

5.4.4 A monitoring schedule;

5.4.5 Identification of the responsible entity for implementation;

5.4.6 Provisions for failure to comply;

5.4.7 Applicants proposing on-site emission reduction measures that require ongoing funding, shall provide evidence in the proposed MRS of continued funding, including, but not limited to:

5.4.7.1 Bonds; or

5.4.7.2 Community Service Districts; or

5.4.7.3 Contracts.

5.4.8 The schedule for submitting a construction equipment schedule.

5.5 Off-Site Fee Deferral Schedule (FDS): The District shall provide a standardized Fee Deferral Schedule form. An applicant may propose a FDS with the District if the total Off-Site Fee exceeds $50,000. The payment schedule must provide assurance that reductions from off-site emission reduction projects can be obtained reasonably contemporaneous with emissions increases associated with the project and shall, at minimum, include the following:

5.5.1 Identification of the person or entity responsible for payment;

5.5.2 Billing address;

5.5.3 Total required off-site operational emissions for the development project and any phase thereof;

5.5.4 Total required off-site construction emissions for the development project and any phase thereof;

5.5.5 Year of build-out, and any phase thereof;

5.5.6 Any applicable milestones;

5.5.7 Off-Site Fee down payment, to be not less than $50,000;

5.5.8 Payment schedule not to exceed or go beyond the issuance of a building permit. For development projects with multiple phases, the payment schedule shall connect fee deadlines for off-site emission reductions required by each phase prior to the issuance of building permits for those phases.

5.5.9 The cost of reductions corresponding to the payment schedule;

5.5.10 Applicable project termination and delay clauses; and

5.5.11 Provisions for failure to comply.

5.6 Air Impact Assessment (AIA): An AIA shall be produced for the project from the project specific information identified in the AIA application. An AIA may be produced by or for the applicant. If an AIA is not provided by the applicant, the District shall perform the AIA during the AIA application review period. The AIA shall meet the following requirements:

5.6.1 The analysis of the proposed project shall be conducted according to the information provided in the application;

5.6.2 The analysis shall employ an APCO-approved model or calculator and include detailed documentation and reasons for all changes to the default input values;

5.6.3 If the AIA is conducted by or for the applicant, a hard copy and an electronic copy of all model runs conducted for the project and each phase thereof, shall be submitted;

5.6.4 The applicant shall include any other information and documentation that supports the calculation of emissions and emissions reductions;

5.6.5 The AIA shall quantify construction and operational NOx and PM10 emissions associated with the project. This shall include the estimated construction and operational baseline emissions, and the mitigated emissions for each applicable pollutant for the development project, or each phase thereof;

5.6.6 The AIA shall quantify the Off-Site Fee, if applicable.

6.0 General Mitigation Requirements

6.1 Construction Equipment Emissions

6.1.1 The exhaust emissions for construction equipment greater than fifty (50) horsepower used or associated with the development project shall be reduced by the following amounts from the statewide average as estimated by the ARB:

6.1.1.1 20% of the total NOx emissions, and

6.1.1.2 45% of the total PM10 exhaust emissions.

6.1.2 An applicant may reduce construction emissions on-site by using less-polluting construction equipment, which can be achieved by utilizing add-on controls, cleaner fuels, or newer lower emitting equipment.

6.2 Operational Emissions

6.2.1 NOx Emissions

Applicants shall reduce 33.3%, of the project's operational baseline NOx emissions over a period of ten years as quantified in the approved AIA as specified in Section 5.6.

6.2.2 PM10 Emissions

Applicants shall reduce of 50% of the project's operational baseline PM10 emissions over a period of ten years as quantified in the approved AIA as specified in Section 5.6.

6.3 The requirements listed in Sections 6.1 and 6.2 above can be met through any combination of on-site emission reduction measures or off-site fees.

7.0 Off-site Emission Reduction Fee (Off-Site Fee) Calculations and Fee Schedules

7.1 Off-site Fee Calculations

7.1.1 Construction Activities

7.1.1.1 NOx Emissions

The applicant shall pay to the District a monetary sum necessary to offset the required construction NOx emissions not reduced on-site. The off-site fee shall be calculated as follows:

$$CNOF = \sum_{i=1}^{n} \left[NACE_i - (0.8 \times NSEE_i) \right] \times CNR_i$$

Where,

CN OF = Construction NOx Off-Site Fee, in Dollars

i = each phase

n = last phase

NACE = Actual Estimated Equipment NOx Emissions, as documented in the APCO approved Air Impact Assessment application, in total tons

NSEE = Statewide Average Equipment NOx Emissions, as calculated by the APCO, in total tons

CNR = Cost of NOx Reductions identified in Section 7.2.1 below, in Dollars per ton. For projects with an approved FDS, the cost of reductions shall be based on the year each payment is made.

7.1.1.2 PM10 Emissions

The applicant shall pay a monetary sum necessary to offset the required construction PM10 exhaust emissions not reduced on-site. The off-site fee shall be calculated as follows:

$$CPM\ OF = \sum_{i=1}^{n} \left[PMACE_i - (0.55 \times PSEE_i)\right] \times CPR_i$$

Where,

CPM OF = Construction PM10 Off-Site Fee, in Dollars

i = each phase

n = last phase

PMACE = Actual Estimated Equipment PM10 Emissions, as documented in the APCO approved AIA application, in total tons

PSEE = Statewide average Equipment PM10 Emissions, as calculated by the APCO, in total tons

CPR = Cost of PM10 Reductions identified in Section 7.2.2 below, in Dollars per ton. For projects with an approved FDS, the fees shall be based on the year each payment is made.

7.1.2 Operational and Area Source Activities

7.1.2.1 NOx Emissions

The applicant shall pay a monetary sum necessary to offset the excess NOx emissions not reduced on-site. The off-site fee shall be calculated as follows:

$$NOxOF = \sum_{i=1}^{n} \left[\left(\frac{NEB_i \times 7.5}{3} \right) - (NEB_i \times 7.5 \times NAPOR_i) \right] \times CNR_i$$

Where,

NOx OF = Operational NOx Off-Site Fee, in Dollars

i = each phase

n = last phase

NEB = Estimated Baseline Emissions, of Operational NOx, as documented in the APCO approved AIA application, in tons per year

NAPOR = NOx Actual Percent of On-Site Reductions, as documented in the APCO approved air impact assessment application, as a fraction of one, calculated as (NEB-NOx Mitigated Baseline)/NEB

CNR = Cost of NOx Reductions, identified in Section 7.2.1 below, in Dollars per ton. For projects with an approved FDS, the cost of reductions shall be based on the year each payment is made.

7.1.2.2 PM10 Emissions

The applicant shall pay a monetary sum necessary to offset the excess PM10 emissions not reduced on-site for a period of ten years. The off-site fee shall be calculated as follows:

$$PM\ 10\ OF = \sum_{i=1}^{n} [(PMMB - 0.5\,PEB_i)(10)] \times CPR_i$$

Where,

PM10 OF = Operational PM Off-Site Fee, in Dollars

i = each phase

n = last phase

PEB = Estimated Baseline Emissions, of Operational PM10, as documented in the APCO approved AIA application, in tons per year

PMMB = Mitigated Baseline Emissions, as documented in the APCO approved AIA application, in tons per year

CPR = Cost of PM10 Reductions, identified in Section 7.2.2 below, in Dollars per ton. For projects with an approved FDS, the fees shall be based on the year each payment is made.

7.2 Fee Schedules

7.2.1 The costs of NOx reductions are as follows:

Year	Cost of NOX Reductions ($/ton)
2006	$4,650.00
2007	$7,100.00
2008 and beyond	$9,350.00

7.2.2 The costs of PM10 reductions are as follows:

Year	Cost of PM10 Reductions ($/ton)
2006	$2,907.00
2007	$5,594.00
2008 and beyond	$9,011.00

7.3 The applicant shall pay the Off-Site Fees in full by the invoice due date within sixty (60) calendar days after the AIA application is approved or in accordance to the schedule contained in the APCO approved FDS.

7.4 The applicant shall receive credit for any off-site emission reduction measures that have been completed and/or paid for, prior to the adoption of this rule, if the following conditions have been met:

7.4.1 The prior off-site emission reduction measures were part of an air quality mitigation agreement with the APCO; or

7.4.2 The applicant demonstrates to the satisfaction of the APCO that the off-site emission reduction measures result in real, enforceable, and surplus reductions in emissions.

7.5 Refund: If a project is terminated or is cancelled, the building permit or use permit expires, is cancelled, or is voided, no construction has taken place, and the use has never occupied the site, the applicant is entitled to a refund of the unexpended Off-Site fees paid less any administrative costs incurred by the APCO. The applicant must provide a written request for the refund, with proof of the project termination, within thirty (30) calendar days of the termination. Proof of project termination can include a confirmation from a local agency of permit cancellation.

7.6 The APCO may adjust the cost of reductions according to the following process:

7.6.1 An Analysis shall be performed that details:

7.6.1.1 The cost effectiveness of projects funded to date;

7.6.1.2 The rule effectiveness of achieving the required emission reductions to date;

7.6.1.3 The availability of off-site emission reduction projects;

7.6.1.4 The cost effectiveness of those projects.

7.6.2 The APCO shall provide a draft revised cost effectiveness based on the analysis.

7.6.3 The process shall include at least one public workshop.

8.0 Administrative Process

8.1 Completeness of the AIA application: The APCO shall determine whether the application is complete and contains the necessary information no later than ten (10) calendar days after receipt of the application, or after such longer time as agreed to by both the applicant and the APCO.

8.1.1 Should the application be deemed incomplete, the APCO shall notify the applicant in writing of the decision and shall specify the additional information required. Resubmittal of any portion of the application begins a new ten (10) day calendar period for the determination of completeness by the APCO.

8.1.2 Completeness of an application or resubmitted application shall be evaluated on the basis of the information requirements set forth in the District Rules and Regulations as they exist on the date on which the application or resubmitted application is received.

8.1.3 The APCO shall notify the applicant in writing that the application is deemed complete.

8.2 Public Agency Review of the proposed project: The APCO shall forward a copy of the AIA application, including the MRS (if applicable) to the relevant public agencies for review. The public agencies may review and comment at any time on the provisions of the MRS. Comments received by the APCO shall be forwarded to the applicant. The proposed MRS may be modified, if necessary, based on the input from the public agency. If any changes result from their comments, the APCO shall make the appropriate changes and provide the applicant a revised Off-Site Fee, if applicable. No section or provision within this rule requires action on the part of the public agency.

8.3 APCO Evaluation of the AIA Application: The AIA application shall be evaluated for content.

8.3.1 If the applicant submits an AIA, the APCO will evaluate the modeling inputs and calculations.

8.3.2 If the applicant does not submit an AIA, the APCO will complete an AIA from the information contained in the AIA application.

8.3.3 The APCO may, during the evaluation of the application, request clarification, amplification, and any correction as needed, or otherwise supplement the information submitted in the application. Any request for such information shall not count towards the time the APCO has to provide notice of approval or disapproval. The clock shall resume once the APCO has received the requested information.

8.4 AIA Approval: The APCO shall notify the applicant in writing of its decision regarding the AIA application and its contents within thirty (30) calendar days after determination of an application as complete and provide the following in writing to the applicant, the public agency, all interested parties as identified by the developer, and make available to the public.

8.4.1 APCO approval determination of the AIA application;

8.4.2 The required emission reductions;

8.4.3 The amount of on-site emission reduction achieved;

8.4.4 The amount of off-site emission reduction required, if applicable;

8.4.5 The required Off-Site Fee if applicable;

8.4.6 A statement of tentative rule compliance;

8.4.7 A copy of the final MRS, if applicable; and

8.4.8 An approved FDS, if applicable.

8.5 Off-Site Fee: After the APCO approves the AIA application and its contents; the APCO shall provide the applicant with an estimate for the projected off-site fees, if applicable. The applicant shall pay the of-site fee within 60 days, unless a FDS has been approved by the District.

8.6 Fee Deferral Schedule: In the event that the applicant had not previously submitted FDS in the AIA application, but desires one, the applicant shall ensure that the proposed FDS is submitted to the APCO no later than fifteen (15) calendar days after receipt of the AIA Approval. The District shall have fifteen (15) calendar days to approve the FDS request.

8.7 MRS Compliance: After the APCO approves the AIA application and its contents; the APCO shall enact the MRS contract, if applicable. The applicant is responsible for implementation and/or maintenance of those measures identified within the MRS. Upon completion of Monitoring and Reporting, the District shall provide to the applicant, the public agency, and make available to the public, an MRS Compliance letter.

8.7.1 Operational On-Site Measures: On-site emission reduction measures that are active operational measures, such as providing a service, must be implemented for 10 years after buildout of the project, if applicable.

8.7.2 Construction Equipment Schedule: The construction equipment schedule shall be submitted to the District if identified in the MRS prior to the start of construction, but not to exceed the issuance of a grading permit, if applicable.

8.8 In the event the applicant significantly changes the AIA application or any portion thereof during the Administrative Process, the APCO shall re-start the evaluation process pursuant to Section 8.3.

9.0 Changes to the Project

9.1 Changes Proposed By The Applicant

9.1.1 The applicant may substitute equivalent or more effective on-site emission reduction measures upon written approval from the APCO.

9.1.2 Changes in the project or to the build-out schedule that increase the emissions associated with the project shall require submission of a new AIA application. A new AIA shall be conducted and the off-site fees shall be recalculated in accordance with the applicable provisions of this rule. The APCO shall notify the applicant of the new off-site fees, the difference of which shall be payable by the due date specified on the billing invoice.

9.2 Changes Required By The Public Agency or Any Court Of Law

Project changes that result in an increase in the emissions shall require submission of a new AIA application within 60 days of said changes, or prior to the star of project construction, whichever is less. A new AIA shall be conducted and the off-site fees shall be recalculated in accordance with the applicable provisions of this rule.

10.0 APCO Administration of the Off-Site Fee Funds

10.1 The District shall establish and maintain separate accounts for NOx and for PM10 for funds collected under this rule. Any off-site fees collected by the District shall be deposited into these accounts.

10.2 The District shall utilize monies from the accounts to fund quantifiable and enforceable Off-Site projects that reduce surplus emissions of NOx and PM10 in an expeditious manner.

10.2.1 The District shall set forth funding criteria for each category of off-site projects that may be funded by this rule.

10.2.2 The District shall ensure that the emission reductions calculations for the off-site projects are accurate.

10.2.3 If the off-site project involves the replacement of existing equipment, the District shall inspect the existing equipment.

10.2.4 The District shall enter into a binding contract with the applicant of the off-site project, which will, at minimum, require an annual report from the applicant that includes information necessary to ensure that emissions reductions are actually occurring.

10.2.5 The District shall conduct inspections on the off-site project to verify that the project is installed or implemented and operating for the life of the contract.

10.2.6 The District may substitute NOx reductions for PM10 in a 1.5 to 1 ratio.

10.3 Any interest that accrues in the off-site account(s) shall remain in the account, to be used in accordance with Section 10.2 above.

10.4 The District shall prepare an annual report that will be available to the public regarding the expenditure of those funds, and shall include the following:

10.4.1 Total amount of Off-Site Fees received;

10.4.2 Total monies spent;

10.4.3 Total monies remaining;

10.4.4 Any refunds distributed;

10.4.5 A list of all projects funded;

10.4.6 Total emissions reductions realized; and

10.4.7 The overall cost-effectiveness factor for the projects funded.

11.0 Effective date of this rule

The provisions of this rule shall become effective on March 1, 2006.

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

NOTICE OF PUBLIC WORKSHOP
ON PROPOSED RULES AND REGULATIONS

NOTICE IS HEREBY GIVEN that a public workshop will be held to present, discuss, and receive comments on the draft amendments to:

Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3)

The public workshop will be presented in-person and via video teleconferencing (VTC) at the following time and location:

October 30, 2007 (Tuesday)
9:00 AM
In-person workshop: Fresno
VTC: Bakersfield and Modesto

Fresno: VTC Room, SJVUAPCD Office, 1990 E. Gettysburg Ave.
Bakersfield: VTC Room, SJVUAPCD Office, 2700 M Street, Suite 275
Modesto: VTC Room, SJVUAPCD Office, 4800 Enterprise Way

In order to save resources, we request that you bring your own copy of the workshop documents when you attend the workshop. Copies of the documents can be downloaded from the District's website at:

www.valleyair.org/workshops/public_workshops_idx.htm

If you are unable to download the documents from the District's website, a paper copy can be obtained by calling (559) 230-6005 or faxing your request to (559) 230-6064.

You can also receive District news, workshop notices, and other information via e-mail by subscribing to one of the District's e-mail notification lists at:

www.valleyair.org/lists/list.htm

The e-mail notification lists are setup and maintained by the end user and not by District staff. Individuals may add or delete their names from these lists at anytime.

Written comments regarding the Draft Staff Report and Draft Rule should be addressed to Manuel Salinas at SJVUAPCD, 1990 East Gettysburg Ave., Fresno, CA 93726 and must be received by 5:00 pm on November 13, 2007. For additional information, contact Mr. Salinas by e-mail at manuel.salinas@valleyair.org or by phone at (559) 230-5800.

RULE 4306 BOILERS, STEAM GENERATORS, AND PROCESS HEATERS – PHASE 3 (Adopted September 18, 2003; Amended March 17, 2005; Amended (rule adoption date))

1.0 Purpose

The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) from boilers, steam generators, and process heaters.

2.0 Applicability

This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million Btu per hour.

3.0 Definitions

3.1 Annual Capacity Factor: the ratio of the amount of fuel burned by the unit in a calendar year to the amount of fuel that the unit could have burned if it had operated at its maximum rated capacity for 8,760 hours during the calendar year.

3.2 Annual Heat Input: the actual, total heat input of fuels burned by a unit in a calendar year, as determined from the higher heating value and cumulative annual usage of each fuel.

3.3 Boiler or Steam Generator: any external combustion equipment, except oilfield steam generators, fired with any fuel used to produce hot water or steam.

3.4 British Thermal Unit (Btu): the amount of heat required to raise the temperature of one pound of water from 59°F to 60°F at one atmosphere.

3.5 Dryer: any unit in which material is dried in direct contact with the products of combustion.

3.6 Gaseous Fuel: any fuel which is a gas at standard conditions.

3.7 Gas Liquids Processing Facility: a facility that is engaged in the catalytic processing of gas liquids to produce finished products.

3.8 Heat Input: the heat (hhv basis) released due to fuel combustion in a unit, not including the sensible heat of incoming combustion air and fuel.

3.9 Higher Heating Value (hhv): the total heat liberated per mass of fuel burned (Btu per pound), when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.

3.10 Liquid Fuel: any fuel which is a liquid at standard conditions.

3.11 Load-following Unit: For the purposes of this rule, a load-following unit is defined as a unit with normal operational load fluctuations and requirements which exceed the operational response range of an Ultra-Low NOx burner system(s) operating at 9 ppmv NOx. The operator shall designated load-following units on the Permit to Operate.

3.12 NOx Emissions: the sum of oxides of nitrogen expressed as NO_2 in the flue gas.

3.13 Oilfield Steam Generator: an external combustion equipment which converts water to dry steam or to a mixture of water vapor and steam, with an absolute pressure of more than 30 psia, and which is used exclusively in thermally enhanced crude oil production.

3.14 Parts Per Million by Volume (ppmv): the ratio of the number of gas molecules of a given species, or group of species, to the number of millions of total gas molecules.

3.15 Process Heater: any combustion equipment fired with liquid and/or gaseous fuel and which transfers heat from combustion gases to water or process streams. This definition excludes: kilns or ovens used for drying, baking, cooking, calcining, or vitrifying; and unfired waste heat recovery heaters used to recover sensible heat from the exhaust of combustion equipment.

3.16 Public Utilities Commission (PUC) Quality Natural Gas: any gaseous fuel, gas-containing fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet and no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet. PUC quality natural gas also means high methane gas (at least 80% methane by volume) as specified in PUC General order 58-A.

3.17 PUC Quality Natural Gas Curtailment: means a shortage in the supply of Public Utility Commission (PUC) quality natural gas, due solely to supply limitations or restrictions in distribution pipelines by the utility supplying the gas, and not due to the cost of natural gas.

3.18 Qualified Technician: a stationary source employee or any personnel contracted by a stationary source operator who has a documented training and a demonstrated experience performing tune-ups on a unit to the satisfaction of the APCO. The

documentation of tune-up training and experience shall be made available to the APCO upon request.

3.19 Rated Heat Input (million Btu per hour): the heat input capacity specified on the nameplate of the unit. If the unit has been physically modified such that its maximum heat input differs from what is specified on the nameplate, the modified maximum heat input shall be considered as the rated heat input and made enforceable by Permit to Operate.

3.20 Refinery Unit: a unit that is permanently installed and operated at a petroleum refinery or a gas liquids processing facility.

3.21 Re-ignition: the relighting of a unit after an unscheduled and unavoidable interruption or shut off of the fuel flow or electrical power, for a period of less than 30 minutes, due to reasons outside the control of the operator.

3.22 Shutdown: The period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off.

3.23 Solid Fuel: any fuel which is a solid at standard conditions.

3.24 Standard Conditions: standard conditions as defined in Rule 1020 (Definitions).

3.25 Start-up: The period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation.

3.26 Unit: any boiler, steam generator, oilfield steam generator, or process heater as defined in this rule.

4.0 Exemptions

4.1 This rule shall not apply to:

4.1.1 Solid fuel fired units.

4.1.2 Dryers and glass melting furnaces.

4.1.3 Kilns and smelters where the products of combustion come into direct contact with the material to be heated.

4.1.4 Unfired or fired waste heat recovery boilers that are used to recover or augment heat from the exhaust of combustion turbines or internal combustion engines.

4.2 The applicable requirements of Section~~s~~ 5.1 Tables 1 and 2 ~~5.1.1~~, and Section 5.1.4 ~~5.1.2~~ shall not apply to a unit when burning any fuel other than PUC quality natural gas during PUC quality natural gas curtailment provided all of the following conditions are met:

4.2.1 Fuels other than PUC quality natural gas are burned no more than 168 cumulative hours in a calendar year plus 48 hours per calendar year for equipment testing, as limited by Permit to Operate.

4.2.2 NOx emissions shall not exceed 150 ppmv or 0.215 lb/MMBtu. Demonstration of compliance with this limit shall be made by either source testing, continuous emission monitoring system (CEMS), an APCO approved Alternate Monitoring System, or an APCO approved portable NOx analyzer.

5.0 Requirements

Operators of units subject to this rule shall comply with the emission limits specified below. All ppmv emission limits specified in this section are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen in accordance with Section 8.1.

5.1 NOx and CO Emission Limits

5.1.1 The emission limits specified in Table 1 shall be effective until May 31, 2011.

5.1.2 The emission limits specified in Table 2 shall be effective on and after June 1, 2011. The operator shall comply with the requirements and deadlines specified in Table 4.

5.1.3 ~~5.1.1~~ Except for units subject to Section 5.3 ~~5.2~~, NOx and carbon monoxide (CO) emissions shall not exceed the applicable emission limits specified in Tables 1 and 2 on and after the applicable dates specified in Tables ~~2 and~~ 3, 4, and 5.

Table 1 NOx and CO Limits Effective until May 31, 2011

Category	Operated on Gaseous Fuel			Operated on Liquid Fuel	
	NOx Limit		CO Limit (ppmv)	NOx Limit	CO Limit (ppmv)
	Standard Option	Enhanced Option			
A. Units with a rated heat input equal to or less than 20.0 MMBtu/hour, except for Categories C, D, E, F, G, H, and I units	15 ppmv or 0.018 lb/MMBtu	9 ppmv or 0.011 lb/MMBtu	400	40 ppmv or 0.052 lb/MMBtu	400
B. Units with a rated heat input greater than 20.0 MMBtu/hour, except for Categories C, D, E, F, G, H, and I units	9 ppmv or 0.011 lb/MMbtu	6 ppmv or 0.007 lb/MMBtu	400	40 ppmv or 0.052 lb/MMBtu	400
C. Oilfield Steam Generators	15 ppmv or 0.018 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
D. Refinery units with a rated heat input greater than 5 MMBtu/hr up to 65 MMBtu/hr	30 ppmv or 0.036 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
E. Refinery units with a rated heat input greater than 65 MMBtu/hr up to 110 MMBtu/hr	25 ppmv or 0.031 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
F. Refinery units with a rated heat input greater than 110 MMBtu/hr	5 ppmv or 0.0062 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
G. Load-following units	15 ppmv or 0.018 lb/MMBtu	9 ppmv or 0.011 lb/MMBtu	400	40 ppmv or 0.052 lb/MMBtu	400
H. Units limited by a Permit to Operate to an annual heat input of 9 billion Btu/year to 30 billion Btu/year	30 ppmv or 0.036 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400

Table 1 NOx and CO Limits Effective until May 31, 2011 (continued)

Category	Operated on Gaseous Fuel			Operated on Liquid Fuel	
	NOx Limit		CO Limit (ppmv)	NOx Limit	CO Limit (ppmv)
	Standard Option	Enhanced Option			
I. Units in which the rated heat input of each burner is less than or equal to 5 MMBtu/hr but the total rated heat input of all the burners in a unit is greater than 5 MMBtu/hr, as specified in the Permit to Operate, and in which the products of combustion do not come in contact with the products of combustion of any other burner.	30 ppmv or 0.036 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400

Table 2 NOx and CO Emission Limits Effective on and after June 1, 2011

Category	Gaseous Fuel		Liquid Fuel	
	NOx Limit	CO Limit	NOx Limit	CO Limit
A. Units with a rated heat input equal to or less than 20.0 MMBtu/hour	9 ppmv or 0.011 lb/MMBtu	400 ppmv	40 ppmv or 0.052 lb/MMBtu	400 ppmv
B. Units with a rated heat input greater than 20.0 MMBtu/hour	5 ppmv or 0.0062 lb/MMBtu	400 ppmv	40 ppmv or 0.052 lb/MMBtu	400 ppmv
C. Units limited by a Permit to Operate to an annual heat input of 9 billion Btu/year to 30 billion Btu/year	30 ppmv or 0.036 lb/MMBtu	400 ppmv	40 ppmv or 0.052 lb/MMBtu	400 ppmv

5.1.4 ~~5.1.2~~ When a unit is operated on combinations of gaseous fuel and liquid fuel, the NOx limit shall be the heat input weighted average of the applicable limits specified in Sections 5.1.1 and 5.1.2, as calculated by the following equation:

$$\text{Weighted Average Limit} = \frac{(\text{NOx limit for gaseous fuel x G}) + (\text{NOx limit for liquid fuel x L})}{\text{G} + \text{L}}$$

Where: G = annual heat input from gaseous fuel
L = annual heat input from liquid fuel

5.2 Particulate Matter 10 microns or less (PM10) and Sulfur Dioxide (SO_2) Emission Limits

5.2.1 On and after June 1, 2011, in order to limit emissions of PM10 and SO_2, all units subject to Table 2 emission limits shall be fired exclusively on PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases, except as allowed in Sections 5.2.2 and 5.2.3.

5.2.2 Gaseous fuels other than those specified in Section 5.2.1 may be used provided the unit's exhaust gas is controlled by a SO_2 and PM10 emission control system with a control efficiency of 95% by weight or greater.

5.2.3 Liquid fuel shall be used only during PUC quality natural gas curtailment periods provided it contains no more than 15 ppm sulfur as determined by the test method specified in Section 6.2.7 and provided the applicable emission limits of Section 5.1 Table 2 are met. In lieu of testing for sulfur content of liquid fuel, an operator may demonstrate compliance with 15 ppm sulfur content by obtaining a copy of the fuel sulfur content specification data from the fuel manufacturer or vendor. An operator shall comply with the recordkeeping requirement of Section 6.1.5.

5.3 ~~5.2~~ For each unit that is limited to less than 9 billion Btu per calendar year heat input pursuant to a Permit to Operate, the operator shall comply with the requirement of Section 7.4 and one of the following:

5.3.1 ~~5.2.1~~ tune the unit at least twice per calendar year, (from four to eight months apart) by a qualified technician in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown; or

5.3.2 ~~5.2.2~~ operate the unit in a manner that maintains exhaust oxygen concentrations at less than or equal to 3.00 percent by volume on a dry basis; or

5.3.3 ~~5.2.3~~ operate the unit in compliance with the applicable emission limits of Sections 5.1.1, 5.1.2, and 5.1.4 ~~or 5.1.2~~.

5.4 ~~5.3~~ On and after the full compliance schedule specified in Section 7.1, the applicable emission limits of Sections 5.1, 5.3.2 ~~5.2.2~~ and 5.3.3 ~~5.2.3~~ shall not apply during start-up or shutdown provided an operator complies with the requirements specified below.

5.4.1 ~~5.3.1~~ The duration of each start-up or each shutdown shall not exceed two hours, except as provided in Section 5.4.3 ~~5.3.3~~.

5.4.2 ~~5.3.2~~ The emission control system shall be in operation and emissions shall be minimized insofar as technologically feasible during start-up or shutdown.

5.4.3 ~~5.3.3~~ Notwithstanding the requirement of Section 5.4.1 ~~5.3.1~~, an operator may submit an application for a Permit to Operate condition to allow more than two hours for each start-up or each shutdown provided the operator meets all of the conditions in specified in Sections 5.4.3.1 ~~5.3.3.1~~ through 5.4.3.3 ~~5.3.3.3~~.

5.4.3.1 ~~5.3.3.1~~ The maximum allowable duration of start-up or shutdown will be determined by the APCO. The allowable duration of start-up shall not exceed twelve hours and the allowable duration of shutdown shall not exceed nine hours.

5.4.3.2 ~~5.3.3.2~~ The APCO will only approve start-up or shutdown duration longer than two hours when the application meets the following conditions:

5.4.3.2.1 ~~5. 3.3.2.1~~ clearly identifies the control technologies or strategies to be utilized; and

5.4.3.2.2 ~~5. 3.3.2.2~~ describes what physical conditions prevail during start-up or shutdown periods that prevent the controls from being effective; and

5.4.3.2.3 ~~5. 3.3.2.3~~ provides a reasonably precise estimate as to when the physical conditions will have reached a state that allows for the effective control of emissions.

5.4.3.3 ~~5.3.3.3~~ The operator shall submit to the APCO any information deemed necessary by the APCO to determine the appropriate length of start-up or shutdown. The information shall include, but is not limited to the following:

5.4.3.3.1 ~~5.3.3.3.1~~ a detailed list of activities to be performed during start-up or shutdown and a reasonable explanation for the length of time needed to complete each activity; and

5.4.3.3.2 ~~5.3.3.3.2~~ a description of the material process flow rates and system operating parameters, etc., the operator plans to evaluate during the process optimization; and an explanation of how the activities and process flow affect the operation of the emissions control equipment; and

5.4.3.3.3 ~~5.3.3.3.3~~ basis for the requested additional duration of start-up or shutdown.

5.4.4 ~~5.3.4~~ Permit to Operate (PTO) modifications solely to include start-up or shutdown conditions may be exempt from Best Available Control Technology (BACT) and emission offset requirements if the PTO modifications meet the requirements of Rule 2201 (New or Modified Stationary Source Review Rule) Section 4.2 (BACT Exemptions) and Rule 2201 Section 4.6 (Offset Exemptions). ~~Permit to Operate modification solely to include start-up or shutdown conditions shall be exempt from the BACT and offset requirements of Rule 2201 (New and Modified Stationary Source Review Rule) for applications for Authority to Construct that are submitted and are approved by the APCO by the applicable "full compliance" schedule specified in Section 7.1 Table 2.~~

5.5 ~~5.4~~ Monitoring Provisions

5.5.1 ~~5.4.1~~ The operator of any unit which simultaneously fires gaseous and liquid fuels, and is subject to the requirements of Section 5.1, shall install and maintain an operational non-resettable, totalizing mass or volumetric flow meter in each fuel line to each unit. Volumetric flow measurements shall be periodically compensated for temperature and pressure.

5.5.2 ~~5.4.2~~ The operator of any unit subject to the applicable emission limits in Sections 5.1 shall install and maintain an operational APCO approved Continuous Emissions Monitoring System (CEMS) for NOx, CO, and oxygen, or implement an APCO-approved Alternate Monitoring System.

An APCO approved CEMS shall comply with the requirements of 40 Code of Federal Regulations (CFR) Part 51, 40 CFR Parts 60.7 and 60.13 (except subsection h), 40 CFR Part 60 Appendix B (Performance Specifications) and 40 CFR Part 60 Appendix F (Quality Assurance Procedures, and applicable provisions of Rule 1080 (Stack Monitoring). An APCO approved Alternate Monitoring System shall monitor one or more of the following:

5.5.2.1 ~~5.4.2.1~~ periodic NOx and CO exhaust emission concentrations,
5.5.2.2 ~~5.4.2.2~~ periodic exhaust oxygen concentration,
5.5.2.3 ~~5.4.2.3~~ flow rate of reducing agent added to exhaust,
5.5.2.4 ~~5.4.2.4~~ catalyst inlet and exhaust temperature,
5.5.2.5 ~~5.4.2.5~~ catalyst inlet and exhaust oxygen concentration,
5.5.2.6 ~~5.4.2.6~~ periodic flue gas recirculation rate,
5.5.2.7 ~~5.4.2.7~~ other operational characteristics.

5.5.3 ~~5.4.3~~ For units subject to the requirements of Section 5.3.1 ~~5.2.1~~ or 5.3.2 ~~5.2.2~~, the operator shall monitor, at least on a monthly basis, the operational characteristics recommended by the manufacturer and approved by the APCO.

5.5.4 ~~5.4.4~~ The operator of any unit limited by a Permit to Operate to an annual heat input of 9 billion Btu per year to 30 billion Btu per year ~~Category H unit listed in Section 5.1.1 Table 1~~ and any unit subject to Section 5.3.1 ~~5.2.1~~ or 5.3.2 ~~5.2.2~~ shall install and maintain an operational non-resettable, totalizing mass or volumetric flow meter in each fuel line to each unit. Volumetric flow measurements shall be periodically compensated for temperature and pressure. A master meter, which measures fuel to all units in a group of similar units, may satisfy these requirements if approved by the APCO in writing. The cumulative annual fuel usage may be verified from utility service meters, purchase or tank fill records, or other acceptable methods, as approved by the APCO.

5.5.5 ~~5.4.5~~ The APCO shall not approve an alternative monitoring system unless it is documented that continued operation within ranges of specified emissions-related performance indicators or operational characteristics provides a reasonable assurance of compliance with applicable emission limits. The operator shall source test over the proposed range of surrogate operating parameters to demonstrate compliance with the applicable emission standards.

5.5.6 Monitoring SOx and PM10 Emissions

Effective on and after June 1, 2011, the operator shall select the key system operating parameters and frequency of the monitoring and recording specified in Attachment A for monitoring. The monitoring option selected shall be submitted for approval by the APCO. The operator may monitor other appropriate parameters and frequencies, other than those found in Appendix A, if written approval is obtained from the APCO, ARB, and EPA.

5.6 ~~5.5~~ Compliance Determination

5.6.1 ~~5.5.1~~ The operator of any unit shall have the option of complying with either the applicable heat input (lb/MMBtu) emission limits or the concentration (ppmv) emission limits specified in Section 5.1. The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (Source Sampling).

5.6.2 ~~5.5.2~~ All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0.

5.6.3 ~~5.5.3~~ All Continuous Emissions Monitoring System (CEMS) emissions measurements shall be averaged over a period of 15 consecutive minutes to demonstrate compliance with the applicable emission limits of this rule. Any 15-consecutive-minute block average CEMS measurement exceeding the applicable emission limits of this rule shall constitute a violation of this rule.

5.6.4 ~~5.5.4~~ For emissions monitoring pursuant to Sections 5.5.2 ~~5.4.2~~, 5.5.2.1 ~~5.4.2.1~~, and 6.3.1 using a portable NOx analyzer as part of an APCO approved Alternate Emissions Monitoring System, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15-consecutive-minute period.

5.6.5 ~~5.5.5~~ For emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are

above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit.

6.0 Administrative Requirements

6.1 Recordkeeping

The records required by Sections 6.1.1 through 6.1.5 ~~6.1.3~~ shall be maintained for five calendar years and shall be made available to the APCO upon request. Failure to maintain records or information contained in the records that demonstrate noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

6.1.1 The operator of any unit operated under the exemption of Section 4.2 shall monitor and record for each unit the cumulative annual hours of operation on each fuel other than natural gas during periods of natural gas curtailment and equipment testing. The NOx emission concentration (in ppmv or lb/MMBtu) for each unit that is operated during periods of natural gas curtailment shall be recorded. Failure to maintain records required by Section 6.1.1 or information contained in the records that demonstrates noncompliance with the conditions for exemption under Section 4.2 will result in loss of exemption status. On and after the applicable compliance schedule specified in Section 7.0, any unit losing an exemption status shall be brought into full compliance with this rule as specified in Section 7.3.

6.1.2 The operator of any unit limited by a Permit to Operate to an annual heat input of 9 billion Btu per year to 30 billion Btu per year ~~Category H unit~~ listed in Section 5.1 ~~5.1.1~~ Tables 1 and 2, and any unit that is subject to the requirements of Section 5.3 ~~5.2~~ shall record the amount of fuel use at least on a monthly basis for each unit, or for a group of units as specified in Section 5.5.4 ~~5.4.4~~. On and after the applicable compliance schedules specified in Section 7.0, in the event that such unit exceeds the applicable annual heat input limit specified in Sections 5.1 ~~5.1.1~~ Tables 1 and 2, ~~Category H~~ and Section 5.3 ~~5.2~~, the unit shall be brought into full compliance with this rule as specified in Section 7.4.

6.1.3 The operator of any unit subject to Section 5.3.1 ~~5.2.1~~ or Section 6.3.1 shall maintain records to verify that the required tune-up and the required monitoring of the operational characteristics of the unit have been performed.

6.1.4 The operator performing start-up or shutdown of a unit shall keep records of the duration of start-up or shutdown.

6.1.5 The operator of any unit firing on liquid fuel during PUC-quality natural gas curtailment period pursuant to Section 5.2.3 shall record the sulfur content of the fuel, amount of fuel used, and duration of the natural gas curtailment period.

6.2 Test Methods

Compliance with the requirements of this rule shall be determined in accordance with the following test methods. Equivalent test methods may be used provided they have been ~~The following test methods shall be used unless otherwise~~ approved by the APCO, ARB, and EPA.

6.2.1 Fuel hhv shall be certified by third party fuel supplier or determined by:

6.2.1.1 ASTM D 240-87 or D 2382-88 for liquid hydrocarbon fuels;
6.2.1.2 ASTM D 1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels.

6.2.2 Oxides of nitrogen (ppmv) - EPA Method 7E, or ARB Method 100.
6.2.3 Carbon monoxide (ppmv) - EPA Method 10, or ARB Method 100.
6.2.4 Stack gas oxygen - EPA Method 3 or 3A, or ARB Method 100.
6.2.5 NOx Emission Rate (Heat Input Basis) - EPA Method 19.
6.2.6 Stack gas velocities - EPA Method 2.
6.2.7 Stack gas moisture content - EPA Method 4.
6.2.8 Oxides of sulfur – EPA Method 6C, EPA Method 8, or ARB Method 100
6.2.9 The SOx emission control system efficiency shall be determined using the following:

$$\% \text{ Control Efficiency} = [\,(C_{SOx,\,inlet} - C_{SO2,\,outlet}) / C_{SOx,\,inlet}\,] \times 100$$

Where:

$C_{SO2,\,inlet}$ = concentration of SOx (expressed as SO_2) at the inlet side of the SOx emission control system, in lb/dscf

$C_{SO2,\,outlet}$ = concentration of SOx (expressed as SO_2) at the outlet side of the SOx emission control system, in lb/dscf

6.2.10 PM10 Test Methods

6.2.10.1 EPA Method 201 in conjunction with EPA Method 202; or
6.2.10.2 EPA Method 201A in conjunction with EPA Method 202; or
6.2.10.3 The PM10 emission control system efficiency shall be determined using the following:

% Control Efficiency = [($C_{PM10, inlet}$ – $C_{PM10, outlet}$) / $C_{PM10, inlet}$] X 100

Where:

$C_{PM10, inlet}$ = concentration of PM10 at the inlet side of the PM10 emission control system, in lb/dscf

$C_{PM10, outlet}$ = concentration of PM10 at the outlet side of the PM10 emission control system, in lb/dscf

6.3 Compliance Testing

6.3.1 Each unit subject to the requirements in Sections 5.1, or 5.3.3 ~~5.2.3~~ shall be source tested to determine compliance with the applicable emission limits at least once every 12 months, (no more than 30 days before or after the required annual source test date). Units that demonstrate compliance on two consecutive 12-month source tests may defer the following 12-month source test for up to 36 months (no more than 30 days before or after the required 36-month source test date). During the 36-month source testing interval, the operator shall tune the unit in accordance with the provisions of Section 5.3.1 ~~5.2.1~~, and shall monitor, on a monthly basis, the unit's operational characteristics recommended by the manufacturer to ensure compliance with the applicable emission limits specified in Sections 5.1 or 5.3.3 ~~5.2.3~~. Tune-ups required by Sections 5.3.1 ~~5.2.1~~ and 6.3.1 do not need to be performed for units that operate and maintain an APCO approved CEMS or an APCO approved Alternate Monitoring System where the applicable emission limits are periodically monitored. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits specified in Sections 5.1 or 5.3.3 ~~5.2.3~~, the source testing frequency shall revert to at least once every 12 months. Failure to comply with the requirements Section 6.3.1, or any source test results that exceed the applicable emission limits in Sections 5.1 or 5.3.3 ~~5.2.3~~ shall constitute a violation of this rule.

6.3.2 In lieu of compliance with Section 6.3.1, compliance with the applicable emission limits in Sections 5.1 or 5.3.3 ~~5.2.3~~ shall be demonstrated by submittal of annual emissions test results to the District from a unit or units that represents a group of units, provided:

6.3.2.1 All units in the group are initially source tested. The emissions from all test runs from units within the group are less than 90% of the permitted value, and the emissions do not vary greater than 25% from the average of all test runs; and

6.3.2.2 All units in a group are similar in terms of rated heat input, make and series, operational conditions, fuel used, and control method. No unit with a rated heat input greater than 100 MMBtu shall be considered as part of the group; and

6.3.2.3 The group is owned by a single owner and is located at a single stationary source; and

6.3.2.4 Selection of the representative unit(s) is approved by the APCO prior to testing; and

6.3.2.5 The number of representative units source tested shall be at least 30% of the total number of units in the group. The representative tests shall rotate each year so that within three years all units in the group have been tested at least once.

6.3.2.6 All units in the group shall have received the similar maintenance and tune-up procedures as the representative unit(s) as listed in the Permit to Operate. The operator shall submit to the APCO the specific maintenance procedures to be performed on each unit that will be included in the group for representative testing. Such maintenance procedures shall be specified in the Permit to Operate for units that are included in the group for representative testing. Any maintenance work on a unit which has no effect on emissions standards and which is not specified in the maintenance procedures shall be submitted to the APCO for approval before such unit can be included as part of the group for representative testing. Any unit that necessitates any maintenance work which has an effect on emission standards and is beyond the maintenance procedures identified in the Permit to Operate, shall not be included as part of the group for representative testing. The unit shall be source tested in accordance with the provisions of Section 6.3.1; and

6.3.2.7 Should any of the representative units exceed the required emission limits, each of the units in the group shall demonstrate compliance by emissions testing. Failure to complete emissions testing within 90 days of the failed test shall result in the untested units being in violation of this rule. After compliance with the requirements of Section 6.3.2.7 has been demonstrated, subsequent source testing shall be performed pursuant to Sections 6.3.1 or 6.3.2.

6.4 Emission Control Plan (ECP)

6.4.1 The operator of any unit shall submit to the APCO for approval an Emissions Control Plan according to the compliance schedule in Section 7.0. For each unit, the plan shall contain the following:

6.4.1.1 Permit to Operate number,
6.4.1.2 Fuel type and hhv,
6.4.1.3 Annual fuel consumption (Btu/yr),
6.4.1.4 Current emission level, including method used to determine emission level,
6.4.1.5 NOx limit to be satisfied, either Standard Option or Enhanced Option, and
6.4.1.6 Plan of actions, including a schedule of increments of progress, which will be taken to satisfy the requirements of Section 5.0 and the compliance schedule in Section 7.0.

6.4.2 The requirements of Section 6.4.2 shall remain in effect until December 1, 2008. The operator shall submit to the APCO for approval, as part of the ECP, a list of units which are to be designated as load-following units. The APCO shall only designate, as load-following, units for which the following information has been provided to demonstrate that the units qualify as load-following:

6.4.2.1 Technical data such as steam demand charts or other information to demonstrate the normal operational load fluctuations and requirements of the unit,
6.4.2.2 Technical data about the operational response range of an Ultra-Low NOx burner system(s) operating at 9 ppmv NOx, and
6.4.2.3 Technical data demonstrating that the unit(s) are designed and operated to optimize the use of base-loaded units in conjunction with the load-following unit(s).

7.0 Compliance Schedule

7.1 An operator subject to the emission limits of Section 5.1 Table 1 with multiple units at a stationary source shall comply with this rule in accordance with the schedule specified in Table 3 ~~2~~. A stationary source with only one unit shall comply with the schedule specified in Table 3 ~~2~~ Group 1 for standard option or Table 4 ~~3~~ Group 1 for enhanced option.

TABLE 3 ~~2~~ – Compliance Schedule for Table 1 Emission Limits - Standard Option ~~Compliance Schedule~~

Units to be in Compliance at a Stationary Source	Emission Control Plan	Authority to Construct	Full Compliance
Group 1: 25% or more of the total number of units subject to this rule on June 1, 2005, excluding Group 4	June 1, 2004	June 1, 2004	June 1, 2005
Group 2: 62.5% or more of the total number of units subject to this rule on June 1, 2006, excluding Group 4	June 1, 2004	January 2, 2005	June 1, 2006
Group 3: 100% of the total number of units subject to this rule on June 1, 2007	June 1, 2004	January 2, 2006	June 1, 2007
Group 4: A. Load-following units B. Units limited by Permit to Operate to an annual capacity factor of 10% or less as of June 1, 2005 C. Category I units at any stationary source that has no more than two units subject to this rule.	June 1, 2004	January 2, 2006	June 1, 2007

Units are considered to be subject to this rule if the rule is applicable to the units pursuant to Section 2.0 and the units are not exempt pursuant to Section 4.1.

TABLE 4 ~~3~~ – Compliance Schedule for Table 1 Emission Limits - Enhanced Option ~~Compliance Schedule~~

Units to be in Compliance at a Stationary Source	Emission Control Plan	Authority to Construct	Full Compliance
Group 1: 25% or more of the total number of units subject to this rule on June 1, 2005, excluding Group 4	December 1, 2005	December 1, 2005	December 1, 2006
Group 2: 62.5% or more of the total number of units subject to this rule on June 1, 2006, excluding Group 4	December 1, 2005	July 1, 2006	December 1, 2007
Group 3: 100% of the total number of units subject to this rule on June 1, 2007	December 1, 2005	July 1, 2007	December 1, 2008
Group 4: A. Load-following units	December 1, 2005	July 1, 2007	December 1, 2008

Units are considered to be subject to this rule if the rule is applicable to the units pursuant to Section 2.0 and the units are not exempt pursuant to Section 4.1.

TABLE 5 – Compliance Schedule for Table 2 Emission Limits

Units to be in Compliance at a Stationary Source	Emission Control Plan	Authority to Construct	Full Compliance
100% of the total number of Table 2 units subject to this rule on June 1, 2011	June 1, 2009	January 2, 2010	June 1, 2011

Units are considered to be subject to this rule if the rule is applicable to the units pursuant to Section 2.0 and the units are not exempt pursuant to Section 4.1.

7.2 As shown in Tables 3 ~~2~~ ,~~and~~ ~~Table~~ 4 ~~3~~, and 5 the column labeled:

7.2.1 "Emission Control Plan" identifies the date by which the operator shall submit an Emission Control Plan pursuant to Section 6.4. The Emission Control Plan shall identify all units subject to this rule. The Emission Control Plan shall identify steps to be taken to comply with this rule.

7.2.2 “Authority to Construct” identifies the date by with the operator shall submit an Application for Authority to Construct for each unit subject to the rule.

7.2.3 "Full Compliance" identifies the date by which the owner shall demonstrate that each unit is in compliance with this rule.

7.3 Any unit that is exempted under Section 4.2 that becomes subject to the emission limits of this rule through the loss of exemption status, shall be in full compliance with this rule on and after the date the exemption status is lost.

7.4 Until May 31, 2011, ~~A~~any unit that becomes subject to the emission limits of this rule as a result of exceeding the applicable annual heat input limit specified in either Section 5.1 ~~5.1.1~~ Table 1 Category H or Section 5.3 ~~5.2~~, shall be in compliance with the applicable standard option emission limits of Table 1 for Category A and B units, ~~in Section 5.1.1~~ on and after the date the annual heat input limit is exceeded.

7.5 On and after June 1, 2011, any unit that becomes subject to the emission limits of this rule as a result of exceeding the applicable annual heat input specified in either Section 5.1 Table 2 Category C or Section 5.3 shall be in compliance with the applicable emission limits for Table 2 Category A and B on and after the date the annual heat input limit is exceeded.

8.0 Calculations

8.1 All ppmv emission limits specified in Section 5.1 are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen as follows:

$$[\text{ppm NOx}]_{\text{corrected}} = \frac{17.95\%}{20.95\% - [\%O2]_{\text{measured}}} \text{ x } [\text{ppm NOx}]_{\text{measured}}$$

8.2 All pounds per million Btu NOx emission rates shall be calculated as pounds of nitrogen dioxide per million Btu of heat input (hhv).

9.0 Alternative Emission Control

9.1 General

The single owner of two or more units may comply with Section 5.1 by controlling units in operation at the same stationary source, or at two contiguous stationary sources, to achieve an aggregated NOx emission factor no higher than 90 percent of the aggregated NOx emission factor limit that would result if each unit in operation were individually in compliance with the applicable NOx emission limits in Section 5.1. An operator that is subject to the AECP requirements below shall also comply with the applicable requirements of Sections 5.0, 6.0, 7.0 and 8.0.

9.2 Eligibility

A unit not subject to Section 5.1 or Section 5.3.3 ~~5.2.3~~ is not eligible for inclusion in an AECP.

9.3 Exclusion

No unit subject to Sections 5.3.1 ~~5.2.1~~ or 5.3.2 ~~5.2.2~~ shall be included in an AECP.

9.4 AECP Definitions

For the purposes of Section 9.0, the following definitions shall apply:

9.4.1 Aggregated NOx emission factor limit: the sum of the NOx emissions, over seven consecutive calendar days, that would result if all units in the AECP were in compliance with the lb/MMBtu limits in Section 5.1 and operating at their actual firing rates, divided by the sum of the heat input of all units in the AECP over seven consecutive calendar days. Aggregated emission factor limit is calculated as:

where: L_A is the aggregated NOx emission factor limit (lb/MMBtu)

L_i is the applicable NOx emission factor limit (lb/MMBtu) specified in Section 5.1 ~~5.1.1~~ Table 1, Table 2 or Section 5.1.4 ~~5.1.2~~ for each category of unit in the AECP,

F_i is the total heat input (hhv basis) of fuel (MMBtu) combusted in each unit during seven consecutive calendar days, and

i identifies each unit in the AECP.

9.4.2 Aggregated NOx emission factor: the sum of the actual NOx emissions during seven consecutive calendar days from all units in the AECP, divided by the sum of the heat input of all units in the AECP during seven consecutive calendar days. The aggregated emission factor is calculated as:

where: E_A is the aggregated NOx emission factor (lb/MMBtu),

E_i is the NOx emission factor (lb/MMBtu) for each unit in the AECP, established and verified by source testing, or continuous emission monitors,
F_i is the total heat input (hhv basis) of fuel (MMBtu) combusted in each unit during seven consecutive calendar days, and

i identifies each unit in the AECP.

9.5 AECP Requirements

9.5.1 The aggregated NOx emission factor (E_A) shall not exceed 90 percent of the aggregated emission limit (L_A). The owner of any unit in an AECP shall notify the APCO within 24 hours of any violation of this section.
$E_A <= 0.90 \times L_A$

9.5.2 Only units in the AECP which were operated during seven consecutive calendar days shall be included in the calculations of the aggregated NOx emission factor (L_A) and the aggregated NOx emission limit (E_A).

9.5.3 During each seven consecutive calendar days_of operation that the AECP is used, the operator shall calculate and record the aggregated NOx emission factor (L_A) and the aggregate NOx emission limit (E_A).

9.5.4 The operator shall submit a NOx emission factor for each unit that is included in the AECP. The established NOx emission factor of the unit shall be no less than the emission factor of the unit from the most recent source test conducted pursuant to Section 6.3 and approved by the APCO. The operator shall not operate any AECP unit in such a manner that the NOx emissions exceed the established NOx emission factor of the unit.

9.5.5 The operator shall submit the AECP, for approval by the APCO, by June 1, 2004 for Section 5.1 Table 1 emission limits, or by June 1, 2009 for Section 5.1 Table 2 emission limits or at least 24 months before compliance with the applicable emission limits in Section 5.1 Table 1 or Table 2 are ~~is~~ required pursuant to the Section 7.1, whichever is later. The AECP shall be submitted with an application for an Authority to Construct pursuant to complying with Section 7.1 as applicable. The operator shall obtain a written approval of the AECP from the APCO prior to implementation.

9.6 AECP Administrative Requirements

9.6.1 The AECP shall:

9.6.1.1 Contain all data, records, and other information necessary to determine eligibility of the units for alternative emission control, including but not limited to:

9.6.1.1.1 A list of units subject to alternative emission control,
9.6.1.1.2 Daily average and maximum hours of utilization for each unit,
9.6.1.1.3 Rated heat input of each unit, and
9.6.1.1.4 Fuel type for each unit.

9.6.1.2 Present the methodology for recordkeeping and reporting required by Sections 9.6.4 and 9.6.5.

9.6.1.3 Specify which NOx limit, either Standard Option or Enhanced Option, will be satisfied by the units under the AECP.

9.6.1.4 Demonstrate that the aggregated emission factor will meet the requirements of Section 9.5.

9.6.1.5 Demonstrate that the schedule for achieving AECP NOx emission levels is at least as expeditious as the schedule if applicable units were to comply individually with the applicable emission levels in Section 5.1 and the increments of progress in Section 7.0.

9.6.2 Revision of AECP

Owners shall demonstrate APCO approval of the AECP prior to applying for a modification to said AECP.

9.6.3 AECP Recordkeeping

In addition to the records kept pursuant to Section 6.1, the operator shall maintain records, on a daily basis, of the parameters needed to demonstrate compliance with the applicable NOx emission limits when operating under the AECP. The records shall be retained for at least five years and shall be made available to the APCO upon request. The records shall include, but are not limited to, the following:

9.6.3.1 For each unit included in the AECP the owner shall maintain the following records for each day:

9.6.3.1.1 fuel type and amount used for each unit (F_i),
9.6.3.1.2 the actual emission factor for each unit (E_i),
9.6.3.1.3 the total emissions for all units ($\Sigma E_i F_i$),
9.6.3.1.4 the aggregated emission factor (E_A),
9.6.3.1.5 the aggregated emission factor limit (L_A), and
9.6.3.1.6 any other parameters needed to demonstrate daily compliance with the applicable NOx emissions when operating the units under the AECP.

9.6.4 Reporting and Annual Updates

Notifications of any violation pursuant to Section 9.5 shall include:
9.6.4.1 name and location of facility,
9.6.4.2 list of applicable units,
9.6.4.3 cause and expected duration of exceedance,
9.6.4.4 the amount of excess emissions, and
9.6.4.5 proposed corrective actions and schedule.

9.7 Compliance Schedule

The AECP schedule for achieving reduced NOx emission levels shall be at least as expeditious as the schedule if applicable units were to comply individually with the applicable emissions limits specified in Section~~s~~ 5.1 ~~5.1.1~~ Tables 1 and 2, and Section 5.1.4 ~~5.1.2~~ and the applicable compliance schedule required by Section 7.0.

Attachment A

Monitoring and Recording Frequency for SOx and PM10 Controls

Dry or Wet Electrostatic Precipitators (ESP)		
Operating Parameters	**Monitoring Frequency**	**Recording Frequency**
Flue gas inlet temperature to ESP	Continuously	Hourly
Flue gas flow rate	Continuously	Hourly
Voltage and current across ESP or total power input	Continuously	Hourly
Ammonia injection rate	Continuously	Hourly
Wet scrubbers or Wet ESPs		
Operating Parameters	**Monitoring Frequency**	**Recording Frequency**
Flue gas flow rate	Continuously	Hourly
Type of scrubbing liquid and average pH	Daily	Daily
Scrubbing liquid flow rate	Continuously	Hourly
SO_2 Reducing Catalyst Additives		
Operating Parameters	**Monitoring Frequency**	**Recording Frequency**
Type of SO_2 reducing catalyst	Once and when change occurs	Once and when change occurs
Addition rate of SO_2 reducing catalyst	Daily	Daily
Pickup factor (i.e., lbs SO_2 reduced per lb of additives)	Once and when change occurs	Once and when change occurs
Baghouses		
Operating Parameters	**Monitoring Frequency**	**Recording Frequency**
Flue gas flow rate	Continuously	Hourly
Pressure drop	Continuously	Hourly
Flu gas inlet temperature	Continuously	Hourly

Notes:

1. Monitoring and recording as shown in this attachment shall not be required during periods of routine maintenance and malfunction of the monitoring and recording devices.

2. “Continuously monitoring” means monitoring at least once every 15 minutes.

3. “Hourly recording” means recording at least one measurement every hour.

4. “Daily monitoring” and “daily recording” means monitoring and recording at least one measurement every day.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

DRAFT STAFF REPORT

October 30, 2007

Amendments to Rule 4306
(Boilers, Steam Generators, and Process Heaters – Phase 3)

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I. SUMMARY

A. Reasons for Rule Development and Implementation

The San Joaquin Valley Air Basin (SJVAB) is a continuous inter-mountain valley comprised of eight counties in the southern portion of the San Joaquin Valley of California: Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare, and the Valley portion of Kern. The SJVAB is approximately 250 miles long, averages 80 miles wide, and is partially enclosed by the Coast Mountain range on the west, the Tehachapi Mountains on the south, and the Sierra Nevada range on the east. These surrounding mountains trap pollution. Low wind speeds combined with low-lying inversion layers in the winter create a climate conducive to the formation of high particulate matter (PM) concentrations. The region's hot, dry summers are conducive to ozone formation.

The SJVAB is currently designated as nonattainment for the national ambient air quality standard (NAAQS) for particulate matter 2.5 microns in diameter or less ($PM_{2.5}$) and serious nonattainment for the eight-hour ozone NAAQS. Prior to the United States Environmental Protection Agency's (EPA's) implementation of the eight-hour ozone standard, the SJVAB was also classified as an extreme nonattainment area for the one-hour ozone NAAQS. Although EPA revoked the one-hour ozone NAAQS, the San Joaquin Valley Air Pollution Control District (District) is still required to meet certain requirements mandated by the federal Clean Air Act related to the extreme designation. In addition to being classified as nonattainment of federal air standards, SJVAB is classified as severe nonattainment for the California ozone air quality standard and

nonattainment for the California air quality standard for particulate matter ten microns in diameter or smaller (PM10).

Since amending Rule 4306 is a control measure in the District's 2007 Eight-Hour Ozone Plan, it is subject to Code of Federal Regulations (CFR), Clean Air Act (CAA), and California Health and Safety Code (CH&SC) requirements. This rulemaking project is intended to satisfy the attainment goals of the District's 2007 Eight-Hour Ozone Plan. The proposed amendments to Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3) will seek to obtain as much reduction of oxides of nitrogen (NO_x) from small boilers, steam generators, and process heaters as expeditiously practicable, technologically feasible, and economically reasonable, as determined by the District's Governing Board. Furthermore, the rule is intended to satisfy the requirements identified in Table 1 below.

Table 1: Ozone Plan Commitments

Subject	Reference	Requirement
Timeline	CAA Section 172(c)(1)	Ozone attainment plans shall implement control measures as expeditiously as practicable, and provide for attainment.
RACT	CAA Sections 182(b)(2) and 182(f)	Ozone attainment plans shall assure that reasonable available control technology (RACT) for NOx and volatile organic compounds (VOC) is in use at sources and on source categories at or above the RACT threshold.
BARCT	CH&SC 40919(a)(3)	Ozone attainment plans should provide for best available retrofit technology (BARCT) for existing permitted sources.
All Feasible Controls	CH&SC 40914(a)(2)	Ozone attainment plans should include "all feasible control measures."
Deadline	District 2007 Eight-Hour Ozone Plan	Rule adoption by the 3rd quarter of 2008.
Reductions	District 2007 Eight-Hour Ozone Plan	The plan calls for about 0.7 tons per day of NOx reductions.

Under EPA's "New Source Review" (NSR) program, if a company is planning to build a new plant or modify an existing plant such that air pollution emissions will increase by a certain amount, then the company must obtain an NSR permit. The NSR permit is a construction permit which requires the company to minimize air pollution emissions by

changing the process to prevent air pollution and/or installing air pollution control equipment. The terms "RACT," "BACT," and "LAER" are acronyms for different program requirements under the NSR program. EPA defines RACT as “the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.” RACT is required on existing sources in non-attainment areas. Best Available Control Technology (BACT), is required on major new or modified sources in attainment areas. Lowest Achievable Emission Rate (LAER) is required on major new or modified sources in non-attainment areas. BACT and LAER (and sometimes RACT) are determined on a case-by-case basis, usually by State or local permitting agencies. For this rule project, District staff will focus on RACT limits, as defined by EPA’s NSR rule, and BARCT limits as defined by the CH&SC.

B. Description of the Project

The District’s Governing Board adopted Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3) on September 18, 2003. The project proposed to address EPA cited deficiencies in Rule 4305 (Boilers, Steam Generators, and Process Heaters – Phase 2) and to reduce emissions of NOx pursuant to the District’s ozone and particulate matter attainment strategies. The rule applies to any gaseous fuel or liquid fuel fired boilers, steam generators, and process heaters with a rated heat input greater than 5 million Btu/hour. Facilities with units subject to this control measure represent a wide range of industries, including but not limited to electrical utilities, cogeneration, oil and gas production, petroleum refining, manufacturing and industrial, food and agricultural processing, and service and commercial facilities.

District staff would amend Rule 4306 to implement an emission control measure (S-COM-1) in the District’s 2007 Eight-Hour Ozone Plan. The control measure indicates that additional NOx emission reductions could be achieved by lowering the current NOx limit of 9 ppmv to 6 ppmv for units greater than 20 MMBtu/hr. An estimated 40 percent reduction from the current emissions level could be achieved.

As stated previously the SJVAB is currently designated as nonattainment for the NAAQS for particulate matter with aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$). As such, the District is required to submit an attainment plan not unlike the 2007 Ozone Plan. The District’s $PM_{2.5}$ attainment plan is due to EPA by June 2008. In anticipation of $PM_{2.5}$ control measures District staff have included SO_2 and PM control requirements in this rule project. While SO_2 is not a precursor to ozone formation in the SJVAB, SO_2 is strongly implicated in atmospheric particle formation (See Reference 5).

C. Rule Development Process

The District’s 2007 Eight-Hour Ozone Plan identified Rule 4306 as control measure S-COM-1 which would be implemented through the rule development process. As part of the rule development process, District staff will conduct public workshops to present and

discuss proposed amendments to Rule 4306. The series of workshops will begin with the first two in the fourth quarter of 2007 and the final workshop in the first quarter of 2008.

At the workshops, District staff will present the objectives of the proposed rulemaking project and provide draft amendments. District staff will solicit information from affected source operators, consultants, vendors and manufacturers of control technologies, and trade associations on the technological feasibility and compliance cost information that would be useful in developing amendments to Rule 4306. The comments received from the public, affected sources, interested parties, California Air Resources Board (ARB), and EPA, during the public workshop process will be incorporated into the draft rule as appropriate.

Pursuant to state law, the District is required to perform a socioeconomic impact analysis prior to adoption, amendment, or repeal of a rule that has significant air quality benefits or that will strengthen emission limitations. As part of the District socioeconomic analysis process, District staff will request volunteers from affected stakeholders and interested parties to participate as members of the Socioeconomic Focus Group. District staff will convene a meeting of the Focus Group at the time of the second workshop to assist District staff in gathering information on regulatory compliance costs and business impacts resulting from compliance with the proposed amendments. The result of the socioeconomic analysis will be published in a report and presented along with the proposed rule amendments to the public and interested parties during the final workshop.

The proposed rule, final draft staff report with appendices, and final draft socioeconomic analysis report will be published and mailed to affected sources and interested parties prior to a public hearing to consider the adoption of proposed amendments to Rule 4306 by the District Governing Board. The public hearing is tentatively scheduled to take place in the second quarter of 2008.

II. CURRENT AND PROPOSED REGULATIONS

A. Existing Rule 4306

Rule 4306 was adopted on September 18, 2003 and amended February 17, 2005. The purpose of Rule 4306 is to limit NOx and CO emissions from boilers, steam generators, and process heaters. The rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, and process heater with a rated heat input greater than 5.0 million Btu/hr.

The current rule does not apply to solid fuel fired units, dryers and glass melting furnaces, kilns and smelters where the products of combustion come in contact with the material to be heated, unfired or fired waste heat recovery boilers that are used to recover or augment heat from combustion turbines or internal combustion engines, and

any unit in which the total rated heat input of each burner is less than or equal to 5 million Btu per hour as specified in the operating permit, and in which each burner's products of combustion does not come in contact with the products of combustion of any other burner. The rule also contains certain exemptions such as burning of any fuel other than natural gas during natural gas curtailment for no more than 168 hours. Units subject to the rule must comply with the NOx and CO limits listed in the following table.

Table 1: Rule 4306 NOx and CO Limits

Category	Operated on Gaseous Fuel			Operated on Liquid Fuel	
	NOx Limit		CO Limit (ppmv)	NOx Limit	CO Limit (ppmv)
	Standard Option	Enhanced Option			
A. Units with a rated heat input equal to or less than 20.0 MMBtu/hour, except for Categories C, D, E, F, G, H, and I units	15 ppmv or 0.018 lb/MMBtu	9 ppmv or 0.011 lb/MMbtu	400	40 ppmv or 0.052 lb/MMBtu	400
B. Units with a rated heat input greater than 20.0 MMBtu/hour, except for Categories C, D, E, F, G, H, and I units	9 ppmv or 0.011 lb/MMbtu	6 ppmv or 0.007 lb/MMbtu	400	40 ppmv or 0.052 lb/MMBtu	400
C. Oilfield Steam Generators	15 ppmv or 0.018 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
D. Refinery units with a rated heat input greater than 5 MMBtu/hr up to 65 MMBtu/hr	30 ppmv or 0.036 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
E. Refinery units with a rated heat input greater than 65 MMBtu/hr up to 110 MMBtu/hr	25 ppmv or 0.031 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
F. Refinery units with a rated heat input greater than 110 MMBtu/hr	5 ppmv or 0.0062 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400
G. Load-following units	15 ppmv or 0.018 lb/MMBtu	9 ppmv or 0.011 lb/Mmbtu	400	40 ppmv or 0.052 lb/MMBtu	400
H. Units limited by a Permit to Operate to an annual heat input of 9 billion Btu/year to 30 billion Btu/year	30 ppmv or 0.036 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400

Table 1: Rule 4306 NOx and CO Limits (continued)

Category	**Operated on Gaseous Fuel**			**Operated on Liquid Fuel**	
	NOx Limit		**CO Limit (ppmv)**	**NOx Limit**	**CO Limit (ppmv)**
I. Units in which the rated heat input of each burner is less than or equal to 5 MMBtu/hr but the total rated heat input of all the burners in a unit is greater than 5 MMBtu/hr, as specified in the Permit to Operate, and in which the products of combustion do not come in contact with the products of combustion of any other burner.	30 ppmv or 0.036 lb/MMBtu	No option	400	40 ppmv or 0.052 lb/MMBtu	400

Other provisions contained in the rule include periodic source testing, monitoring, and recordkeeping. Additionally, the rule also allows operators to comply with the emission limits of the rule through an Alternative Emission Control by achieving an aggregated emission level no higher than the aggregated emission level that would have resulted if each unit in operation were individually in compliance with the specified emission limits.

B. Summary of Draft Amendments To Rule 4306

Section 5.0 – Requirements

New emission limits for NOx would be added to Section 5.1. The new table of emission limits will condense previous categories and lower the NOx limits. The existing limits of Table 1 will be effective until May 31, 2011 and the new emission limits of Table 2 would become effective on and after June 1, 2011. The categories for Table 2 with their respective emission limits are as follows:

Table 2: NOx and CO Emission Limits

Category	Gaseous Fuel		Liquid Fuel	
	NOx Limit	CO Limit	NOx Limit	CO Limit
A. Units with a rated heat input equal to or less than 20.0 MMBtu/hour	9 ppmv or 0.011 lb/MMBtu	400 ppmv	40 ppmv or 0.052 lb/MMBtu	400 ppmv
B. Units with a rated heat input greater than 20.0 MMBtu/hour	5 ppmv or 0.0062 lb/MMBtu	400 ppmv	40 ppmv or 0.052 lb/MMBtu	400 ppmv
C. Units limited by a Permit to Operate to an annual heat input of 9 billion Btu/year to 30 billion Btu/year	30 ppmv or 0.036 lb/MMBtu	400 ppmv	40 ppmv or 0.052 lb/MMBtu	400 ppmv

Section 5.2 would be added to limit emissions of PM10 and SO_2. Units subject to Table 2 would be required to fire exclusively on PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of these gases. Other gaseous fuels not listed can be used as long as the unit's exhaust gas is controlled by a PM10 and SO_2 emission control system with a control efficiency of 95% by weight or greater. Liquid fuel would only be allowed during PUC quality natural gas curtailment as long as it contains no more than 15 ppm of sulfur.

Section 5.3.4 of the rule would be modified to address an EPA concern regarding the exemption from BACT and offset exemption to include provisions of start-up or shutdown in the Permit to Operate (PTO). The modified provision would include a statement that modification of PTO may qualify for exemption from BACT and offset provided it meets the criteria specified in Rule 2201 (New and Modified Stationary Source Review Rule), Section 4.4 (BACT Exemption) and Section 4.6 (Offset Exemption). US EPA commented it is not appropriate to include such an exemption from new source review (NSR) requirements and it would not be approvable for inclusion in the State Implementation Plan (SIP). US EPA also stated "any regulatory language that exempts sources from NSR is subject to review as a revision to the District's NSR program. Adding a specific NSR exemption or new terms to provide an exemption already provided for in Rule 2201 to any rule not previously evaluated by EPA would likely open up all of the existing NSR rules to a new review to ensure compliance with the requirements of 40 CFR 51.165(a)(1)."

Section 6.0 – Administrative Requirements

Section 6.1 Recordkeeping would be modified to include required records for units firing on liquid fuel during PUC-quality natural gas curtailment.

Section 6.2 Test Methods would be modified to include test methods specific to oxides of sulfur, SOx emission control system efficiency, and PM10.

Section 7.0 – Compliance Schedule

Table 5 Compliance Schedule for Table 2 Emission Limits, with compliance deadlines, would be added. The deadline for these units to submit an Emission Control Plan is by June 1, 2009, the deadline for an Authority to Construct is January 2, 2010, and the full compliance deadline is June 1, 2011.

III. CURRENT EMISSIONS AND EMISSIONS REDUCTION

Upon adoption for Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3) the rule affected 1,600 permitted boilers, steam generators, and process heaters. The estimated total potential emissions reduction was calculated to be 7.7 tons/day.

For this project staff have identified approximately 770 units, greater than 20 MMBtu/hr, that would be affected by amending the rule. The potential emissions reductions would be 8.85 tons per day. Staff will refine the emissions reduction calculations later in the rule development process.

IV. EMISSION CONTROL TECHNOLOGIES

The two primary methods of controlling NOx emissions from boilers, steam generators, and process heaters are either to change the combustion parameters (i.e., combustion modification) to reduce NOx formation or to treat the NOx formed before it is emitted into the atmosphere (i.e., exhaust gas treatment).

Combustion Modification

Combustion modification systems are designed to reduce thermal NOx formation by changing the flame characteristics to reduce peak flame temperature. Combustion controls include low excess air operation, staged combustion, overfire air ports, biased firing, and placing selected burners out-of-service.

Combustion modification is also achieved by different burner designs such as Low NOx and Ultra Low NOx burners. Some of the design principles used in Ultra low NOx and Low NOx burner include staged air burners, staged fuel burners, pre-mix burners, internal recirculation, and radiant burners.

A combustion control system may be used by itself or in combination with Flue Gas Recirculation (FGR). FGR recycles a portion of the exhaust stream back into the burner windbox, mixing low oxygen air with combustion air prior to entering the combustion chamber. This technique reduces thermal NOx formation by reducing the peak temperature and by reducing oxygen in the combustion zone.

Exhaust Gas Treatment

Exhaust Gas treatment (EGT) is another way to reduce NOx. NOx is reduced to molecular nitrogen by adding flue gas treatment systems located after the boiler firebox. EGT includes Selective Catalytic Reduction (SCR) and Selective Noncatalytic Reduction (SNCR). EGT operate at a certain temperature range to effectively reduce NOx in the exhaust gas by injecting either urea or ammonia into the post-combustion zone of the boiler.

PM2.5 or SO_2 Post-Combustion Controls

Post-combustion control devices remove pollutants from the flue gases downstream of the unit. These controls are effective at removing PM, SO_2, and NOx. PM post-combustion controls include fabric filters, electrostatic precipitators (ESPs), and wet scrubbers. SO_2 post-combustion controls include flue gas desulfurization and dry sorbent injection.

ESPs use an electrical charge to separate the particles in the flue gas. The ESP particles in the flue gas are then attracted to an oppositely charged plate or tube and collected to a hopper by vibrating the collection surface. ESPs have been reported to achieve 99 percent $PM_{2.5}$ removal efficiency.

Fabric filters known as a baghouse trap particulates in the flue gas before they exit the stack. These cylindrical bags or flat envelope systems include a dust collection hopper and a cleaning mechanism for removal of the particulates. Fabric filters are not recommended for units that use oil exclusively. A baghouse downstream of an ESP provides high rates of $PM_{2.5}$ removal. Baghouses can capture up to 99.9 percent of total particulates.

Flue gas desulfurization typically uses lime or limestone as a sorbent to remove SO_2 from the exhaust gas. The two most common flue gas desulfurization scrubbers are wet and spray dry. Wet scrubbers have a reduction efficiency of greater than 90 percent and newer dry scrubbers are capable of achieving a reduction efficiency of near 90 percent.

Currently there are a few crude oil-fired or field gas-fired steam generators operated in crude oil production facilities in the District that are required by permit condition to operate SO_2 scrubbers or desulfurization equipment. Other permitted units firing on natural gas or back-up distillate oil are not required to operate $PM_{2.5}$ or SO_2 control devices. Control devices such as baghouses, electrostatic precipitators, and scrubbers are available, but they have not yet been demonstrated or achieved-in-practice for gaseous-fired or liquid-fired units.

Units firing on natural gas, propane, liquefied petroleum gas, or low sulfur diesel tend to emit very low levels of $PM_{2.5}$ and SO_2. AP-42 indicates that the uncontrolled total PM (condensable and filterable) is 0.007 pound per million Btu and uncontrolled SO_2 is 0.0006 pound per million Btu for boilers firing on natural gas.

V. COST EFFECTIVENESS ANALYSIS

District staff will conduct a cost effectiveness analysis of the proposed amendments to the rule later during the rule development process to address retrofit costs and replacement costs.

VI. SOCIOECONOMIC ANALYSIS

State law requires the District to analyze the socioeconomic impacts of any proposed rule or rule amendment that significantly affects air quality or strengthens an emission limitation. District staff will conduct the socioeconomic analysis later in the rule development process. The socioeconomic analysis will be used to further refine the rule amendments. The socioeconomic report will be published as part of the future staff

report, and will be presented to the public at a final rule workshop. The final socioeconomic report will be presented to the District Governing Board, at a public hearing for adopting amendments to the rule, in order to disclose any potential economic impacts.

VII. ENVIRONMENTAL IMPACTS

Pursuant to the California Environmental Quality Act (CEQA), District staff will investigate the likely environmental impacts of the proposed rule amendments later in the rule development process and recommend appropriate action to the District Governing Board.

VIII. RULE CONSISTENCY ANALYSIS

Pursuant to state Health and Safety Code, Section 40272.2, District staff will prepare a rule consistency analysis later in the rule development process.

IX. REFERENCES

1. San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan, April 30, 2007.

2. Final Draft Staff Report for Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3), September 18, 2003.

3. Federal Clean Air Act, Amended 1990.

4. San Joaquin Valley Unified Air Pollution Control District, Rules and Regulations.

5. Sheth, Atul and Tom Giel. “Understanding the PM-2.5 Problem.” Pollution Engineering On-line. March 2000.

6. STAPPA (State and Territorial Air Pollution Program Administrators), ALAPCO (Association of Local Air Pollution Control Officials). “Controlling Fine Particulate Matter Under the Clean Air Act: A Menu of Options”. March 2006

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

NOTICE OF PUBLIC WORKSHOP
ON PROPOSED RULES AND REGULATIONS

NOTICE IS HEREBY GIVEN that a public workshop will be held to present, discuss, and receive comments on the draft amendments to:

Rule 4307 (Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr)

The public workshop will be presented in-person and via video teleconferencing (VTC) at the following time and location:

October 16, 2007 (Tuesday)
1:30 PM
In-person workshop: Fresno
VTC: Bakersfield and Modesto

Fresno: VTC Room, SJVUAPCD Office, 1990 E. Gettysburg Ave.
Bakersfield: VTC Room, SJVUAPCD Office, 2700 M Street, Suite 275
Modesto: VTC Room, SJVUAPCD Office, 4800 Enterprise Way

In order to save resources, we request that you bring your own copy of the workshop documents when you attend the workshop. Copies of the documents can be downloaded from the District's website at:

www.valleyair.org/workshops/public_workshops_idx.htm

If you are unable to download the documents from the District's website, a paper copy can be obtained by calling (559) 230-6005 or faxing your request to (559) 230-6064.

You can also receive District news, workshop notices, and other information via e-mail by subscribing to one of the District's e-mail notification lists at:

www.valleyair.org/lists/list.htm

The e-mail notification lists are setup and maintained by the end user and not by District staff. Individuals may add or delete their names from these lists at anytime.

Written comments regarding the Draft Staff Report and Draft Rule should be addressed to Manuel Salinas at SJVUAPCD, 1990 East Gettysburg Ave., Fresno, CA 93726 and must be received by 5:00 pm on October 30, 2007. For additional information, contact Mr. Salinas by e-mail at manuel.salinas@valleyair.org or by phone at (559) 230-5800.

RULE 4307 BOILERS, STEAM GENERATORS, AND PROCESS HEATERS – 2.0 MMBtu/hr to 5.0 MMBtu/hr (Adopted December 15, 2005; Amended April 20, 2006; (Amended [date of rule amendment])

1.0 Purpose

The purpose of this rule is to limit emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) from boilers, steam generators, and process heaters.

2.0 Applicability

This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input of 2.0 million Btu per hour (MMBtu/hr) up to and including 5.0 MMBtu/hr.

3.0 Definitions

3.1 Air Pollution Control Officer (APCO): as defined in Rule 1020 (Definitions).

3.2 Air Resources Board (ARB): as defined in Rule 1020 (Definitions).

3.3 Annual Heat Input: the actual, total heat input of fuels burned by a unit in a calendar year, as determined from the higher heating value and cumulative annual usage of each fuel.

3.4 Boiler or Steam Generator: any external combustion equipment fired with any fuel used to produce hot water or steam.

3.5 British Thermal Unit (Btu): the amount of heat required to raise the temperature of one pound of water from 59°F to 60°F at one atmosphere.

3.6 Certified Unit or Certified Retrofit Control Technology: any unit, any control technology, or any burner and ancillary controls or blowers, that has been demonstrated to comply with the emissions limits of this rule and which has been approved by the APCO pursuant to Section 9.0 of this rule.

3.7 Dryer: any unit in which material is dried in direct contact with the products of combustion.

3.8 Gaseous Fuel: any fuel which is a gas at Standard Conditions.

3.9 Heat Input: the heat (hhv basis) released due to fuel combustion in a unit, not including the sensible heat of incoming combustion air and fuel.

3.10 Higher Heating Value (hhv): the total heat liberated per mass of fuel burned (Btu per pound), when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.

3.11 Humidifier: a device or system that uses an air stream heated by a direct contact combustion process in combination with a water spray to produce warm air of high humidity in order to maintain or increase the moisture content of the material being processed or conveyed by the air stream.

3.12 Liquid Fuel: any fuel which is a liquid at Standard Conditions.

3.13 NOx Emissions: the sum of oxides of nitrogen expressed as NO_2 in the flue gas.

3.14 NOx Exhaust Control: a device or technique used to treat a unit's exhaust combustion gas to reduce NOx emissions. Such a device or technique includes, but is not limited to, selective catalytic reduction or nonselective catalytic reduction.

3.15 Parts Per Million by Volume (ppmv): as defined in Rule 1020 (Definitions). —

3.16 Process Heater: any combustion equipment fired with liquid and/or gaseous fuel and which transfers heat from combustion gases to water or process streams. This definition excludes: kilns or ovens used for drying, baking, cooking, calcining, or vitrifying; and unfired waste heat recovery heaters used to recover sensible heat from the exhaust of combustion equipment.

3.17 Qualified Technician: a stationary source employee or any personnel contracted by a stationary source operator who has a documented training and a demonstrated experience performing tune-ups on a unit to the satisfaction of the APCO. The documentation of tune-up training and experience shall be made available to the APCO upon request.

3.18 Rated Heat Input (million Btu per hour): the heat input capacity specified on the nameplate of the unit. If the unit has been physically modified such that its maximum heat input differs from what is specified on the nameplate, the modified maximum heat input shall be considered as the rated heat input and made enforceable by Permit to Operate.

3.19 Re-ignition: the relighting of a unit after an unscheduled and unavoidable interruption or shut off of the fuel flow or electrical power, for a period of less than 30 minutes, due to reasons outside the control of the operator.

3.20 School: any public or private school used for the purpose of education and instruction of school pupils in Kindergarten through Grade 12, but does not include any private school in which education and instruction are primarily conducted in private homes.

3.21 Shutdown: The period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to a cold or ambient temperature as the fuel supply is turned off. A unit is considered in shutdown status when the fuel supply to the unit is turned off for a continuous period of at least 30 minutes.

3.22 Solid Fuel: any fuel which is a solid at Standard Conditions.

3.23 Standard Conditions: as defined in Rule 1020 (Definitions).

3.24 Start-up: the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure.

3.25 Stationary Source: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).

3.26 Unit: any boiler, steam generator or process heater as defined in this rule.

3.27 ~~US~~ EPA: United States Environmental Protection Agency

4.0 Exemptions

This rule shall not apply to:

4.1 Solid fuel fired units.

4.2 Dryers and glass melting furnaces.

4.3 Kilns, humidifiers, and smelters where the products of combustion come into direct contact with the material to be heated.

4.4 Unfired or fired waste heat recovery boilers that are used to recover or augment heat from the exhaust of combustion turbines or internal combustion engines.

4.5 Until June 30, 2015, ~~U~~units used at a school are exempt from the requirements of this rule. On and after July 1, 2015, such units shall comply with the NOx and CO limits of Section 5.1 in accordance with the compliance requirements and deadlines specified for Group 3 units in Section 7.1 Table 2 of this rule.

5.0 Requirements

All ppmv emission limits specified in this section are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen in accordance with Section 8.1.

5.1 NOx and CO Emission Limits

Except for units subject to Section 5.2, no unit shall be operated unless it is certified, according to Section 9.0, to comply with the emission limits specified in Table 1.

Table 1 NOx and CO limits

Type of Unit	NOx Limit	CO Limit (ppmv)
Gaseous Fuel-Fired Unit	30 ppmv or 0.036 lb/MMBtu	400
Liquid Fuel-Fired Unit	40 ppmv or 0.052 lb/MMBtu	400

5.2 Until June 30, 2015, the emission requirements of Section 5.1 do not apply for each existing natural draft unit operated in an oilfield or refinery; each glycol reboiler; or each unit limited to no more than 5.0 billion Btu per calendar year heat input pursuant to a Permit to Operate or Permit-Exempt Equipment Registration, the operator shall comply with Section 5.7.2 ~~5.4.2~~, Section 7.3, Section 7.4, and either Section 5.2.1, 5.2.2, or 5.2.3.

5.2.1 Tune the unit at least twice per calendar year, (from four to eight months apart) using a qualified technician in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown; or

5.2.2 Operate the unit in a manner that maintains exhaust oxygen concentrations at less than or equal to 3.00 percent by volume on a dry basis; or

5.2.3 Certify the unit according to Section 9.0 to comply with the applicable emission requirements of Section 5.1.

5.3 On and after July 1, 2015, the requirements of Section 5.1 shall not apply for each unit limited to no more than 1.8 billion Btu per calendar year heat input pursuant to a Permit to Operate or Permit-Exempt Equipment Registration, the operator shall comply with Section 5.7.2, Section 7.3, Section 7.4, and either Section 5.2.1, 5.2.2, or 5.2.3.

5.4 On and after July 1, 2015, for each existing natural draft unit in an oilfield or refinery; each glycol reboiler; each unit with a heat input greater than 1.8 billion Btu per calendar year, the operator shall comply with the emission requirements of Section 5.1. The operator shall comply with the compliance requirements and deadlines specified for Group 3 units in Section 7.1 Table 2 of this rule.

5.5 Particulate Matter 10 microns (PM10) and Sulfur Dioxide (SO_2) Emission Limits

5.5.1 On and after July 1, 2015, in order limit emissions of PM10 and SO_2, all units subject to Table 1 emission limits shall be fired exclusively on PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or combination of such gases, except as allowed in Section 5.5.2.

5.5.3 Liquid fuel shall be used only during PUC quality natural gas curtailment period provided it contains no more than 15 ppm sulfur as determined by the test method specified in Section 6.2.7 An operator shall comply with the recordkeeping requirement of Section 6.1.3. In lieu of testing for sulfur content of liquid fuel, an operator may demonstrate compliance with 15 ppm sulfur content by obtaining a copy of the fuel sulfur content specification data from fuel manufacturer or vendor.

5.6 ~~5.3~~ The applicable emission limits of Sections 5.1 and 5.2.2 shall not apply during start-up or shutdown provided an operator complies with the requirements specified below.

5.6.1 ~~5.3.1~~ For units not equipped with a NOx exhaust control, the duration of each start-up and each shut down shall not exceed one hour, except as provided in Section 5.6.4 ~~5.3.4~~.

5.6.2 ~~5.3.2~~ For units equipped with a NOx exhaust control, the duration of each start-up and each shut down shall not exceed two hours, except as provided in Section 5.6.4 ~~5.3.4~~.

5.6.3 ~~5.3.3~~ The emission control system shall be in operation and emissions shall be minimized insofar as technologically feasible during start-up or shutdown.

5.6.4 ~~5.3.4~~ Notwithstanding the requirements of Section 5.6.1 ~~5.3.1~~ or Section 5.6.2 ~~5.3.2~~, the APCO, ARB, and US EPA may approve a longer start-up or shutdown duration, if an operator submits an application for a Permit to Operate or Permit-Exempt Equipment Registration which provides a justification for the requested additional duration.

5.6.4.1 ~~5.3.4.1~~ The maximum allowable duration of start-up or shutdown will be determined by the APCO, ARB, and US EPA.

5.6.4.2 ~~5.3.4.2~~ At a minimum, a justification for increased start-up or shutdown duration shall include the following:

5.6.4.2.1 ~~5.3.4.2.1~~ A clear identification of the control technologies or strategies to be utilized; and

5.6.4.2.2 ~~5.3.4.2.2~~ A description of what physical conditions prevail during start-up or shutdown periods that prevent the controls from being effective; and

5.6.4.2.3 ~~5.3.4.2.3~~ A reasonably precise estimate as to when the physical conditions will have reached a state that allows for the effective control of emissions; and

5.6.4.2.4 ~~5.3.4.2.4~~ A detailed list of activities to be performed during start-up or shutdown and a reasonable explanation for the length of time needed to complete each activity; and

5.6.4.2.5 ~~5.3.4.2.5~~ A description of the material process flow rates and system operating parameters, etc., the operator plans to evaluate during the process optimization; and an explanation of how the activities and process flow affect the operation of the emissions control equipment; and

5.6.4.2.6 ~~5.3.4.2.6~~ Basis for the requested additional duration of start-up or shutdown.

5.6.5 ~~5.3.5~~ Permit to Operate (PTO) changes solely to include start-up or shutdown conditions may be exempt from Best Available Control Technology (BACT) and emission offset requirements if the PTO changes meet the requirements of Rule 2201 (New or Modified Stationary Source Review Rule) Section 4.2 (BACT Exemptions) and Rule 2201 Section 4.6 (Offset Exemptions).

5.7 ~~5.4~~ Monitoring Provisions

5.7.1 ~~5.4.1~~ For units subject to the emission limits of Section 5.1 the operator shall;

5.7.1.1 ~~5.4.1.1~~ Monitor, at least once a month, the operational characteristics recommended by the manufacturer and approved by the APCO; and

5.7.1.2 ~~5.4.1.2~~ Tune the unit at least twice per calendar year, (from four to eight months apart) using a qualified technician in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown. In lieu of tuning the unit, operators shall monitor the emissions with a portable NOx analyzer and adjust the unit's operating parameters accordingly to assure compliance with the emission limits of this rule.

5.7.2 ~~5.4.2~~ The operator of any unit limited to the annual heat input specified in Section 5.2 or Section 5.3 ~~no more than 5.0 billion Btu per calendar year heat input~~ shall install and maintain an operational non-resettable, totalizing mass or volumetric flow meter in each fuel line to each unit. Volumetric flow measurements shall be periodically compensated for temperature and pressure. A master meter, which measures fuel to all units in a group of similar units, may satisfy these requirements if approved by the APCO in writing. The cumulative annual fuel usage may be verified from utility service meters, purchase or tank fill records, or other acceptable methods, as approved by the APCO.

5.8 ~~5.5~~ Compliance Determination

5.8.1 ~~5.5.1~~ For the purposes of certification, the operator of any unit shall have the option of demonstrating compliance with either the applicable heat input emission limits (lb/MMBtu) or the concentration emission limits (ppmv) specified in Section 5.1. The emission limits selected to demonstrate compliance shall be specified in the Permit to Operate or Permit-Exempt Equipment Registration. The emission limit selected in Section 5.1 shall also be specified in the source test proposal pursuant to Rule 1081 (Source Sampling).

5.8.2 ~~5.5.2~~ All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate or Permit-Exempt Equipment Registration.

5.8.3 ~~5.5.3~~ No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0.

5.8.4 ~~5.5.4~~ Notwithstanding the requirements of Section 5.8.3 ~~5.5.3~~, for units with a cyclical firing period that routinely interrupts fuel flow as part of its normal operation, source testing may commence sooner than specified in Section 5.8.3 ~~5.5.3~~ and continue through its normal cyclical firing period.

5.8.5 ~~5.5.5~~ For emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit.

6.0 Administrative Requirements

6.1 Recordkeeping

The records required by Sections 6.1.1, ~~and~~ 6.1.2, and 6.1.3 shall be maintained, retained for five calendar years, and shall be made available to the APCO, ARB, and US EPA upon request. Failure to maintain records or information contained in the records that demonstrates noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

6.1.1 The operator of any unit limited to the annual heat input specified in Section 5.2 or Section 5.3 ~~no more than 5.0 billion Btu per calendar year heat input~~ shall record the amount of fuel use, at least once a month for each unit, or for a group of units as specified in Section 5.7.2 ~~5.4.2~~. On and after the compliance schedule specified in Section 7.0 Table 2, any unit that exceeds the annual heat input limit specified in Section 5.2 or Section 5.3, shall be brought into full compliance with this rule as specified in Section 7.3.

6.1.2 The operator of any unit subject to the applicable requirements of Sections 5.2.1, 5.7.1.1 ~~5.4.1.1~~, and 5.7.1.2 ~~5.4.1.2~~ shall maintain records to verify that tune-up and monitoring of the operational characteristics of the unit have been performed.

6.1.3 Operators who operates a unit on liquid fuel during PUC-quality natural gas curtailment period shall record the sulfur content of the fuel, amount of fuel used, and duration of the natural gas curtailment period.

6.2 Test Methods

The following test methods shall be used unless otherwise approved by the APCO, ARB, and ~~US~~ EPA.

6.2.1 Oxides of nitrogen (ppmv) – ~~US~~ EPA Method 7E, or ARB Method 100.

6.2.2 Carbon monoxide (ppmv) – ~~US~~ EPA Method 10, or ARB Method 100.

6.2.3 Stack gas oxygen – ~~US~~ EPA Method 3 or 3A, or ARB Method 100.

6.2.4 NOx Emission Rate (Heat Input Basis) – ~~US~~ EPA Method 19.

6.2.5 Stack gas velocities – ~~US~~ EPA Method 2.

6.2.6 Stack gas moisture content – ~~US~~ EPA Method 4.

6.2.7 Sulfur content of liquid fuel – American Society for Testing and Materials (ASTM) D 6428-99 or ASTM D 5453-99

6.3 Compliance Demonstration

6.3.1 The operator shall conduct an initial source test at the time of installation and/or modification for each non-certified unit or each non-certified retrofit control technology to demonstrate compliance with the applicable certification emission limits in Section 5.1. Units demonstrating

compliance are eligible for certification under the provisions of Section 9.0.

6.3.2 Source testing of a certified unit or certified retrofit control technology, as defined in Section 3.0, is not required provided the operator complies with the requirements of Sections 6.3.2.1 and 6.3.2.2.

6.3.2.1 Operate the unit within range of operating parameters specified in the APCO-approved certification document.

6.3.2.2 Operate and maintain the unit in accordance with the manufacturer's instructions and conditions specified in the APCO-approved certification document.

6.3.3 A unit or retrofit control technology that loses its certification status shall be source tested within 60 days after the date the certification status is lost to demonstrate compliance with the emission limits of this rule. The manufacturer or operator may request re-certification of a unit or retrofit control technology that lost its ~~exemption~~ certification status provided the provisions of Section 9.0 are met.

6.4 Equipment Registration Requirement

Except for units that require a Permit to Operate pursuant to Rule 2020 (Exemptions), the operator shall register with the District any unit subject to this rule no later than the applicable date shown in Table 2, in accordance with Rule 2250 (Permit-Exempt Equipment Registration).

7.0 Compliance Schedule

7.1 An operator with multiple units at a stationary source shall comply with this rule in accordance with the schedule specified in Table 2. An operator with only one unit at a stationary source shall comply with the schedule specified in Table 2, Group 2.

TABLE 2 - Compliance Schedule

Quantity of Units to be in Compliance at a Stationary Source	Authority to Construct	Permit-Exempt Equipment Registration	Full Compliance
Group 1: 50% or more of the total number of units subject to this rule on July 1, 2008, excluding Group 3	January 1, 2008	April 1, 2008	July 1, 2008
Group 2: 100% of the total number of units subject to this rule on July 1, 2009, excluding Group 3	January 1, 2009	April 1, 2009	July 1, 2009
Group 3: 100% of the total number of units located at a school, 100%of existing natural draft units operated in an oilfield or refinery, 100% of existing glycol reboilers, and 100% of units with heat input greater than 1.8 billion Btu per calendar year, subject to this rule on July 1, 2015	January 1, 2015	April 1, 2015	July 1, 2015

Units are considered to be subject to this rule if the rule is applicable to the units pursuant to Section 2.0 and the units are not exempt pursuant to Section 4.0.

7.2 As shown in Table 2, the column labeled:

7.2.1 "Authority to Construct" identifies the date by which the operator shall submit an Application for Authority to Construct for each unit subject to this rule and which is required to have a Permit to Operate (PTO) pursuant to Rule 2020 (Exemptions).

7.2.2 "Permit-Exempt Equipment Registration" identifies the date by which the owner or operator shall submit a complete Permit-Exempt Equipment Registration application for each unit subject to the registration requirements of Rule 2250 (Permit-Exempt Equipment Registration).

7.2.3 "Full Compliance" identifies the date by which the owner shall demonstrate that each unit is in compliance with this rule regardless of whether the unit requires a Permit to Operate or a Permit-Exempt Equipment Registration.

7.3 Any unit that becomes subject to the emission limits of this rule as a result of exceeding the annual heat input limit specified in Section 5.2 or Section 5.3, shall be in compliance with this rule on and after the date the annual heat input limit is exceeded.

7.4 On or before June 30, 2015, ~~W~~when an existing unit, that is subject to Section 5.2, is replaced, the replacement unit shall be certified, according to Section 9.0, to comply with the emission limits specified in Section 5.1, on and after the date of initial operation.

8.0 Calculations

8.1 All ppmv emission limits specified in Section 5.1 are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen as follows:

$$[ppm\,NOx]_{corrected} = \frac{17.95\%}{20.95\% - [\%O2]_{measured}}\ x\ [ppm\,NOx]_{measured}$$

$$[ppm\,CO]_{corrected} = \frac{17.95\%}{20.95\% - [\%O2]_{measured}}\ x\ [ppm\,CO]_{measured}$$

8.2 All pounds per million Btu NOx emission rates shall be calculated as pounds of nitrogen dioxide per million Btu of heat input (hhv).

9.0 Equipment Certification Requirements

9.1 To be considered for APCO certification, the manufacturer or operator shall comply with the following requirements:

9.1.1 Certification shall be based upon the emission source testing results of a specific unit, or a randomly selected unit of each model, or retrofit control technology.

9.1.2 A source testing protocol shall be submitted in accordance with the provisions of Rule 1081 (Source Sampling) for approval by the APCO prior to conducting the source test. The source testing protocol approved by the APCO shall be strictly adhered to during certification source testing.

9.1.3 Source testing shall be conducted over the range of operating parameters for which the unit(s) or retrofit control technology will be operated.

9.1.4 The source testing results shall demonstrate compliance with the emission limits of this rule for each model of unit(s), or retrofit control technology to be certified.

9.1.5 The source testing procedure and reports shall be prepared by an ARB-approved independent testing laboratory, and shall contain all the elements identified in the APCO-approved source testing protocol.

9.1.6 Source testing shall be conducted no more than 90 days prior to the date of submission of request for certification by the APCO.

9.2 The manufacturer or operator requesting certification shall submit to the APCO the following information:

9.2.1 Copies of the source testing results conducted pursuant to the requirements of Section 9.1, and other pertinent technical data to demonstrate compliance with the emission limits of this rule.

9.2.2 The applicant shall sign and date the statement attesting to the accuracy of all information in the statement.

9.2.3 Name and address of the unit manufacturer or operator, brand name of the unit or retrofit control technology, model number, rated heat input as it appears in the unit nameplate, and description of model of unit(s), or retrofit control technology being certified.

9.3 The APCO will only approve an application for certification to the extent that the requirements of Sections 9.1 through 9.2 are met and the source testing results demonstrate that the emission limits of this rule are met.

9.4 The APCO-approved certification is valid only for the range of operating parameters for which certification is issued.

9.5 A certified unit or a certified retrofit control technology that is operated outside the APCO-certified range of operating parameters shall lose its certification status._A unit or retrofit control technology that loses its certification status shall comply with the requirements of Section 6.3.3.

9.6 The APCO shall publish a list of certified units or certified retrofit control technology after the certification process is completed.

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

DRAFT STAFF REPORT

October 16, 2007

Amendments to Rule 4307
(Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr)

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I. SUMMARY

A. Reasons for Rule Development and Implementation

The San Joaquin Valley Air Basin (SJVAB) is a continuous inter-mountain valley comprised of eight counties in the southern portion of the San Joaquin Valley of California: Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare, and the Valley portion of Kern. The SJVAB is approximately 250 miles long, averages 80 miles wide, and is partially enclosed by the Coast Mountain range on the west, the Tehachapi Mountains on the south, and the Sierra Nevada range on the east. These surrounding mountains trap pollution. Low wind speeds combined with low-lying inversion layers in the winter create a climate conducive to the formation of high particulate matter (PM) concentrations. The region's hot, dry summers are conducive to ozone formation.

The SJVAB is currently designated as nonattainment for the national ambient air quality standard (NAAQS) for particulate matter 2.5 microns in diameter or less (PM2.5) and serious nonattainment for the eight-hour ozone NAAQS. Prior to the United States Environmental Protection Agency's (EPA's) implementation of the eight-hour ozone standard, the SJVAB was also classified as an extreme nonattainment area for the one-hour ozone NAAQS. Although EPA revoked the one-hour ozone NAAQS, the San Joaquin Valley Air Pollution Control District (District) is still required to meet certain requirements mandated by the federal Clean Air Act related to the extreme designation.

In addition to being classified as nonattainment of federal air standards, SJVAB is classified as severe nonattainment for the California ozone air quality standard and nonattainment for the California air quality standard for particulate matter ten microns in diameter or smaller (PM10).

Since amending Rule 4307 is a control measure in the District's 2007 Eight-Hour Ozone Plan, it is subject to Code of Federal Regulations (CFR), Clean Air Act (CAA), and California Health and Safety Code (CH&SC) requirements. This rulemaking project is intended to satisfy the attainment goals of the District's 2007 Eight-Hour Ozone Plan. The proposed amendments to Rule 4307 (Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr) will seek to obtain as much reduction of oxides of nitrogen (NO_x) from small boilers, steam generators, and process heaters as expeditiously practicable, technologically feasible, and economically reasonable, as determined by the District's Governing Board. Furthermore, the rule is intended to satisfy the requirements identified in Table 1 below.

Table 1: Ozone Plan Commitments

Subject	Reference	Requirement
Timeline	CAA Section 172(c)(1)	Ozone attainment plans shall implement control measures as expeditiously as practicable, and provide for attainment.
RACT	CAA Sections 182(b)(2) and 182(f)	Ozone attainment plans shall assure that reasonable available control technology (RACT) for NOx and volatile organic compounds (VOC) is in use at sources and on source categories at or above the RACT threshold.
BARCT	CH&SC 40919(a)(3)	Ozone attainment plans should provide for best available retrofit technology (BARCT) for existing permitted sources.
All Feasible Controls	CH&SC 40914(a)(2)	Ozone attainment plans should include "all feasible control measures."
Deadline	District 2007 Eight-Hour Ozone Plan	Rule adoption by the 3rd quarter of 2008.
Reductions	District 2007 Eight-Hour Ozone Plan	The plan commits to 0.4 tons per day of NOx reductions.

Under EPA's "New Source Review" (NSR) program, if a company is planning to build a new plant or modify an existing plant such that air pollution emissions will increase by a

certain amount, then the company must obtain an NSR permit. The NSR permit is a construction permit which requires the company to minimize air pollution emissions by changing the process to prevent air pollution and/or installing air pollution control equipment. The terms "RACT," "BACT," and "LAER" are acronyms for different program requirements under the NSR program. EPA defines RACT as “the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.” RACT is required on existing sources in non-attainment areas. Best Available Control Technology (BACT), is required on major new or modified sources in attainment areas. Lowest Achievable Emission Rate (LAER) is required on major new or modified sources in non-attainment areas. BACT and LAER (and sometimes RACT) are determined on a case-by-case basis, usually by State or local permitting agencies. For this rule project, District staff will focus on RACT limits, as defined by EPA’s NSR rule, and BARCT limits as defined by the CH&SC.

B. Description of the Project

District staff would amend Rule 4307 to implement an emission control measure (S-COM-2) in the District’s 2007 Eight-Hour Ozone Plan. The control measure indicates that additional NOx emissions reduction could be achieved by providing incentives for replacement and retrofit of school boilers, steam generators and process heaters (units) which are currently exempt by existing Rule 4307. Also, the existing annual heat input threshold of 5 billion Btu per year would be lowered to 1.8 billion Btu per year. Additionally, units with a heat input greater than 1.8 billion Btu per calendar year, natural draft units in an oilfield or refinery, and glycol reboilers would be required to comply with the emission requirements of Section 5.1 in order to gain additional NOx emission reductions. As guidelines for developing the proposed changes to Rule 4307, District staff studied rules from other air districts within and outside of California.

The District’s Governing Board adopted Rule 4307 (Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr) on December 15, 2005. The project proposed to reduce emissions of nitrogen oxides (NOx) and carbon monoxide (CO) pursuant to the District’s ozone and particulate matter attainment (PM10) strategies. Facilities with units subject to this control measure represented a wide range of industries, including but not limited to medical facilities, educational institutions, office buildings, prisons, military facilities, hotels, and industrial facilities.

In order to alleviate significant adverse economic impacts on public and private schools (Kindergarten through Grade 12) in the San Joaquin Valley Rule 4307 provided an exemption for units located at schools. In the Final Draft Staff Report, December 15, 2005, staff stated that as a separate control strategy in the future, the District may seek available funding to assist schools in replacing or retrofitting existing units and achieve additional emissions reduction from this source category. As stated above, Rule 4307 would be amended in this current project by removing the exemption to gain the emission reductions associated with units that are used at schools.

Currently, there are no current programs that would provide funding for the replacement of these units. The District has identified the following possible sources of future funding to replace/retrofit school boilers, steam generators, and process heaters:

- Community Clean Air Fund, funded by donations. If funding becomes available the District will assist in the coordination of distributing funds for the replacement of school units.

- Fees generated by District Rule 9510 (Indirect Source Review Program). The purpose of the District's ISR Program is to reduce emissions from new development projects. The District anticipates that the ISR Program will generate funds for future emission reduction projects including the replacement of school boilers, steam generators, and process heaters.

- Rule 4694 (Wine Fermentation and Storage Tanks). Rule 4694 contains three options to comply with the emissions control and emissions reduction requirements of the rule. One of the options allows operators could to the make monetary payments to the District Air Quality Impact Mitigation Fund (AQIMF). The amount of payment is calculated based on the amount of reductions required by the rule for a given facility's fermentation and storage emissions. The monies paid by operators into the AQIMF may then be used by the District to obtain equivalent emissions reduction from stationary, mobile, or area sources. If AQMIF funds become available, the District could use the monies to pay for the replacement/retrofit of school units.

PM2.5 and SO_2 Provisions

The SJVAB is currently designated as nonattainment for the NAAQS for particulate matter with aerodynamic diameter of 2.5 micrometers or less (PM2.5). As such, the District is required to submit an attainment plan not unlike the 2007 Ozone Plan. The District's PM2.5 attainment plan is due to EPA by June 2008. District staff, in anticipation of PM2.5 control measures, will research the feasibility of including SO_2 and PM control requirements in this rule project. While SO_2 is not a precursor to ozone formation in the SJVAB, SO_2 is strongly implicated in atmospheric particle formation (See Reference 7).

Currently, there are no units in the nation or elsewhere that operate with a PM or SO_2 control devices for gaseous-fired or liquid-fired small boilers, steam generators and process heaters. According AP 42 (Compilation of Air Pollutant Emission Factors), "control of PM emissions from residential and commercial units is accomplished by improving burner servicing and improving oil atomization and combustion aerodynamics. Optimization of combustion aerodynamics using a flame retention device, swirl, and/or recirculation is considered effective toward achieving the goals of low PM emissions, low NOx emissions, and high thermal efficiency. Although control devices such as mechanical collectors, fabric filtration (baghouses), electrostatic

precipitator, and scrubbers are available for control of PM and/or SO_2 , none of these controls been demonstrated or achieved-in-practice for small units. Another potential challenge, is small units subject to Rule 4307 are usually located inside the buildings or structures with limited space to allow installation of additional emission control devices.

Almost all of the small units subject to Rule 4307 are fired on gaseous fuels (PUC quality natural gas, propane, liquefied petroleum gas, or combination of these gases). AP-42 indicates that for units firing on natural gas the uncontrolled PM (condensable and filterable) is 0.007 pound per million Btu and uncontrolled SO_2 is 0.0006 pound per million Btu. For distillate oil fuel, the PM emission is about 0.07 pound per million Btu, and SO_2 is about 0.5 pound per million Btu. It is expected that requiring operators of small units firing on PUC quality natural gas to install PM and SO_2 control devices would not be economically or technologically feasible. However, in order to assure that PM and SO_2 emissions are minimized to the extent it is economically feasible, staff is proposing all units be fired exclusively on PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or combination of such gases. Liquid fuel should be used only during PUC quality natural gas curtailment period provided it contains no more than 15 ppmw sulfur.

C. Rule Development Process

The District's 2007 Eight-Hour Ozone Plan identified Rule 4307 as control measure S-COM-2 which would be implemented through the rule development process. As part of the rule development process, District staff will conduct public workshops to present and discuss proposed amendments to Rule 4307. The series of workshops will begin in the fourth quarter of 2007.

At the workshops, District staff will present the objectives of the proposed rulemaking project and provide draft amendments. District staff will solicit information from affected source operators, consultants, vendors and manufacturers of control technologies, and trade associations on the technological feasibility and compliance cost information that would be useful in developing amendments to Rule 4307. The comments received from the public, affected sources, interested parties, California Air Resources Board (ARB), and EPA, during the public workshop process will be incorporated into the draft rule as appropriate.

Pursuant to state law, the District is required to perform a socioeconomic impact analysis prior to adoption, amendment, or repeal of a rule that has significant air quality benefits or that will strengthen emission limitations. As part of the District socioeconomic analysis process, District staff will request volunteers from affected stakeholders and interested parties to participate as members of the Socioeconomic Focus Group. District staff will convene a meeting of the Focus Group at the time of the second workshop to assist District staff in gathering information on regulatory compliance costs and business impacts resulting from compliance with the proposed amendments. The result of the socioeconomic analysis will be published in a report and

presented along with the proposed rule amendments to the public and interested parties during the final workshop.

The proposed rule, final draft staff report with appendices, and final draft socioeconomic analysis report will be published and mailed to affected sources and interested parties prior to a public hearing to consider the adoption of proposed amendments to Rule 4307 by the District Governing Board. The public hearing is tentatively scheduled to take place in the second quarter of 2008.

II. CURRENT AND PROPOSED REGULATIONS

A. Existing Rule 4307

Rule 4307 was adopted on December 15, 2005 and amended April 20, 2006. The purpose of Rule 4307 is to limit NOx and CO emissions from boilers, steam generators, and process heaters. The rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, and process heater with a rated heat input of 2.0 million Btu/hr up to and including 5.0 million Btu/hr.

The current rule does not apply to solid fuel fired units, dryers, glass melting furnaces, kilns, humidifiers and smelters where the products of combustion come into direct contact with the material to be heated, unfired or fired waste heat recovery boilers that are used to recover or augment heat from the exhaust of combustion turbines or internal combustion engines, and units used at a school.

Units subject to Rule 4307 are to be certified that they comply with the NOx and CO emission limits specified in the rule. For gaseous fuel-fired units the NOx limit is 30 ppmv or 0.036 lb/MMBtu and 400 ppmv for CO. For liquid fuel-fired units the NOx limit is 40 ppmv or 0.052 lb/MMBtu and 400 ppmv for CO. Natural draft units operated in an oilfield or refinery, glycol reboilers, or low-use units (limited by Permit to Operate or Permit-Exempt Equipment Registration to operate at no more than 5.0 billion Btu per calendar year heat input) are not required to meet the specified emission limits but operators of such units must either tune the unit in accordance with the rule, operate the unit in a manner that maintains exhaust oxygen concentrations at less than or equal to 3.0 percent by volume on a dry basis, or certify the unit in accordance with the rule to comply with the applicable emission requirements. Rule 4307 also contains provisions for equipment certification requirements, monitoring and testing, compliance determination, and recordkeeping requirements.

B. Summary of Draft Amendments To Rule 4307

Section 4.0 – Exemptions

In Section 4.5, the exemption language pertaining to “units used at a school” would be deleted thereby making such school units subject to the emission limits of the rule. The

exemption will be in place until June 30, 2015. On and after July 1, 2015 school units are to comply with the NOx and CO limits of Section 5.1

Section 5.0 – Requirements

New Section 5.3 will stipulate the new "Low-use Units" threshold that would change from no more than 5.0 billion Btu per calendar year heat input to no more than 1.8 billion Btu per calendar year heat input.

New Section 5.4 will stipulate that on and after July 1, 2015 each natural draft unit in an oilfield or refinery, each glycol reboiler, and each unit with a heat input greater than 1.8 billion Btu per calendar year shall comply with the emission requirements of Section 5.1

Proposing that the natural draft units, glycol reboilers, and units with a heat input greater than 1.8 billion Btu per calendar year would make Rule 4307 consistent with other California air district's rules and considered to be an All Feasible Control Measure pursuant to the state Health and Safety Code.

New Section 5.5 would establish the requirements to limit emissions of PM10 and SO_2. Units would be fired only exclusively on PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or combination of such gases. Liquid fuel use would be allowed only during periods of PUC natural gas curtailment.

Section 6.0 – Administrative Requirements

The word "exemption" would be changed to "certification" in the last sentence of Section 6.3.3. This is a non-significant change to address a typographical error during the original adoption of Rule 4307.

Section 7.0 – Compliance Schedule

Group 3 would be added, to Table 2 – Compliance Schedule, to specify the full compliance deadline for units located at a school, natural draft units operated in an oilfield or refinery, glycol reboilers, and units with a heat input greater than 1.8 billion Btu per calendar year. These units are required to be in full compliance by July 1, 2015.

III. CURRENT EMISSIONS AND EMISSIONS REDUCTION

Based on information available at the time staff identified approximately 1,179 total units subject to Rule 4307 upon adoption in 2005. The District's PM10 Plan estimated the 2006 baseline NOx emissions to be 8.6 tons per day from medium boilers, steam generators, and process heaters. District staff estimated the emissions reduction would be about 4.9 tons of NOx per day. This was 56.7% of the PM10 Plan uncontrolled NOx emissions baseline of 8.6 tons per day.

School Boilers
Preliminary assessment indicates at least 380 school boilers in the District with estimated uncontrolled NOx emissions of 0.8 tons per day.

Low-use Units
Based on information submitted to the District staff estimated that approximately 101 units qualified for the 5.0 billion Btu per calendar year fuel usage limit. Emissions from the low use units are approximately 0.28 tons per day.

Oilfield and Refinery Natural Draft Units
Based on the District permits database 27 units were identified. Their uncontrolled NOx emissions were estimated as 0.083 tons per day.

Glycol Reboilers
Based on the District permits database 8 units were identified. Their uncontrolled NOx emissions were estimated as 0.031 tons per day.

Rule 4307 requires registration of units pursuant to District Rule 2250 (Permit-Exempt Equipment Registration). The registration deadline is April 1, 2008 for 50% of units subject to the rule at a stationary source and April 1, 2009 for 100% of units subject to the rule at a stationary source. When registration is complete and the total number of medium sized units has been determined, the District will calculate the emissions and then update the emissions inventory for this source category.

IV. NOx CONTROL TECHNOLOGIES

The two primary methods of controlling NOx emissions from boilers, steam generators, and process heaters are either to change the combustion parameters (i.e., combustion modification) to reduce NOx formation or to treat the NOx formed before it is emitted into the atmosphere (i.e., exhaust gas treatment).

Combustion Modification
Combustion modification systems are designed to reduce thermal NOx formation by changing the flame characteristics to reduce peak flame temperature. Combustion controls include low excess air operation, staged combustion, overfire air ports, biased firing, and placing selected burners out-of-service.

Combustion modification is also achieved by different burner designs such as Low NOx and Ultra Low NOx burners. Some of the design principles used in Ultra low NOx and Low NOx burner include staged air burners, staged fuel burners, pre-mix burners, internal recirculation, and radiant burners.

A combustion control system may be used by itself or in combination with Flue Gas Recirculation (FGR). FGR recycles a portion of the exhaust stream back into the burner

windbox, mixing low oxygen air with combustion air prior to entering the combustion chamber. This technique reduces thermal NOx formation by reducing the peak temperature and by reducing oxygen in the combustion zone.

Exhaust Gas Treatment

Exhaust Gas Treatment (EGT) is another way to reduce NOx. NOx is reduced to molecular nitrogen by adding flue gas treatment systems located after the boiler firebox. EGT includes Selective Catalytic Reduction (SCR) and Selective Noncatalytic Reduction (SNCR). EGT operate at a certain temperature range to effectively reduce NOx in the exhaust gas by injecting either urea or ammonia into the post-combustion zone of the boiler.

V. COST EFFECTIVENESS ANALYSIS

Based on information previously provided by vendors and manufacturers of NOx control devices, and the fact that the limit in Rule 4307 is already being achieved by similar units, the technology that would likely be used is a low NOx burner system either with or without FGR. There are natural draft type units at schools, oilfields, and refineries that are not likely candidates for retrofit. These units would require replacement. District staff will conduct a cost effectiveness analysis of the proposed amendments to the rule later during the rule development process to address retrofit costs, replacement costs, and possibly costs for replacing with electric heaters.

VI. SOCIOECONOMIC ANALYSIS

State law requires the District to analyze the socioeconomic impacts of any proposed rule or rule amendment that significantly affects air quality or strengthens an emission limitation. District staff will conduct the socioeconomic analysis later in the rule development process. The socioeconomic analysis will be used to further refine the rule amendments. The socioeconomic report will be published as part of the future staff report, and will be presented to the public at a final rule workshop. The final socioeconomic report will be presented to the District Governing Board, at a public hearing for adopting amendments to the rule, in order to disclose any potential economic impacts.

VII. ENVIRONMENTAL IMPACTS

Pursuant to the California Environmental Quality Act (CEQA), District staff will investigate the likely environmental impacts of the proposed rule amendments later in the rule development process and recommend appropriate action to the District Governing Board.

VIII. RULE CONSISTENCY ANALYSIS

Pursuant to state Health and Safety Code, Section 40272.2, District staff will prepare a rule consistency analysis later in the rule development process.

IX. REFERENCES

1. San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan, April 30, 2007.

2. Final Draft Staff Report for Rule 4307 (Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr), December 15, 2005.
3. Federal Clean Air Act, Amended 1990.

4. San Joaquin Valley Unified Air Pollution Control District, Rules and Regulations.

5. South Coast AQMD Rule 1146.1.

6. Ventura County APCD Rule 74.15.1.

7. Sheth, Atul and Tom Giel. “Understanding the PM-2.5 Problem.” Pollution Engineering On-line. March 2000.

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

NOTICE OF PUBLIC WORKSHOP
ON PROPOSED RULES AND REGULATIONS

NOTICE IS HEREBY GIVEN that a public workshop will be held to present, discuss, and receive comments on the draft amendments to:

Rule 4354 (Glass Melting Furnaces)

The public workshop will be presented in-person and via video teleconferencing (VTC) at the following time and location:

October 8, 2007 (Monday)
1:30 PM
In-person workshop: Fresno
VTC: Bakersfield and Modesto

Fresno: VTC Room, SJVUAPCD Office, 1990 E. Gettysburg Ave.
Bakersfield: VTC Room, SJVUAPCD Office, 2700 M Street, Suite 275
Modesto: VTC Room, SJVUAPCD Office, 4800 Enterprise Way

In order to save resources, we request that you bring your own copy of the workshop documents when you attend the workshop. Copies of the rule will be made available by September 20, 2007 and can be downloaded from the District's website at:

www.valleyair.org/workshops/public_workshops_idx.htm

If you are unable to download the documents from the District's website, a paper copy can be obtained by calling (559) 230-6005 or faxing your request to (559) 230-6064.

You can also receive District news, workshop notices, and other information via e-mail by subscribing to one of the District's e-mail notification lists at:

www.valleyair.org/lists/list.htm

The e-mail notification lists are setup and maintained by the end user and not by District staff. Individuals may add or delete their names from these lists at anytime.

Written comments regarding the draft amendments to Rule 4354 or the draft staff report should be addressed to Sandra Lowe-Leseth at SJVUAPCD, 1990 East Gettysburg Ave., Fresno, CA 93726 and must be received by 5:00 pm on October 25, 2007. For additional information, contact Ms. Lowe-Leseth by e-mail at sandra.loweleseth@valleyair.org or by phone at (559) 230-5800.

RULE 4354 GLASS MELTING FURNACES (Adopted September 14, 1994; Amended April 16, 1998; Amended February 21, 2002, Amended August 17, 2006, Amended [*rule adoption date*])

1.0 Purpose

The purpose of this rule is to limit emissions of nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOC), ~~and~~ oxides of sulfur (SOx), and particulate matter (PM) from glass melting furnaces.

2.0 Applicability

The provisions of this rule shall apply to any glass-melting furnace.

3.0 Definitions

3.1 Air-fuel Firing: operation of a glass melting furnace where greater than 50% of the oxidant for the fuel comes from ambient air. 100% air-fuel fired means operation of a glass melting furnace where the oxidant is exclusively ambient air.

3.2 APCO: as defined in Rule 1020 (Definitions).

3.3 ARB: California Air Resources Board.

3.4 Block 24-hour Average: the arithmetic average of the hourly NOx emission rates of a furnace as measured over 24 one-hour periods, daily, from 12:00 AM to 11:59 PM, excluding periods of system calibration.

3.5 Carbon Monoxide (CO): emissions of carbon monoxide, a colorless and odorless gas resulting from incomplete combustion of fuel.

3.6 Commercial Propane: a gaseous fuel composed primarily of propane.

3.7 Condensable PM10: the PM10 collected in the impingers of the applicable reference test method listed in Section 6.6.

~~3.7~~ 3.8 Container Glass: any glass manufactured by pressing, blowing in molds, drawing, rolling, or casting which is used as a container.

~~3.8~~ 3.9 EPA: United States Environmental Protection Agency.

~~3.9~~ 3.10 Fiberglass: material consisting of fine filaments of glass that are combined in yarn and woven or spun into fabrics, or that are used as reinforcement in other materials or in masses as thermal or as acoustical insulating products for the construction industry.

3.11 Filterable PM10: the PM10 collected on the cyclone exit, probe, and filter(s) of the applicable reference test method(s) listed in Section 6.6.

~~3.10~~ 3.12 Flat glass: any glass produced by the float, sheet, rolled, or plate glass process which is used in windows, windshields, tabletops, or similar products.

~~3.11~~ 3.13 Furnace Battery: two or more glass melting furnaces that exhaust to a common stack.

~~3.12~~ 3.14 Furnace Rebuild: a cold tank repair which is commenced after the end of a furnace campaign period or expected life cycle of a furnace. For the purpose of compliance deadline in Section 7.1, the effective date of a furnace rebuild is the date of the start of the furnace shutdown.

~~3.13~~ 3.15 Idling: the operation of a furnace at less than 25 percent of the permitted glass production capacity or fuel use capacity as stated on the Permit to Operate (PTO).

~~3.14~~ 3.16 Liquefied Petroleum Gas (LPG): LPG is a general term for the following gases: commercial propane, commercial butane, propane-butane (PB) mixtures, and special duty propane, although some people consider commercial propane separate from LPG.

~~3.15~~ 3.17 Multiple Furnaces: two or more glass melting furnaces at a single facility that do not exhaust to a common stack.

~~3.16~~ 3.18 Normal Business Hours: Monday through Friday, 8:00 am to 5:00 pm.

~~3.17~~ 3.19 Oxides of Nitrogen (NOx): the sum of oxides of nitrogen in the flue gas, collectively expressed as nitrogen dioxide (NO_2).

~~3.18~~ 3.20 Oxides of Sulfur (SOx): the sum of compounds containing sulfur and oxygen, such as sulfur dioxide (SO_2) and sulfur trioxide (SO_3).

~~3.19~~ 3.21 Oxygen-Assisted Combustion: operation of a glass melting furnace where the oxidant is greater than the oxygen content in ambient air or greater than 20.9 percent oxygen.

~~3.20~~ 3.22 Oxy-fuel Fired: operation of a glass melting furnace where greater than 50% of the oxidant for the fuel is provided from enriched oxygen streams.

~~3.21~~ 3.23 Parts Per Million by Volume (ppmv): the ratio of the number of gas molecules of a given species or group of species, to the number of millions of a total gas molecules.

~~3.22~~ 3.23 Parts Per Million by Weight (ppm): the ratio of the weight of the given species or group of species, to the weight of total mixture and the ratio multiplied by one million.

~~3.23~~ 3.24 Permitted Glass Production Capacity: the maximum pull rate as stated in the Permit to Operate (PTO).

3.25 PM10: as defined in Rule 1020 (Definitions).

~~3.24~~ 3.26 Potential to Emit: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).

~~3.25~~ 3.27 Primary Furnace Combustion System: the burners in a furnace that are used during production of glass.

~~3.26~~ 3.28 PTO: a Permit To Operate issued by the District.

~~3.27~~ 3.29 PUC-quality Natural Gas: a gaseous fuel that meets the requirements specified in California Public Utilities Commission (PUC) General Order 58-A. PUC-quality natural gas also means that the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet and no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet.

~~3.28~~ 3.30 Pull Rate: the amount of glass coming out of a glass melting furnace, expressed in short tons per day.

~~3.29~~ 3.31 Rolling 30-day Average: the arithmetic average of the daily emission rates of a furnace over a contiguous 30-day period, excluding periods of system calibration.

~~3.30~~ 3.32 Shutdown: the period of time during which a glass-melting furnace is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to a cold or ambient temperature as the fuel supply is turned off.

~~3.31~~ 3.33 Start-up: the period of time, after initial construction or a furnace rebuild, during which a glass melting furnace is heated to operating temperature by the primary furnace combustion system, and systems and instrumentation are brought to stabilization.

~~3.32~~ 3.34 Stationary Source: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).

~~3.33~~ 3.35 Volatile Organic Compound (VOC): as defined in Rule 1020 (Definitions).

4.0 Exemptions

4.1 Except for Section ~~6.8~~ 6.9, the provisions of this rule shall not apply to electric glass melting furnaces where all the heat is supplied by an electric current from electrodes submerged in the molten glass, except that heat may be supplied by other fuels for start-up when the furnace contains no molten glass.

4.2 Except for Section ~~6.8~~ 6.9, the provisions of this rule shall not apply to any glass-melting furnace that is part of a stationary source with a total potential to emit, for all processes, less than ten (10.0) tons per year of NOx and less than ten (10.0) tons per year of VOC.

4.3 The emission limits in Section 5.1 Table 1 shall not apply during periods of start-up, shutdown, or idling, provided the operator complies with the applicable requirements of Sections ~~5.3~~, 5.4, 5.5, 5.6, and ~~6.7~~ 6.8.

5.0 Requirements

5.1 NOx, CO, and VOC Emission Limits

Except as specified in Section 4.3, the operator of any glass melting furnace shall not operate a furnace in such a manner that results in NOx, CO, or VOC-emissions exceeding the limits in Table 1. ~~The deadlines to comply with the emission limits are specified in Section 7.0.~~

~~Table 1 NOx, CO, and VOC Emission Limits~~

~~Type of Furnace~~	~~Combustion Type~~	~~Tier 1 Emission Limits~~	~~Tier 2 Emission Limits~~		
		~~NOx~~	~~NOx~~	~~CO~~	~~VOC~~
~~Container Glass or Fiberglass~~	~~100% Air-Fuel Fired~~	~~5.5 lb/ton of glass pulled~~	~~4.0 lb/ton of glass pulled on a block 24 hour average~~	~~300 ppmv~~	~~20 ppmv~~
	~~Oxygen-Assisted Combustion~~	~~5.5 lb/ton of glass pulled~~	~~4.0 lb/ton of glass pulled on a block 24 hour average~~	~~1.0 lb / ton of glass pulled~~	~~0.25 lb / ton of glass pulled~~
~~Flat Glass~~	~~100% Air-Fuel Fired~~	~~See Section 5.7~~	~~9.2 lb/ton of glass pulled on a block 24 hour average and 7.0 lb/ton of glass pulled on a rolling 30-day average~~	~~300 ppmv~~	~~20 ppmv~~

	~~Oxygen-Assisted Combustion~~	~~See Section 5.7~~	~~9.2 lb/ton of glass pulled on a block 24 hour average and 7.0 lb/ton of glass pulled on a rolling 30-day average~~	~~0.9 lb / ton of glass pulled~~	~~0.1 lb / ton of glass pulled~~

Table 1 - NOx, CO, and VOC Emission Limits

NOx Emission Limits in pounds NOx per ton glass produced			
Type of Glass Produced	Firing Technology	Tier 2 NOx Limit Effective through December 31, 2010	Tier 3 NOx Limit Effective on and after January 1, 2011
Container or Fiberglass	All firing technologies	4.0 [A]	1.3 [A]
Flat	All firing technologies	9.2 [A] 7.0 [B]	3.7 [A] 3.2 [B]
CO and VOC Limits – Three hour averaging period (ppmv limits are referenced at 8% O_2 and dry stack conditions)			
Type of Glass Produced	Firing Technology	CO Limit	VOC Limit
Container or Fiberglass	100% air fired	300 ppmv	20 ppmv
	Oxygen assisted or Oxy-fuel	1.0 lb/ton glass produced	0.25 lb/ton glass produced
Flat	100% air fired	300 ppmv	20 ppmv
	Oxygen assisted or Oxy-fuel	0.9 lb/ton glass produced	0.1 lb/ton glass produced

[A] Block 24-hour average
[B] Rolling 30-day average

5.2 SOx Emission Limits

5.2.1 In order to limit SOx emissions, all glass melting furnaces subject to Table 1 emission limits shall fire on PUC-quality natural gas, commercial propane, or LPG on and after March 31, 2008. Liquid fuel may be used as backup fuel or standby fuel provided the liquid fuel contains no more than 15 ppm of sulfur and the furnace exhaust is controlled by a SOx emission control system with control system efficiency of 50% by weight or greater.

5.2.2 In addition to the requirements of Section 5.2.1, each furnace shall meet the appropriate SOx emission limit from Table 2.

Table 2 – SOx Emission Limits

SOx Emission Limits in pounds SOx per ton glass produced		
Type of Glass Produced	Firing Technology	Effective on and after January 1, 2011
Container or Fiberglass	All technologies	0.8 [A]
Flat Glass	100% air fired	1.7 [A] 1.2 [B]
	All other technologies	0.6 [A]

[A] Block 24-hour average
[B] Rolling 30-day average

5.3 PM10 Emission Limit

Effective on and after January 1, 2011, each furnace shall not emit more than the applicable total PM10 emission limit from Table 3, where total PM10 includes both filterable PM10 and condensable PM10.

Table 3 – PM10 Emission Limits

PM10 Limits in pounds total PM10 per ton glass produced		
Type of Glass Produced	Firing Technology	Effective on and after January 1, 2011
Container or Fiberglass	All technologies	0.45
Flat	All technologies	0.70

~~5.3~~ 5.4 Start-up Requirements

~~5.3.1~~ 5.4.1 The operator shall submit a request for a start-up exemption to the APCO, ARB, and EPA in conjunction with or in advance of an application for Authority to Construct (ATC) associated with a furnace rebuild.

~~5.3.2~~ 5.4.2 The operator shall submit to the APCO, ARB, and EPA any information deemed necessary by the APCO, ARB, or EPA to determine the appropriate length of start-up exemption. This information shall include, but is not limited to:

~~5.3.2.1~~ 5.4.2.1 A detailed list of activities to be performed during start-up, and a reasonable explanation for the length of time needed to complete each activity, and

~~5.3.2.2~~ 5.4.2.2 A description of the material process flow rates, system operating parameters, etc., that the operator plans to evaluate during the process optimization,

~~5.3.2.3~~ 5.4.2.3 Clearly identified control technologies or strategies to be utilized,

~~5.3.2.4~~ 5.4.2.4 Explicit description of what physical conditions prevail during start-up periods that prevent the controls from being effective, and

~~5.3.2.5~~ 5.4.2.5 Reasonably precise estimate as to when physical conditions will have reached a state that allows for the effective control of emissions.

~~5.3.3~~ 5.4.3 Start up exemptions shall begin upon activation of the primary combustion system.

~~5.3.4~~ 5.4.4 The actual length of the start-up exemption shall be determined by the APCO, ARB, and EPA at the time of the ATC issuance, but in any case, it shall not exceed the amount of time specified in Table ~~2~~ 4. The approval for the startup exemption shall be in writing from each agency.

Table ~~2~~ 4 – Maximum Start-up Time

Type of Furnace	Maximum Start-up NOx control system that does not meet Section ~~5.3.4.2~~ 5.4.4.2 provisions	Maximum Start-up NOx control system that meets Section ~~5.3.4.2~~ 5.4.4.2 provisions
Container glass	70 days	100 days
Fiber glass	40 days	105 days
Flat glass	104 days	208 days

~~5.3.4.1~~ 5.4.4.1 Maximum start-up time for furnaces with NOx controls that do not meet any of the conditions of ~~5.3.4.2~~ 5.4.4.2 is listed in the center column of Table ~~2~~ 4.

~~5.3.4.2~~ 5.4.4.2 Maximum start-up time column as shown in the rightmost column of Table ~~2~~ 4 shall be the maximum startup time if the NOx control system meets one or more of the following conditions:

~~5.3.4.2.1~~ 5.4.4.2.1 Is innovative,

~~5.3.4.2.2~~ 5.4.4.2.2 Is not in common use,

~~5.3.4.2.3~~ 5.4.4.2.3 Is not readily available from a commercial supplier,

~~5.3.4.2.4~~ 5.4.4.2.4 Is funded as original research by a public agency.

~~5.3.5~~ 5.4.5 During start-up period, the stoichiometric ratio of the primary furnace combustion system shall not exceed 5% excess oxygen, as calculated from the actual fuel and oxidant flow measurements for combustion in the glass melting furnace.

~~5.3.6~~ 5.4.6 The emission control system shall be in operation as soon as technologically feasible during start-up to minimize emissions.

~~5.3.7~~ 5.4.7 Notifications shall be performed and records kept in accordance with Section ~~6.7~~ 6.9.

~~5.4~~ 5.5 Shutdown Requirements

~~5.4.1~~ 5.5.1 The duration of shutdown, as measured from the time the furnace operations drop below the idle threshold specified in Section ~~3.13~~ 3.15 to when all emissions from the furnace cease, shall not exceed 20 days.

~~5.4.2~~ 5.5.2 The emission control system shall be in operation whenever technologically feasible during shutdown to minimize emissions.

~~5.4.3~~ 5.5.3 Notifications shall be performed and records kept in accordance with Section ~~6.7~~ 6.9.

~~5.5~~ 5.6 Idling Requirements

~~5.5.1~~ 5.6.1 The emission control system shall be in operation whenever technologically feasible during idling to minimize emissions.

~~5.5.2 The NOx, CO, and VOC emission during idling shall not exceed the amount as calculated using the following equation:~~

~~Pounds per day emission limit of NOx, VOC, or CO = (Applicable Tier 1 or Tier 2 emission limit in pounds emissions per ton of glass produced) x (Furnace permitted production capacity in tons of glass produced per day)~~

5.6.2 Emissions of NOx, CO, VOC, SOx, and PM during idling shall not exceed the amount as calculated using the following equation:

$$Ei, \max = Ei * (0.25 * Capacity)$$

Where

Ei, max = maximum daily emission of pollutant *i* during idling;
Ei = Applicable emission limit from Table 1, Table 2, or Table 3 for pollutant *i,* in pounds pollutant per ton glass produced;
Capacity, max = furnace's permitted glass production capacity in tons glass produced per day.

~~5.5.3~~ 5.6.3 Notifications shall be performed and records kept in accordance with Section ~~6.7~~ 6.9.

~~5.6 Compliance Determination~~

~~5.6.1 The emissions measured for compliance with Tier 1 NOx limits and Tier 2 CO and VOC limits shall be averaged over a three hour period in accordance with the applicable test methods in Section 6.5, or, if a continuous emission monitoring system (CEMS) or an alternate emission monitoring method is used, the applicable requirements of Sections 6.6.1 or 6.6.2, respectively.~~

~~5.6.2 Any source testing result, CEMS or alternate emission monitoring method averaged value exceeding the applicable emission limits in Section 5.1 shall constitute a violation of the rule.~~

~~5.7 The Tier 1 NOx emission limit for flat glass furnaces shall be calculated using the following equation:~~

~~NOx Limit = (32 lb NOx per ton of glass pulled) – [(0.2 lb NOx per ton of glass pulled) x CF]~~

~~Where:~~

$$\cancel{CF = \frac{\text{Glass Pull Rate in tons per day}}{\text{Permitted Production Capacity in tons per day}} \times 100\%}$$

5.7 Compliance Determination

5.7.1 Any source testing result, CEMS, or alternate emission monitoring method averaged value exceeding the applicable emission limits in Section 5.1, Section 5.2, or Section 5.3 shall constitute a violation of the rule.

5.7.2 For flat glass furnaces, any 30-day averaged value from CEMS or alternate emission monitoring method that exceeds the applicable emission limit in Section 5.1 or Section 5.2 shall constitute a violation of the rule for each day of the averaged period. This provision shall be in effect on and after January 1, 2009.

5.8 In lieu of each furnace complying individually with the ~~Tier 2~~ emission limits in Section 5.1, Section 5.2, and Section 5.3, the ~~owner~~ operator of a furnace battery or multiple furnaces may comply with this rule according to Section 9.0.

5.9 Monitoring Requirements

5.9.1 NOx Monitors

The operator of any glass melting furnace shall implement a NOx CEMS or a NOx alternate emissions monitoring method on each furnace, that is approved, in writing, by the APCO, ARB, and EPA, and that meets the requirements of Sections ~~6.6~~ 6.7. For a furnace battery, a single CEMS or alternate emissions monitoring method may be used to determine the total NOx emissions from all the furnaces provided the emission measurements are made at the common stack. The operator of a glass melting furnace not subject to the Table 1 limits of this rule before August 17, 2006 that becomes subject to Table 1 limits on August 17, 2006 shall implement an approved monitoring system by March 31, 2008.

5.9.2 Monitoring SOx and PM10 Emissions

This section shall be in effect on and after January 1, 2011.

5.9.2.1 The operator shall select the key system operating parameters and frequency of the monitoring and recording specified in Attachment A for monitoring.

5.9.2.2 As an alternative, the operator may monitor other appropriate substitute parameters and frequencies, if written approval is obtained from the APCO, ARB, and EPA.

5.10 Routine Maintenance of Add-On Emission Control Systems

This section shall be in effect on and after January 1, 2009.

5.10.1 During routine maintenance of an add-on emission control system, an operator of a glass melting furnace subject to the provisions of Sections 5.1 through 5.3 is exempt from these limits if:

5.10.1.1 Routine maintenance in each calendar year does not exceed 6 days total for all add-on controls;

5.10.1.2 Routine maintenance is conducted in a manner consistent with good air pollution control practices for minimizing emissions; and

5.10.1.3 A report is submitted to the APCO and EPA ten (10) days before the start of the routine maintenance and the report contains an explanation of the schedule of the maintenance and method of minimizing emissions. If ten (10) days cannot be provided, the report must be submitted as soon as practicable.

5.10.2 The opacity limits of Rule 4101 (Visible Emissions) apply throughout the routine maintenance period.

6.0 Administrative Requirements

6.1 Permitted Glass Production Capacity and Fuel Use Capacity

Each glass melting furnace's PTO shall include either 6.1.1 or 6.1.2 or both as a permit condition.

6.1.1 The furnace's permitted glass production capacity in units of tons of glass pulled per day; or

6.1.2 The furnace's maximum fuel use capacity in units of million British thermal units per hour or per day (MMBtu/hr or MMBtu/day).

6.2 Emission Control Plan (ECP)

6.2.1 The operator of any glass melting furnace subject to the provisions of this rule on February 21, 2002 shall submit to the APCO an ECP in accordance with the compliance schedule in Section 7.1 which identifies all actions to be taken to satisfy the requirements of Section 5.0. Such plan shall identify the type of emission controls, CEMS or alternate emission monitoring method to be applied to each glass melting furnace

and a construction schedule. The method used for determining pull rate shall be submitted. If the pull rate calculation method is changed, the new calculation method shall be submitted within 30 days from the date of such change. If a furnace is already achieving Section 5.1 Tier 2 emission limits prior to the compliance deadline specified in Section 7.1 Table ~~3~~ 5 Tier 2, the ECP shall include CEMS or alternate emission monitoring data, or source tests results that are sufficient to demonstrate compliance with all the requirements of this rule.

6.2.2 An operator of a glass melting furnace not subject to the Table 1 limits of this rule before August 17, 2006 that becomes subject to the Table 1 limits on August 17. 2006 shall submit an ECP to the APCO by February 17, 2007. The ECP shall contain, at minimum, the following information:

6.2.2.1 The type of emission controls to be used to meet the requirements of Section 5.0.

6.2.2.2 Whether CEMS or alternate emission monitoring will be used for emission monitoring.

6.2.2.3 The method used to calculate pull rate. If the calculation method is changed, the new calculation method shall be submitted within 10 calendar days from the date of such change.

6.2.2.4 The construction schedule, should construction be necessary to meet the requirements of this rule.

6.2.2.5 If a furnace is achieving Section 5.1 Tier 2 emission limits before March 31, 2008, the ECP shall include emission monitoring data or source test results that are sufficient to demonstrate compliance with all requirements of the rule.

6.3 Operations Records

Section 6.3 shall be in effect through December 31, 2010.

6.3.1 Until the full compliance date for Tier 2 emission limits specified in Section 7.1, the operator of any glass melting furnace subject to the provisions of this rule before February 21, 2002 shall maintain an operating log for each furnace that includes, on a monthly basis: the total hours of operation; type and quantity of fuel used in each furnace; and the quantity of glass pulled. The owner shall maintain records of source tests and operating parameters established during initial source test,

maintenance, repair, malfunction, idling, shutdown, and start-up. This information shall be made available on site during normal business hours for a period of five years, and submitted to the APCO upon request.

6.3.2 Effective on and after the full compliance date for Tier 2 emission limits specified in Section 7.1, the owner of any glass melting furnace subject to the emission limits of Table 1 before February 21, 2002 shall maintain the records specified in Sections 6.3.2.1, 6.3.2.2, and 6.3.2.3 for a period of five years, make them available on site during normal business hours, and submit them to the APCO, ARB, or EPA upon request.

6.3.2.1 Daily records of the total hours of operation, type and quantity of fuel used in each furnace, and/or the quantity of glass pulled from each furnace whichever matches the permit condition in the furnace's PTO.

6.3.2.2 Daily records of NOx emission rate in lb/ton of glass pulled.

6.3.2.3 Records of source tests and operating parameters established during initial source test, maintenance and repair, malfunction, and idling, start-up and shutdown.

6.3.3 The operator of a glass furnace that is not subject to the emission limits of Table 1 prior to August 17, 2006 that becomes subject to the Table 1 emission limits on August 17, 2006 shall maintain the following records:

6.3.3.1 Daily records of total hours of operation and type of fuel used in each furnace.

6.3.3.2 Daily records or either the quantity of fuel used by each furnace or the quantity of glass pulled from each furnace, whichever matches the permit condition in the furnace's PTO.

6.3.3.3 Daily records of NOx emission rate in lb/ton of glass pulled.

6.3.3.4 Records of source tests and operating parameters established during initial source test, maintenance and repair, and malfunction.

6.3.4 The operator shall retain the records specified in Sections 6.3.3.1 through 6.3.3.4 for a period of five years, make them available on site during normal business hours to the APCO, ARB, or EPA, and submit them to the APCO, ARB, or EPA upon request.

6.4 Operations Records

Section 6.4 shall be in effect on and after January 1, 2011.

6.4.1 Operators shall maintain daily records of the following items:

6.4.1.1 Total hours of operation;

6.4.1.2 Either quantity of fuel used by each furnace or the quantity of glass pulled from each furnace, whichever matches the permit condition in the furnace's PTO;

6.4.1.3 NOx emission rate in lb/ton glass pulled.

6.4.1.4 Operators shall maintain daily records of key system operating parameters, which will demonstrate continuous operation and compliance of the emission control system during periods of emission-producing activities.

6.4.1.5 Excess Reporting: Any record showing violation of Section 5.9.2 shall be reported by sending a copy of such record to the APCO within 96 hours following the occurrence. Such report will include an explanation of the cause of the violation and the corrective action taken.

6.4.2 Operators shall maintain records of the following items:

6.4.2.1 Source tests and operating parameters established during initial source test;

6.4.2.2 Maintenance and repair; and

6.4.2.3 Malfunction.

6.4.3 The operator shall retain records specified in Sections 6.4.1 and 6.4.2 on site for a period of five years; make the records available on site during normal business hours to the APCO, ARB, or EPA; and submit the records to the APCO, ARB, or EPA upon request.

~~6.4~~ 6.5 Compliance Source Testing

~~6.4.1~~ 6.5.1 Each glass melting furnace or a furnace battery shall be source tested at least once every calendar year, but not more than every 18 months and not sooner than every 6 months to demonstrate compliance with the applicable requirements of Section 5.0.

~~6.4.2~~ 6.5.2 Source test conditions shall be representative of normal operations, but not less than ~~60~~ 90 percent of either the permitted glass production capacity or the furnace's maximum fuel use capacity for each furnace, whichever limit is stated in the furnace's PTO.

~~6.4.3~~ 6.5.3 For source testing performed in accordance with Section ~~6.4.1~~ 6.5.1, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two of the three runs individually demonstrate emissions above the applicable limit, the test cannot be used to demonstrate compliance for the furnace, even if the averaged emissions of all three test runs is less than the applicable limit.

~~6.5~~ 6.6 Test Methods

Compliance with the requirements of Section 5.0 shall be determined in accordance with the following source test procedures or their equivalents as approved by the EPA, ARB, and the APCO:

~~6.5.1~~ 6.6.1 Oxides of nitrogen – EPA Method 7E, EPA Method 19, or ARB Method 100.

~~6.5.2~~ 6.6.2 Carbon monoxide (ppmv) – EPA Method 10, or ARB Method 100.

~~6.5.3~~ 6.6.3 Volatile Organic Compound (ppmv) – EPA Method 25A expressed in terms of carbon. EPA ~~Test~~ Method 18 or ARB Method 422 shall be used to determine emissions of exempt compounds.

~~6.5.4~~ 6.6.4 Stack gas oxygen, carbon dioxide, excess air, and dry molecular weight – EPA Method 3 or 3A, or ARB Method 100.

~~6.5.5~~ 6.6.5 Stack gas velocity and volumetric flow rate – EPA Method 2.

6.6.6 Oxides of sulfur emissions - EPA Method 6C, EPA Method 8, or ARB Method 100.

~~6.5.6~~ 6.6.7 The SOx emission control system efficiency shall be determined using the following:

~~6.5.6.1~~ 6.6.7.1 EPA Method 2 for measuring flow rates; and

~~6.5.6.2~~ 6.6.7.2 EPA Method 6C or EPA Method 8 for measuring total SOx (expressed as SO_2) concentrations at the inlet and outlet of the control device.

~~6.5.6.3~~ 6.6.7.3 The SOx emission control system efficiency shall be calculated using the following equation:

$$\% \text{ Control Efficiency} = [\ (C_{SO_2,\ inlet} - C_{SO_2,\ outlet}) / C_{SO_2,\ inlet}\ ] \times 100$$

Where:

$C_{SO_2,\ inlet}$ = concentration of SOx (expressed as SO_2) at the inlet side of the SOx emission control system, in lb/dscf

$C_{SO_2,\ outlet}$ = concentration of SOx (expressed as SO_2) at the outlet side of the SOx emission control system, in lb/dscf

6.6.8 PM10 Test Methods

6.6.8.1 EPA Method 201 in conjunction with EPA Method 202; or

6.6.8.2 EPA Method 201A in conjunction with EPA Method 202;

6.6.8.3 Other test method(s) approved in writing by the APCO, ARB, and EPA.

~~6.6~~ 6.7 CEMS Emissions Monitoring Systems

~~6.6.1~~ 6.7.1 An approved CEMS shall comply with all of the following requirements:

~~6.6.1.1~~ 6.7.1.1 40 Code of Federal Regulations (CFR) Part 51;

~~6.6.1.2~~ 6.7.1.2 40 CFR Part 60.7;

~~6.6.1.3~~ 6.7.1.3 40 CFR Part 60.13;

~~6.6.1.4~~ 6.7.1.4 40 CFR Part 60 Appendix B (Performance Specifications);

~~6.6.1.5~~ 6.7.1.5 40 CFR Part 60 Appendix F (Quality Assurance Procedures); and

~~6.6.1.6~~ 6.7.1.6 Applicable sections of Rule 1080 (Stack Monitoring).

~~6.6.2~~ 6.7.2 An approved alternate emission~~s~~ monitoring method shall be capable of determining the furnace emissions on an hourly basis and shall comply with the following requirements:

~~6.6.2.1~~ 6.7.2.1 42 FR 54900 (Compliance Assurance Monitoring); and

~~6.6.2.2~~ 6.7.2.2 40 CFR 60.13 (Monitoring Requirements).

~~6.7~~ 6.8 Notifications and Records for Start-up, Shutdown, and Idling

~~6.7.1~~ 6.8.1 The operator of any glass melting furnace claiming an exemption under Section 4.3 shall notify the APCO by telephone at least 24 hours before initiating idling, shutdown, or start-up. The notification shall include: date and time of the start of the exempt operation, reason for performing the operation, and an estimated completion date.

~~6.7.2~~ 6.8.2 The operator shall notify the APCO by telephone within 24 hours after completion of the start-up, shutdown, or idling.

~~6.7.3~~ 6.8.3 The operator claiming exemption under Section 4.3 shall maintain all operating records/support documentation necessary to support claim of exemption.

~~6.7.4~~ 6.8.4 Records/support documentation required by Section ~~6.7.3~~ 6.8.3 shall meet the following requirements:

~~6.7.4.1~~ 6.8.4.1 The records/support documentation shall be retained on-site for five years.

~~6.7.4.2~~ 6.8.4.2 The records/support documentation shall be made available to the APCO, ARB, or EPA during normal business hours.

~~6.7.4.3~~ 6.8.4.3 The records/support documentation shall be submitted to the APCO, ARB, or EPA upon request.

~~6.8~~ 6.9 Records for Exempt Furnaces

~~6.8.1~~ 6.9.1 An operator claiming exemption under Section 4.1 or Section 4.2 shall maintain records/documentation necessary to support claim of exemption.

~~6.8.2~~ 6.9.2 Records/support documentation specified in Section ~~6.8.1~~ 6.9.1 shall meet the following requirements:

~~6.8.2.1~~ 6.9.2.1 The records/documentation shall be retained on-site for five years after exemption is lost.

~~6.8.2.2~~ 6.9.2.2 The records/documentation shall be made available to the APCO, ARB, or EPA during normal business hours.

~~6.8.2.3~~ 6.9.2.3 The records/documentation shall be submitted to the APCO, ARB, or EPA upon request.

7.0 Compliance Schedule

7.1 The operator of any flat glass, container glass, or fiberglass melting furnace subject to Table 1 limits of this rule before February 21, 2002 shall demonstrate full compliance with the provisions of this rule not later than the schedules in Table ~~3~~ 5.

Table ~~3~~ 5 Compliance Schedule

Emission Limits	Emission Control Plan (ECP)	Authority to Construct (ATC) Application	Full Compliance
~~Tier 1~~	~~3/14/95~~	~~3/14/95~~	~~5/31/95~~
Tier 2	12 months prior to next furnace rebuild after 1/1/99 and no later than 3/31/2007	9 months prior to next furnace rebuild after 1/1/99 and no later than 6/31/2007	Next furnace rebuild after 1/1/99 and no later than 3/31/2008

7.2 For furnaces subject to this rules before February 21, 2002, as shown in Section 7.1 Table ~~3~~ 5, the column labeled:

7.2.1 "Emission Control Plan (ECP)" identifies the date by which the operator shall submit an Emission Control Plan according to Section 6.2.1, or Section 9.0.

7.2.2 "Authority to Construct (ATC) Application" identifies the date by which the operator shall submit a complete application for Authority to Construct (ATC) for any necessary modifications to each glass melting furnace.

7.2.3 "Full Compliance" identifies the date by which the operator shall demonstrate that each furnace is in compliance after start-up with the emission limits in Section 5.1 and after which, the operator shall remain in compliance with the applicable emission limits in Section 5.1.

7.3 A glass melting furnace not subject to the Table 1 limits of this rule before August 17, 2006 that becomes subject to the Table 1 limits on August 17, 2006 shall be in full compliance with the requirements of this rule by March 31, 2008, unless otherwise specified in the rule requirements.

7.4 For furnaces that are not meeting the Tier 3 NOx emission limits specified in Section 5.1, or the SOx limits in Section 5.2, or the PM10 emission limits in Section 5.3 on January 1, 2009, the operator must submit a complete ATC application, if needed, by June 1, 2009 and be in full compliance with the rule by January 1, 2011.

8.0 Calculations

8.1 The NOx emission rate in ppmv shall be converted to lb/hr by using the appropriate conversion equations in ARB Method 100, EPA Method 19, or an equivalent conversion method approved, in writing, by each of the following: APCO, ARB, and EPA. The NOx mass emission rate in lb/hr shall be converted to lb NOx/ton of glass pulled according to the following equation:

$$lb\ NOx / ton\ of\ glass\ pulled = \frac{lb / hr\ of\ NOx}{Pull\ rate\ in\ tons / hr}$$

8.2 100% air-fuel fired furnaces which have concentration limits in ppmv values shall be subject to the CO and VOC emission limits specified in Section 5.1. These limits are referenced at dry stack gas conditions and 8.0 percent by volume of stack oxygen. The CO and VOC emission concentrations shall be corrected to 8.0 percent oxygen by using the equation below, or an equivalent correction method that is approved, in writing, by each of the following: APCO, ARB, and EPA.

$$(\text{ppmv CO})_{\text{corrected}} = \frac{12.9\%}{20.9\% - (\%\,O_2)_{\text{measured}}} \times (\text{ppmv CO})_{\text{measured}}$$

$$(\text{ppmv VOC})_{\text{corrected}} = \frac{12.9\%}{20.9\% - (\%\,O_2)_{\text{measured}}} \times (\text{ppmv VOC})_{\text{measured}}$$

8.3 The operator of a oxy-fuel fired furnace, oxygen-assisted combustion furnace, or a furnace utilizing any fuel oxidants other than 100% ambient air, shall submit to the APCO, ARB, and EPA for approval any methodologies and data that will be used to calculate emission rates for NOx, CO, and VOC if the methods are different than specified in Sections 8.1 or 8.2. Unless the operator

received prior written approval from APCO, ARB, and EPA of all the calculation methods to be used that are different than specified in Sections 8.1 or 8.2, compliance with the emission~~s~~ limits cannot be fully demonstrated, and it shall be deemed to be a violation of the rule.

9.0 Furnace Battery or Multiple Furnaces Control

As an alternative to complying with Section 5.1 Tier 2 NOx emission limits and Section 7.0, the operator of a furnace battery or multiple furnaces shall operate the furnace battery or multiple furnaces pursuant to Sections 9.1 through 9.7. Any violation of the requirements below shall be considered a violation of this rule, and a violation of the aggregated emission limits shall constitute a violation for each furnace for the entire averaging time.

Any operator who elects to comply with Section 9.0 in lieu of complying with the requirements of Section 5.1 Tier 2 NOx emission limits and Section 7.0 shall be subject to a 10% environmental air quality benefit pursuant to the EPA's Emissions Trading Policy. NOx emissions shall be at least 10% lower than the limits specified in Section 5.1 Tier 2. The furnace shall not be subject to this requirement if the operator can demonstrate compliance by operating an approved CEMS or an approved alternate monitoring method for each furnace in accordance with the provisions of Section ~~6.6~~ 6.7.

9.1 The operator shall submit an ECP and a complete ATC in accordance with schedules in Section 7.1. The ECP shall:

9.1.1 contain, in addition to the requirements of Section 6.2, all data, records, and other information necessary to determine eligibility of a furnace battery or multiple furnaces for NOx emission control under Section 9.0, including, but not limited to:

9.1.1.1 a list of furnaces subject to the ECP;

9.1.1.2 estimated aggregate emission levels as determined in accordance with Section 9.7; and

9.1.1.3 estimated aggregate glass production rates.

9.1.2 detail the method of recording and verifying daily compliance with the ECP.

9.2 The operator shall submit an updated or modified ECP for approval by the APCO, ARB, and EPA prior to any modification to the furnace(s) which requires an ATC as outlined in Rule 2010 (Permits Required).

9.3 The ECP schedule for achieving reduced NOx emission levels shall be at least as expeditious as the schedule were each furnace to comply individually with the emission limits in Section 5.1 Tier 2 and the compliance schedule in Section 7.1.

9.4 The daily aggregate NOx emissions, as determined in accordance with Section 9.7, shall be no greater than those obtained by controlling each furnace to comply individually with the limits in Section 5.1 Tier 2.

9.5 The operator shall conduct source testing of the furnace according to the requirements of Section ~~6.4~~ 6.5.

9.6 Determination of Compliance

9.6.1 The operator shall calculate and record on a daily basis the aggregated NOx emissions of furnaces which are subject to an ECP. Such records shall be kept for a period of five years. The operator shall notify the APCO of any violation of Section 9.4 within 24 hours. The notification shall include:

9.6.1.1 name and location of the facility;

9.6.1.2 identification of furnace(s) causing the exceedances;

9.6.1.3 the cause and the expected duration of exceedances;

9.6.1.4 calculation of actual NOx, CO and VOC emissions;

9.6.1.5 corrective actions and schedules to complete the work.

9.6.2 The operator shall demonstrate compliance with the requirements of Section 9.4 through CEMS data or approved alternate emission monitoring methods, and source test results.

9.7 Determination of Aggregated NOx Emissions

9.7.1 The aggregated NOx emissions of a furnace battery are the NOx emissions as measured at the common stack divided by the sum of the daily glass pulled from each furnace.

9.7.2 The aggregated NOx emissions of multiple furnaces are the sum of the daily NOx emissions of each furnace divided by the sum of the daily glass pulled from each furnace.

9.8 Tier 3 NOx Emission Limits and SOx and PM10 Emission Limits

9.8.1 Any operator who elects to comply with Section 9.0 in lieu of complying with the requirements of Section 5.1 Tier 3 NOx emission limits, shall be subject to a 10% environmental air quality benefit pursuant to the EPA's Emissions Trading Policy. NOx emissions shall be at least 10% lower than the limits specified in Section 5.1 Tier 3. The furnace shall not be subject to this requirement if the operator can demonstrate compliance by operating an approved CEMS or an approved alternate monitoring method for each furnace in accordance with the provisions of Section 6.7.

9.8.2 As an alternative to complying with Section 5.1 Tier 3 NOx emission limits, Section 5.2 SOx emission limits, and Section 5.3 PM10 emission limits, the operator of a furnace battery or multiple furnaces shall operate the furnace battery or multiple furnaces pursuant to Sections 9.8.4 through 9.8.10.

9.8.3 Any violation of the requirements of Sections 9.8.4 through 9.8.10 shall be considered a violation of this rule.

9.8.4 The daily aggregate NOx emissions, as determined in accordance with Sections 9.7, shall be no greater than those obtained by controlling each furnace to comply individually with Section 5.1 Tier 3 NOx emission limits.

9.8.5 The operator shall demonstrate compliance with the NOx requirements of Section 9.8.4 through CEMS data or approved alternate emission monitoring methods, and source test results.

9.8.6 Any violation of the aggregated emission limits shall constitute a violation of the rule for each furnace for the entire averaging period.

9.8.7 The operator shall notify the APCO of any violation of Section 9.8.4 within 24 hours. The notification shall include:

9.8.7.1 Name and location of the facility;

9.8.7.2 Identification of furnace(s) causing the exceedances;

9.8.7.3 The cause and the expected duration of exceedances;

9.8.7.4 Calculation of actual NOx, CO and VOC emissions;

9.8.7.5 Corrective actions and schedules to complete the work.

9.8.8 The operator shall demonstrate compliance with the SOx and PM10 limits through complying with the monitoring requirements of Section 5.9.2.

9.8.9 The operator shall conduct source testing of the furnaces according to the requirements of Section 6.5.

9.8.10 Records shall be kept in accordance with the applicable provisions of Section 6.0.

Attachment A

Monitoring and Recording Frequency for SOx and PM10 Controls

Dry or Wet Electrostatic Precipitators (ESP)		
Operating Parameters	**Monitoring Frequency**	**Recording Frequency**
Flue gas inlet temperature to ESP	Continuously	Hourly
Flue gas flow rate	Continuously	Hourly
Voltage and current across ESP or total power input	Continuously	Hourly
Ammonia injection rate	Continuously	Hourly
Wet scrubbers or Wet ESPs		
Operating Parameters	**Monitoring Frequency**	**Recording Frequency**
Flue gas flow rate	Continuously	Hourly
Type of scrubbing liquid and average pH	Daily	Daily
Scrubbing liquid flow rate	Continuously	Hourly
SO_2 Reducing Catalyst Additives		
Operating Parameters	**Monitoring Frequency**	**Recording Frequency**
Type of SO_2 reducing catalyst	Once and when change occurs	Once and when change occurs
Addition rate of SO_2 reducing catalyst	Daily	Daily
Pickup factor (i.e., lbs SO_2 reduced per lb of additives)	Once and when change occurs	Once and when change occurs
Baghouses		
Operating Parameters	**Monitoring Frequency**	**Recording Frequency**
Flue gas flow rate	Continuously	Hourly
Pressure drop	Continuously	Hourly
Flu gas inlet temperature	Continuously	Hourly

Notes:

1. Monitoring and recording as shown in this attachment shall not be required during periods of routine maintenance and malfunction of the monitoring and recording devices.

2. “Continuously monitoring” means monitoring at least once every 15 minutes.

3. “Hourly recording” means recording at least one measurement every hour.

4. “Daily monitoring” and “daily recording” means monitoring and recording at least one measurement every day.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

DRAFT STAFF REPORT

October 8, 2007

Draft Amendments to Rule 4354 (Glass Melting Furnaces)

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I. SUMMARY

A. Reasons for Rule Development and Implementation

The San Joaquin Valley Air Basin (SJVAB) is a continuous inter-mountain valley comprised of eight counties in the southern portion of the San Joaquin Valley of California: Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare, and the Valley portion of Kern. The SJVAB is approximately 250 miles long, averages 80 miles wide, and is partially enclosed by the Coast Mountain range on the west, the Tehachapi Mountains on the south, and the Sierra Nevada range on the east. These surrounding mountains trap pollution. Low wind speeds combined with low-lying inversion layers in the winter create a climate conducive to the formation of high particulate matter (PM) concentrations. The region's hot, dry summers are conducive to ozone formation.

The SJVAB is currently designated as nonattainment for the national ambient air quality standard (NAAQS) for particulate matter 2.5 microns in diameter or less (PM2.5) and serious nonattainment for the eight-hour ozone NAAQS. Prior to the United States Environmental Protection Agency's (EPA's) implementation of the eight-hour ozone standard, the SJVAB was also classified as an extreme nonattainment area for the one-hour ozone NAAQS. Although EPA revoked the one-hour ozone NAAQS, the San Joaquin Valley Air Pollution Control District (District) is still required to meet certain requirements mandated by the federal Clean Air Act related to the extreme designation. In addition to being classified as nonattainment of federal air standards, SJVAB is classified as severe nonattainment for the California ozone air quality standard and nonattainment for the California air quality standard for particulate matter ten microns in diameter or smaller (PM10).

Since amending Rule 4354 is a control measure in the District's 2007 Eight-Hour Ozone Plan, it is subject to Code of Federal Regulations (CFR), Clean Air Act (CAA), and

California Health and Safety Code (CH&SC) requirements. This rulemaking project is intended to satisfy the attainment goals of the District's 2007 Eight-Hour Ozone Plan. The proposed amendments to Rule 4354 will seek to obtain as much reduction of oxides of nitrogen (NO_x) from glass melting furnaces as expeditiously practicable, technologically feasible, and economically reasonable, as determined by the District's Governing Board. Furthermore, the rule is intended to satisfy the requirements identified in Table 1 below.

Table 1: Ozone Plan Commitments

Subject	Reference	Requirement
Timeline	CAA Section 172(c)(1)	Ozone attainment plans shall implement control measures as expeditiously as practicable, and provide for attainment.
RACT	CAA Sections 182(b)(2) and 182(f)	Ozone attainment plans shall assure that reasonable available control technology (RACT) for NOx and volatile organic compounds (VOC) is in use at sources and on source categories at or above the RACT threshold.
BARCT	CH&SC 40919(a)(3)	Ozone attainment plans should provide for best available retrofit technology (BARCT) for existing permitted sources.
All Feasible Controls	CH&SC 40914(a)(2)	Ozone attainment plans should include "all feasible control measures."
Deadline	District 2007 Eight-Hour Ozone Plan	Rule adoption by the 3rd quarter of 2008.
Reductions	District 2007 Eight-Hour Ozone Plan	The plan calls for about 0.4 tons per day of NOx reductions.

Under EPA's "New Source Review" (NSR) program, if a company is planning to build a new plant or modify an existing plant such that air pollution emissions will increase by a certain amount, then the company must obtain an NSR permit. The NSR permit is a construction permit which requires the company to minimize air pollution emissions by changing the process to prevent air pollution and/or installing air pollution control equipment. The terms "RACT," "BACT," and "LAER" are acronyms for different program requirements under the NSR program. EPA defines RACT as "the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic

feasibility." RACT is required on existing sources in non-attainment areas. Best Available Control Technology (BACT), is required on major new or modified sources in attainment areas. Lowest Achievable Emission Rate (LAER) is required on major new or modified sources in non-attainment areas. BACT and LAER (and sometimes RACT) are determined on a case-by-case basis, usually by State or local permitting agencies. For this rule project, District staff will focus on RACT limits, as defined by EPA's NSR rule, and BARCT limits as defined by the CH&SC.

B. Description of the Project

District staff would amend Rule 4354 to implement an emission control measure in the District's 2007 Eight-Hour Ozone Plan. The control measure anticipates reduced NO_x emission limits for all types of glass melting furnaces. As guidelines for developing the proposed changes to Rule 4354, District staff studied rules from other air districts within and outside of California.

C. Rule Development Process

District staff held a public scoping meeting in June 2007. At the scoping meeting, District staff presented the objectives of the proposed rulemaking project. Draft amendments to Rule 4354 were not be available for the scoping meeting.

District staff anticipates that there will be three workshops scheduled to present the rule amendments and seek comments from the public before the proposed rule amendments would be brought before the District's Governing Board for adoption. The first workshop will be held on October 4, 2007. District staff will solicit information from affected source operators, consultants, vendors and manufacturers of control technologies, and trade associations on the technological feasibility and compliance cost information that would be useful in developing amendments to the rule. The tentative date for the public hearing to consider adoption of the amended rule is the third quarter of 2008.

II. BACKGROUND

Glass-making facilities within the District represent four different glass marketing sectors – container, flat, continuous fiber, and fiberglass wool (building insulation). There are 15 glass-melting furnaces at eight different facilities that are subject to Rule 4354, of which 13 furnaces are currently producing glass. The two non-producing furnaces have not been fired in several years. One of the non-producing furnaces is electric and is exempt from Rule 4354. The other non-producing furnace retains an active Permit-To-Operate.

Not only are the types of glass produced within the District distinctly different, the size of the furnaces themselves varies widely. One way to measure the size of a glass-melting

furnace is to describe it in terms of the maximum amount of energy the furnace could burn in an hour. Using this measure, the District's glass melting furnaces range from 4.5 million British thermal units per hour (MMBtu/hr) to over 200 MMBtu/hr – a difference of about two orders of magnitude.

III. CURRENT RULE 4354 AND POTENTIAL CHANGES

A. Current Rule 4354

Rule 4354 applies to any non-electric glass-melting furnace located at a stationary source with a total potential to emit, for all processes, of at least ten tons per year of NOx or at least ten tons per year of VOC. The current rule limits emission of NOx, volatile organic compounds (VOCs), carbon monoxide (CO), and oxides of sulfur (SOx). NOx emission limits range from 4.0 to 9.2 pounds NOx per ton of glass pulled (lb/ton glass pulled), depending on market sector, firing technology, and monitoring averaging period. VOC emission limits are 20 ppmv or range from 0.1 to 0.25 lbs/ton glass pulled depending on market sector and firing technology. Operators meet current emission limits through a selection of furnace firing technology and glass raw materials. For detailed requirements, please refer to current Rule 4354, which is available on the District's website at www.valleyair.org.

B. Draft Amendments to Rule 4354

The main objective of this rule project is to obtain as much reduction of NOx from glass melting furnaces as is expeditiously practicable, technologically feasible, and economically reasonable. In addition, District staff will recommend an emission limit for SOx and an emission limit for particulate matter. Changing the emission-averaging period for flat glass furnaces, and the maximum allowable startup period for flat glass furnaces will also be addressed.

1. Section 3.0 – Definitions

Three definitions would be added to accommodate the addition of a PM10 emission limit: PM10, condensable PM10, and filterable PM10.

2. Section 4.0 – Exemptions

District staff does not anticipate any change in this section.

3. Section 5.1 – NOx Emission Limits

In Section 5.1, Table 1 would be revised to include lower emission limits for NOx. These limits range from 1.3 pounds NOx per ton glass to 3.7 lb/ton glass, depending on type of glass manufactured, firing technology, and averaging period. The limits in Table 1 represent the most recent BACT determinations made by District staff.

Table 2 – Draft NOx Emission Limits

Type of Glass Produced	Firing Technology	Effective on and after January 1, 2011
Container or Fiberglass	All firing technologies	1.3 [A]
Flat	All firing technologies	3.7 [A] 3.2 [B]

[A] Block 24-hour average
[B] Rolling 30-day average

Some of the VOC and carbon monoxide emission limits are in parts per million by volume (ppmv). For compliance clarity, the reference conditions for these limits would be added to Table 1– eight percent oxygen and dry stack conditions. These conditions are already stated elsewhere in the rule, so there is no change by including them in the table.

4. Section 5.1 – Emission Averaging Period for Flat Glass Furnaces

It has been suggested that the averaging period for flat glass be reduced to no more than three hours. Flat glass furnaces hold hundreds of tons of materials at any given point in time. Being able to change the process quickly is not possible; therefore a three-hour averaging period is unrealistic. A second consideration is that the draft NOx emission limits for 30-day averaging are lower than the three-hour limits in other California air districts for container glass furnaces. Consequently, no change in the emission-averaging period is proposed.

5. Section 5.2 – SOx Emission Limit

The SJVAB is currently designated as nonattainment for the NAAQS for particulate matter with aerodynamic diameter of 2.5 micrometers or less (PM2.5). As such, the District is required to submit an attainment plan not unlike the 2007 Ozone Plan. The District's PM2.5 attainment plan is due to EPA by June 2008. District staff, in anticipation of PM2.5 control measures, is proposing to include a SOx emission limit in this rule project, rather than re-open the rule within a year to include a SOx limit. While SOx is not a precursor to ozone formation in the SJVAB, SOx is strongly implicated in atmospheric particle formation (See Reference 10). Section 5.2 would be expanded to include a table for the SOx emission limits. The limits were taken from recent BACT determinations for various types of glass furnaces. Table 3 lists the draft SOx limits.

Table 3 – SOx Emission Limits

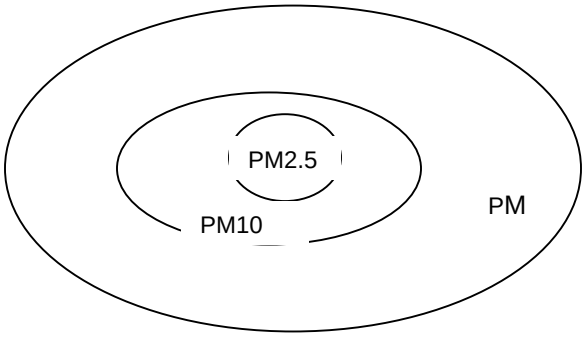
SOx Emission Limits in pounds SOx per ton glass produced		
Type of Glass Produced	Firing Technology	Effective on and after January 1, 2011
Container or Fiberglass	All technologies	0.8 [A]
Flat Glass	100% air fired	1.7 [A] 1.2 [B]
	All other technologies	0.6 [A]

[A] Block 24-hour average
[B] Rolling 30-day average

6. Section 5.3 – Particulate Matter Emission Limit

As with the SOx limit, District staff is proposing to include a particulate matter emission limit in this rule project, rather than re-open the rule within a year to include a particulate matter limit. The individual particles of particulate matter can be different sizes. Below, Figure 1 illustrates the relationship between particulate matter (PM), particulate matter with aerodynamic diameter of 10 micrometers or less (PM10), and PM2.5. PM is the most global of the three designations. PM10 is a portion of PM and PM2.5 is a portion of PM10. The fraction of PM that is PM10 or PM2.5 depends on the source emitting the particles. Combustion sources tend to emit smaller particles than material handling sources.

Figure 1 – Relationship between PM, PM10, and PM2.5



The difference between the three PM designations becomes important when an operator must demonstrate compliance with an emission limit. While EPA has approved a test method for PM2.5 for ambient air monitors (like the air monitors at the District's air monitoring stations), there is no approved PM2.5 test method for stationary sources (e.g., the monitors on process exhaust stacks). There are, however, approved stationary source tests for PM10. Consequently, District staff is recommending an emission limit for PM10, which, by extension, would limit PM2.5 emissions, since PM2.5 is a subset of PM10.

District staff has recently concluded two BACT determinations for glass melting furnaces, one for a flat glass furnace and one for a container glass furnace. In these BACT determinations, control of PM10 emissions was evaluated. For Rule 4354, a PM10 emission limit of 0.45 pounds per ton glass produced for container glass and a limit of 0.7 pounds per ton glass produced are proposed. This draft limit includes both filterable particles and condensable material. The rule would require operators to be in compliance with these limits on and after January 11, 2011.

7. Section 5.4 – Maximum Allowable Startup Period for Flat Glass Furnaces

Section 5.4 specifies the necessary steps to minimize emissions during furnace startup. The current rule already has a maximum number of days for startup. The maximum startup period depends on the type of glass produced. During startup, there is a direct requirement to bring the emission control systems on-line as soon as technologically feasible. Indirectly, operators are required to minimize the amount of excess oxygen in the combustion air during startup. Minimizing the amount of oxygen minimizes the amount of oxygen that would be available to form NOx. At the very beginning of the startup, when the emission control systems cannot provide little emission reduction, operators have much more control over how much air is fed into the burners compared to operation of an add-on emission control systems. In addition to the limit on excess combustion oxygen, the operator must file a request for the length of the startup with three different agencies: the District, ARB, and EPA. Each agency independently approves the number of startup days. For these reasons, no change to the startup period is proposed.

8. Section 5.6 – Idling Requirements

The current equation for determining maximum emissions during idling allows the operator to emit as much as if the furnace were operating at 100 percent of production capacity. The maximum emissions during idling would be changed to allow 25 percent of daily limit. District staff chose this percentage based on the definition of idling, which is 25 percent or less of maximum glass pull or maximum heat input.

9. Section 5.9 – Monitoring of SOx and PM10

In adding an emission limit to the rule, operators must demonstrate compliance with the limit between the once-a-year source tests. Continuous emission monitoring systems (CEMS) are not typically used for SOx and PM10, therefore, District staff would add parametric monitoring of the add-on controls as a surrogate for direct emissions monitoring. Section 5.9 points the operator to Attachment A, which is a table similar to one in SCAQMD Rule 1105.1 (Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units). It is expected that the range of parameters would be determined by source test. Some Permits-To-Operate for glass melting furnaces already contain parametric monitoring requirements, so the added monitoring provision would not affect these operations.

10. Section 5.10 – Routine Maintenance of Add-On Emission Control Equipment
In response to stakeholder comments, a new section has been added to specifically address routine maintenance of add-on controls. Under the current rule, operators must request a variance from the emission limits through the District's regional hearing boards using the variance process. Although such requests are routinely granted, the variance process requires much time and effort on the part of both the operator and District staff to prepare for the hearing board meeting. It is the opinion of some operators that routine maintenance is sometimes delayed because the variance process is too complex for such a mundane operation. It is assumed that a well-maintained add-on control is more efficient at reducing emissions than one that is not well maintained. In order to remove a barrier to efficient emission control, District staff is proposing a simpler process for maintaining add-on controls. The draft amendment would strictly limit the length of the routine maintenance. The provision would require that the operator notify District staff of the maintenance schedule as well as explain how emissions would be minimized while the routine maintenance is being performed. Operators would still be required to meet opacity standards, even during the maintenance period. If an operator needed more than six days per year to perform routine maintenance, the request for an extension would go through the District's variance process, and the request would be reviewed and evaluated as part of the District's regional hearing board's procedure. The added rule section parallels a similar requirement in the 40 CFR 60 Subpart CC, which is the new source performance standard (NSPS) for glass melting furnaces. Operators could start taking advantage of the routine maintenance section beginning January 1, 2009.

11. Section 6.4 – Operations Records
Section 6.3 would be retired as of December 31, 2010 and Section 6.4 would take its place on January 1, 2011 to simplify the types of records that are required. Operators would keep daily records of the operating parameters and report excess emissions within 96 hours.

12. Section 6.5 – Compliance Source Testing
The minimum production rate during source testing would increase from 60 percent to 90 percent. This change allows District Rule 4354 to align more closely with other California air districts, although some District permits for glass furnaces already contain this requirement.

13. Section 6.6 – Test Methods
In this section, a specific test method for SOx emissions is proposed along with test methods for PM10. Operators would still be allowed to use other test methods if the APCO, ARB, and EPA approve the use of alternative methods.

14. Section 7.0 – Compliance Schedule
It is expected that most operators are already meeting the draft emission limits. For those facilities that are not, a completed Authority-To-Construct applications, if needed would be required by June 1, 2009, with full compliance required by January 1, 2011.

15. Section 9.0 – Furnace Battery or Multiple Furnaces Control
A section would be added specifically addressing the Tier 3 NOx emission limits and the SOx and PM10 emission limits for furnace batteries/multiple furnaces. The current requirements for Tier 2 NOx emission limits would be used as a template.

IV. EMISSION CONTROL TECHNIQUES

Operators can control air emissions either by controlling inputs to the process or by treating the exhaust from the process. Process inputs for glass melting furnaces include raw materials, fuel, and combustion air. Post-combustion control techniques depend on the pollutant to be controlled. The following paragraphs outline potential ways that operators of glass melting furnaces can reduce furnace exhaust emissions of NOx, SOx, and PM.

A. NOx Emission Control Techniques

On the inlet side of the glass furnace, NOx is generated from nitrogen-containing materials entering the furnace. The nitrogen (N_2) and oxygen (O_2) in ambient air can combine to form NOx at the high temperature. This phenomenon is called "thermal NOx." Since high temperatures are required to melt raw materials to form glass, thermal NOx in the exhaust of glass melting furnaces is expected. There are several combustion practices that form less thermal NOx. Operators may also choose to control NOx on the outlet side of the process, i.e., run the glass furnace to optimize the product, and then deal with the generated NOx in the furnace's exhaust stream.

1. Raw Materials
One of the ingredients in glass is a refining agent. The purpose of a refining agent is to remove bubbles of gas, known as seeds, from the glass melt. Niter (sodium nitrate, chemical formula Na_2NO_3) is a commonly used refining agent. A little over a third of niter converts to NOx and leaves the furnace in the exhaust gas. Therefore, the use of niter as a refining agent is balanced against the melting furnace's total NOx emissions allowed by permit. Operators may substitute a different refining agent, called saltcake (sodium sulfate, chemical formula Na_2SO_4), to reduce NOx emissions. The replacement is not without its own set of challenges. The operator may not be able to exchange saltcake for niter without substantially changing the glass recipe. Adding to the consideration is the fact that at least some of the saltcake leaves the molten glass to become SOx emissions.

2. Control of the Combustion Process
Commercial natural gas is very low in nitrogen-containing material and all furnaces in the District are (or will soon) fire on commercial natural gas as a primary fuel. This means that nitrogen contained in the fuel is not a significant source for NOx.

Operators can modify the combustion process either by changing the configuration of the burner to reduce peak flame temperature or change the composition of the combustion air to reduce the amount of N_2 available for conversion to NOx. Thermal NOx formation increases exponentially as a function of a burner's peak flame temperature. Therefore, lowering the peak flame temperature can significantly reduce NOx formation. Burner manufacturers have designed low-NOx burners that increase the zone where combustion takes place, thereby lowering the temperature of the flame at any given point. Lower flame temperatures means less thermal NOx created per unit of fuel burned. Besides low-NOx burners, operators can use electrodes submerged in the molten glass to "boost" the amount of heat added to the materials. The electric boosters generate no additional NOx, since they do not come in contact with air. However, operators consider heat from electricity expensive relative to heat generated by burning of fossil fuels.

Ambient air (the air around us) is about 79% nitrogen (N_2) and 21% oxygen (O_2). If the operator changes the proportion of N_2 in the air used for fuel burning (combustion air) by increasing the concentration of O_2, the amount of NOx that could form would be reduced because there is less N_2 available to react. A partial replacement of N_2 with O_2 is called "oxygen-enriched" firing – total replacement is "oxy-fuel" firing. Replacing some or all of the N_2 in combustion air with O_2 is not without cost. Most operators who convert to their furnaces to oxy-fuel or oxygen enhanced firing have an O_2-generating gas plant built on their property to support the needs of the glass-melting furnace. On the other hand, oxy-fuel furnaces use somewhat less fuel to melt the same amount of glass as air-fuel furnaces. This means that operators can partially offset the cost of O_2-generation through more efficient fuel usage.

3. Post-Combustion Techniques

Post-combustion control is the final place where operators can reduce NOx emissions. Add-on controls increase the complexity of the process by virtue of being another system that the operator must monitor and maintain. Glass manufacturers face challenges with post-combustion controls. Since the furnace exhaust temperature is high, special care must be taken to design an appropriate control system.

Controlling NOx through add-on controls offers one important advantage to operators. With add-on controls, the operator can choose the raw materials and furnace firing technology that make the most sense for the operations yet still meet low emission limits. Post-combustion control, however, does carry one main disadvantage – extra costs. These costs are significant one-time capital costs and on-going additional operating expenses. Since add-on controls are a separate system from the glass-making portion of the process, maintenance of the emission control system can add complexity to overall operations. Also, add-on controls may have some indirect effects on the glass-making process. Some examples of these indirect effects are that the furnace exhaust temperature or certain raw materials may have to be different in order to run the add-on control efficiently.

Selective catalytic reduction (SCR) is one type of post-combustion emission control used in other industries to control NOx emissions on combustion exhaust streams. SCR works by passing the post-combustion exhaust stream through a catalyst bed. The catalyst promotes the reaction of NOx back to N_2 and O_2. The catalyst is effective only in a narrow temperature range, and the exhaust stream must be relatively free from particulates and sulfur-containing compounds before the stream passes through the catalyst. To date, the use of SCR has been established at glass-making facilities in Europe and Asia, but it has not been used here in the United States. One District facility is planning to install SCR on its glass-melting furnace, but is at least a year away from using it in a production setting.

Selective non-catalytic reduction (SNCR) is a second type of post-combustion emission control used in other industries. The use of SNCR is not a widely adopted practice in the glass industry and it is not expected that operators within the District would use this technology to control NOx emissions.

The 3R process, developed by Pilkington Glass Limited, is a proprietary, low-NOx firing technology. The process injects various hydrocarbon fuels into the furnace waste gas stream as the agent to reduce NOx to nitrogen and water vapor. Since the control of NOx occurs within the furnace's regenerators (checker packs), the 3R process can be considered a hybrid between combustion control and add-on control. The treatment is after combustion, since the fuel is injected into the furnace exhaust. However, the reaction does not take place in a separate unit, so the 3R process is not, technically speaking, an add-on control. While flat glass furnace operators can expect to rebuild checker packs every 15 years or so, facilities utilizing the 3R process have experienced early and catastrophic failure of the refractory (insulation) within the checker packs.

B. SOx Emission Control Techniques

Within the glass-making process, there are three sources of SOx. The sources are fuel, raw material, especially a refining agent called saltcake (sodium sulfate, chemical formula Na_2SO_4), and gaseous SO_2 used in the annealing oven (lehr). As noted below, the sulfur that becomes SOx emissions enters a glass-melting furnace with either the fuel or the raw materials.

1. Fuel and Raw Materials

Natural gas is a low-sulfur fuel. Therefore, fuel is not a significant source of sulfur in the furnace exhaust. For furnaces fired on natural gas, controlling sulfur emissions on the input side of the process means controlling the use of saltcake. Replacing all or part of saltcake with alternative refining agent can create as many challenges as it solves. Arsenic trioxide is, by far, the best refining agent. However, it is seldom used in large-scale glass making because of the inherent toxicity of compounds containing arsenic. Niter must be stored and handled appropriately for safety considerations; niter is not as good as saltcake at stabilizing colorant ions for certain glass chemistries; and, at glass

melting temperatures, niter dissociates to form NOx. All these facts, taken as a whole, mean that replacing saltcake as a raw material is not a straightforward substitution.

2. Annealing Oven (Lehr)

A third source of SOx emissions is within the annealing section of the flat-glass production. SO_2 gas may be pumped into the annealing oven (lehr), either to prevent surface staining of the glass or to form a protective coat on the rollers that pull the glass through the process. The portion of SO_2 that does not adhere to the glass surface or roller surface exits the process with the lehr's exhaust gas. The lehr does not melt materials to make glass, and, therefore, is not directly subject to Rule 4354. However, the lehr exhaust gases may go through the glass-melting furnace and exit the process with the furnace exhaust. If the lehr in a glass-making process for flat glass is designed to exhaust into the glass-melting furnace, the lehr exhaust becomes a source of SOx to the glass-melting furnace. To reduce SOx emissions in the furnace by controlling the SO_2 level in the lehr can be problematic. The SO_2 concentration in the lehr is optimized for best glass processing, and making large changes in the SO_2 concentration to meet emission limits may be detrimental to maintaining glass quality and processing efficiency.

3. Post Combustion Control

If an operator determines that inlet-side control technique is not feasible or that the changes are not practical, there are control devices for removing SOx from the exhaust side of the process such as scrubbers. Scrubbers are air pollution control devices that use an absorbent to remove aerosol and gaseous pollutants from an air stream. The gases are removed either by absorption or chemical reaction. There are two types of scrubbing suitable for glass manufacturers: dry and semi-dry (in other industries, this type of scrubber is sometimes called semi-wet). The reaction principles are the same for both types of scrubbers. A reactive material (the absorbent) is introduced to and dispersed in the exhaust stream. The absorbent reacts with the SOx species to form a solid, which has to be removed from the exhaust stream by a bag filter system or an electrostatic precipitator (ESP). It makes economic sense for some glass manufacturers to reuse a portion the collected dust as a raw material, rather than disposing of it. The collected ESP dust is high in sulfate, so the recycled dust may replace at least some of the purchased saltcake in the glass recipe.

C. Particulate Matter (PM) Emission Control Techniques

The airflow through a glass melting furnace can be on the order of 30,000 standard cubic feet per minute. With airflow this high, un-melted raw material in the furnace can be lifted off the surface of the molten glass to go directly into the furnace's exhaust stream. Operators can influence the rate at which raw materials become directly emitted PM through raw materials specification, control of the raw material moisture at the point the material is delivered to the furnace, and design of the furnace's material charging system. There are also end-of-pipe particulate control techniques.

1. Material Selection and Moisture Control

In selecting raw materials, operators take into account the particle size of glass raw materials. Small particles are more easily lifted by airflow than larger particles, but are more easily melted. Material moisture also plays into how much material bypasses the melting process. It is best if material contains "enough" moisture to keep the material from being airborne, but not so wet as to affect glass production. In addition, the amount of recycled glass (cullet) in the recipe plays a role. Cullet generally melts at a lower temperature than glass raw material and is more likely to have a larger particle size. The use of cullet may be limited by the end-use quality requirements for the glass. Operators would balance all three elements to minimize directly emitted particulate through raw material selection.

2. Furnace Material Charging System

Given that most District furnaces are designed to produce hundreds of tons of glass per day, making sure that enough raw materials are feed into the furnace is an important consideration in furnace design. Particulate control through raw material selection and moisture content could be moot if the furnace's material charging system facilitates the material become airborne. The design of the material charging system is constrained by engineering principles and production requirements.

3. Post Combustion Control

Post-combustion particulate control is of two types: filters and ESPs. Filters used for high airflow situations are grouped together into what is a called bag house. In most cases, glass melting furnace operators opt for ESPs, since the temperature of the furnace exhaust is too high for most filter materials.

V. BASELINE INVENTORY AND EMISSION REDUCTIONS

The estimated NOx emissions from glass melting furnaces in 2008 are 9.0 tons per day. About 1.2 tons per day of NOx emission reductions are expected from projects that are already underway. Preliminary calculations indicate an additional 1.4 tons per day of NOx emission reductions when the draft emission limits are fully implemented in 2010. Based on recent source test results, District staff estimates that there are about 3.0 tons per day of SOx emissions and about 1.0 ton per day of PM10 emissions. Further refinement of the emission reductions calculations will take place later in the rule development process.

VI. COSTS AND COST EFFECTIVENESS ANALYSIS

District staff will prepare a cost effectiveness analysis using the estimated costs of complying with the draft amendments to Rule 4354 later in the rule development process. Operators and other interested parties are invited to submit their estimate of compliance costs to aid District staff with the cost effectiveness analysis.

VII. SOCIOECONOMIC IMPACT ANALYSIS

Pursuant to state law, District staff is required to perform a socioeconomic impact analysis prior to adoption, amendment, or repeal of a rule that has significant air quality benefits or that will strengthen emission limitations. As part of the District's socioeconomic analysis process, District staff will seek representatives from interested groups to participate as members of a Socioeconomic Focus Group. Operators and other interested parties are invited to submit their estimate of compliance costs and possible business responses to aid District staff. Information submitted by members of the Focus Group will assist District staff in determining the regulatory compliance costs and business impacts resulting from compliance with the rule. The results of the socioeconomic impact analysis will be published in a report that will be presented along with the refined version of the proposed rule to the public and interested parties during the final workshops for the rules.

VIII. ENVIRONMENTAL IMPACTS

The California Environmental Quality Act (CEQA) requires that District staff investigate the likely environmental impacts of the proposed changes to the rules. The investigation will be performed later in the rule development process and District staff will recommend appropriate action to the District Governing Board.

IX. RULE CONSISTENCY ANALYSIS

Under California Health and Safety Code Section 40272.2, District staff is required to prepare a rule consistency analysis. This analysis will be done later in the rule development process.

VII. REFERENCES

1. US EPA, AP-42 Chapter 11.15 – Glass Manufacturing

2. US EPA, Alternative Control Techniques Guidelines – NOx Emissions from Glass Manufacturing EPA 453/R-94-037, June 1994.

3. US EPA, Federal Register Volume 44 page 53761 (September 17, 1979).

4. South Coast Air Quality Management District Rule 1171 (Emissions of Oxides of Nitrogen from Glass Melting Furnaces), amended January 1984.

5. South Coast Air Quality Management District Rule 1105.1 (Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units), adopted November 7, 2003.

6. Bay Area Air Quality Management District Regulation 9 Rule 12 (Nitrogen Oxides from Glass Melting Furnaces), adopted January 1994.

7. European Commission, Integrated Pollution Prevention and Control Reference Document on Best Available Techniques in the Glass Manufacturing Industry December 2001.

8. World Bank Group, Environmental, Health, and Safety Guidelines for Glass Manufacturing, April 30, 2007.

9. Code of Federal Regulations, Title 40 Part 60 Subpart CC New Source Performance Standards for Glass Melting Furnaces.

10. Sheth, Atul and Tom Giel. “Understanding the PM-2.5 Problem.” Pollution Engineering On-line. March 2000.

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APPENDIX A

SUMMARY OF SIGNIFICANT COMMENTS ON THE PRELIMINARY DRAFT STAFF REPORT FOR RULE 4354 AND DISTRICT RESPONSES

OCTOBER 8, 2007

APPENDIX A

Summary of Significant Comments and District Responses for the Preliminary Draft Staff Report dated June 4, 2007

US EPA REGION IX STAFF COMMENTS

1. **COMMENT:** Section III.B.3 - Furnace Campaign Length
EPA has observed that container glass furnaces can be operated for well over 10 years. Operators are even doing mid-campaign crown replacements to extend the life of the furnace. Flat glass furnaces can go as long as 17 years (Guardian Glass). Fiberglass furnaces are rebuilt more frequently than the other furnaces types at about 5 to 8 years. The District's Pilkington facility has also experienced problems with their regenerators, similar to other facilities using 3R. The facility rebuilt both regenerators mid-campaign in 2005 due to premature refractory wear.

   RESPONSE: Comment noted.

2. **COMMENT:** Section III.B.4 - Particulate Matter Emission Limits
The term "modified processes" in the NSPS pertains to applications of a technology that reduce PM emissions. Oxygen-enrichment, oxy-fuel, and 3R are all NOx reduction techniques. With oxyfuel, the PM emissions decrease due to the decrease in the exhaust gas flow rate. Has the District found that oxygen-enrichment and 3R reduce PM emissions also?

   RESPONSE: District staff will not cite the NSPS and, therefore, the question of whether not a combustion technology is controls PM is moot.

3. **COMMENT:** Section IV.B. - Furnace Firing Technology - What about BAS (Blower Air Staging) and OEAS (Oxygen Enriched Air Staging)? BAS (Madera) and OEAS/BAS (Owens Brockway – Tracy) are used in the container industry currently in the District.

   RESPONSE: It is District staff's understanding that Blower Air Staging is a firing technology associated with carbon monoxide (CO) control. Since controlling CO is not part of this rule project, it was not included in the discussion of furnace firing technology. District staff has changed the staff report to more clearly reflect that both oxy-fuel and oxygen-assisted air staging reduce NOx emissions using the same mechanism.

4. **COMMENT:** Section IV.C. - Post-Combustion Techniques - The District facility has permits to install SCR and should be in production in fall of this year or by March 31, 2008 (according to the facility as of May 2007). Selective Non-Catalytic Reduction (SNCR) has also been used as a post-combustion device.

   RESPONSE: Based on a recent discussion with a facility representative, the window for shutdown is November 2007 to January 2008. The construction phase will take about four months and startup will take another few months. This means the actual production-setting debut of SCR is more likely fourth quarter 2008, which is after the expected rule adoption date. SCR for NOx control of glass furnaces, therefore, will not be an achieved-in-practice technology before rule adoption.

ARB STAFF COMMENTS

No comments received.

STAKEHOLDER COMMENTS

Stakeholders sending comments:

Guardian Industries Corporation (GIC)
Pilkington North America (PNA)
PPG Industries (PPG)
Saint-Gobain Containers, Inc. (SGCI)

5. **COMMENT:** Commenter believes that comparisons to District BACT and EU BAT are potentially misleading because those requirements represent heightened levels of control that do not emphasize cost-effectiveness. In addition, EU BAT does not represent an apples-to-apples comparison to domestic glass manufacturing or emission control because the circumstances in the EU are significantly different. (PNA)

   The Staff Report suggests that the effort and expense of installing and operating low-NOx burners will be insufficient to meet the emission levels being considered by the Air District, which in turn suggests that the levels being considered by the Air District may be too aggressive. As a result, the Air District should not revise Rule 4354 in a way that requires flat glass furnaces to use oxy-fuel technology to reduce NOx emissions. (PNA)

   Requiring the installation of SCR at a glass furnace is often paramount to requiring the contemporaneous installation of particulate, sulfur and/or acid controls. The Staff Report acknowledges that SCR needs to have these other pollutants treated in order to allow proper functioning, which could easily result in doubling, tripling, or quadrupling the expenses associated with installing the

complete suite of air pollution control devices. As a result, requiring SCR (alone) in not a feasible or reasonable suggestion, and requiring SCR with the necessary companion technologies is cost-prohibitive. SCR may also pose additional technical problems. (PNA)

We think it is fundamentally unfair to adopt a new NOx limit when the exiting limit does not take fill effect until 2008. Having recently invested time and effort into reducing emissions to the 4.0-lb/ton limit, changing that limit before it becomes fully enforceable penalizes those who have undertaken efforts to achieve it before the deadline for compliance. Our concern with this proposal is that there is no incremental control option which would allow a furnace to reduce emissions from 4.0 lb/ton to 3.0 lb/ton and thus the 3.0 lb/ton requirement would necessitate the installation of very costly add-on control, exceeding any reasonable cost effectiveness. (SGCI)

There have been no new NOx control technologies implemented by the glass industry since the low-NOx limits were established for flat glass in the current version of Rule 4354. PPG's implementation of oxy-fuel technology at Fresno represented not only a significant capital investment, but also was a major technical advance for float glass manufacturing. These changes have not yet observed emissions performance over a full campaign life. Thus, PPG is concerned about the proposal to further lower NOx limits. (PPG)

RESPONSE: District staff has carefully considered these comments in incorporating a NOx limit for glass furnaces. See rule for draft changes.

6 **COMMENT:** We urge the District to consider adopting a standard which allows for averaging of emissions on a facility-wide basis. Utilization of averaging for multi-furnace facilities would encourage other operators to install BACT-level controls on one furnace at multiple furnace facilities, which could result in facility wide RACT-level emissions of less than 4.0 lb/ton. Such limits would normally be calculated on a weighted average basis. (SGCI)

RESPONSE: District staff recommends that the commenter review Section 9.0 of the current rule. This section addresses emissions-averaging for multiple furnaces and for furnace batteries.

7. **COMMENT:** Given the focus on NOx emissions, as well as the counterproductive effect of simultaneously attempting to reduce SOx emission, Commenter believes that no SOx limit is warranted at this point. If a SOx limit is pursued by the Air District, salt cake limits probably provide the best control of SOx emissions because salt cake is the primary source of those emissions at many flat glass furnaces. EPA has already recognized salt cake limits as BACT, which suggests that any additional reductions would exceed the level of controls appropriate for this rule revision process. (PNA)

The simultaneous reduction of existing NOx and SOx emission limits is counterproductive. Given the *de minimis* impact of fuel on SOx emissions, and the virtual necessity of sulfur-containing raw materials such as salt cake, glass manufacturers should not be subjected to additional SOx regulation by the Air District. (PNA)

Low SOx limits are typically achievable on float glass furnaces only by means of emission controls. PPG is permitted to operate on fuel oil during emergency back-up situations, and requests that the District consider that factor in setting any industry-wide SOx limit. (PPG)

RESPONSE: District staff has carefully considered these comments in incorporating a SOx limit for glass furnaces. See rule for draft changes.

8. **COMMENT:** A number of additional arguments against adopting a SOx limit were previously provided to the Air District by Commenter in a letter dated March 17, 2005 (comments on the previous review of District Rule 4354), which are hereby incorporated by reference. (PNA)

RESPONSE: These comments were addressed in the previous rule project.

9. **COMMENT:** EU BAT is not an especially helpful point of comparison to U.S. emission standards, and especially NSPS standards. (PNA)

We believe that the modified process limit of 1.0 lb/ton glass is generally achievable with RACT-level raw material usage restrictions for most types of glass, but we believe that a good operating practice rule regarding saltcake usage is preferable to a numeric limit. (SGCI)

The District should specify only the emission limits that must be met. Manufacturers should have the flexibility to select whatever emission reduction methods are best suited to their furnaces to meet he specified limits. It would be detrimental to glass manufacturing's operational flexibility if the rule would constrain or define raw materials, firing technologies or post-combustion control, as glass furnaces and their products may vary. (PPG)

RESPONSE: District staff has carefully considered these comments in incorporating a PM limit for glass furnaces. See rule for draft changes.

10 **COMMENT:** The discussion in the preliminary draft staff report is unclear whether the District is suggesting a particulate matter (PM) limit, filterable PM limit, or a PM2.5 limit. (PPG)

RESPONSE: At the time the preliminary draft staff report was released, staff had not determined which type of PM would be controlled. See the draft staff report for discussion on the limit chosen.

11. **COMMENT:** Reducing the emission averaging period for flat glass furnaces would be counter productive, increase costs to the Air District and increase costs to industry and is not expected to yield an overall reduction in emissions. Increasing costs of doing business, increasing costs to the public while not making any reduction in emissions is unreasonable and would therefore not only not bring any public good, it could bring public harm at least economically. (GIC)

    Given the relative steady-state manufacture of flat glass (i.e., successful glass production is predicated on consistency and predictability), the sector is already attempting to maintain stable production rates and, by extension, stable emission rates. Shortening the averaging period for flat glass manufacturers will change the existing need for the flat glass industry to keep production/emissions stable; it will, however, expose the sector to increase exposure to potential violations. Commenter sees no justification for shortening the averaging times for the flat glass sector. (PNA)

    The Staff Report also fails to connect the fact that there are different quality standards applicable to the flat glass industry (compared to other glass sectors), which makes quick or sudden changes to the production of flat glass much harder (if not impossible) to make without ruining the product. (PNA)

    The industry needs adequately flexible averaging to accommodate operational adjustments for product quality control, product changes, tonnage changes, and operations upsets. A 30-day emissions averaging period allows compliance even though occasional operational upsets or other changes may cause short-lived emission spikes. (PPG)

    RESPONSE: District staff has carefully considered these comments. See staff report for further explanation.

12. **COMMENT:** Changing the startup period (i.e., shortening the period) would be technically infeasible, potentially result in capital damage to facilities, increase costs and place a burden on the Air District to monitor. Assuming a flat glass furnace life of 10 to 12 years or more the amount of time during start-up is negligible and very infrequent. The emission reduction potential therefore would at best be infrequent and negligible. Imposing additional costs, potential for capital damage and an additional burden on the Air District for negligible and infrequent reductions in emissions is unreasonable. (GIC)

The time needed for startup must be relatively long because the size of flat glass furnaces is relatively large and the quality requirements require a gradual process for beginning production. (PNA)

During startup, the furnace is filled with raw materials, which must be melted and refined, and glass quality needs to be checked out and stabilized. In our experience, the timeframe for startup in the current rule is fair and reasonable, and a lesser time period would be difficult to attain. Ironically, during startup, the furnace is typically operating with a lower firing rate than during normal operations, so the lb/hour NOx emission rate is likely to be lower, but due to the lack of glass production during this period, the lb NOx/ton glass would be higher. Thus, there is little or no environmental impact from the startup exemption. (SGCI)

Shorter start up period is a particular concern for plant that may wish to adopt innovative technology. It is not reasonable to expect the industry to implement innovative technologies that strive for reduced emissions, while at the same time imposing less time upon furnace startup to do so. The magnitude and complexity of a startup for a large float glass furnace requires sufficient time to stabilize the process. Furthermore, it is not advantageous to a business to prolong startup of a process. Rather, a prompt and efficient start up maximizes productivity. Mandating shorter periods through rule making would only serve to discourage innovation. And, since startups occur so infrequently for float glass furnaces, NOx reductions achieved through shorter start up would likely be negligible. (PPG)

RESPONSE: District staff has carefully considered these comments. See staff report for further explanation.

13. **COMMENT:** Commenter notes that glass furnaces in the District are currently in the midst of complying with several emission reduction requirements under the current Rule 4354. Further reducing these limits will likely render insufficient the emission reduction projects *that are still under construction*, thereby requiring additional projects, investment, and interruption to glass manufacturing on the heels of the projects, investment, and interruption that is already in progress. Commenter believes it economically *un*-reasonable and potentially wasteful to further reduce the applicable emission limits in Rule 4354, especially since the glass industry is still responding to the last revision to the rule. (PNA)

Glass manufacturers typically schedule significant emission reduction projects to coincide with furnace cold repairs to minimize the production losses associated with the interruption to normal glass production. The need to minimize interruptions is especially important for the flat glass sector because the start-up process is relatively long and the need for stable production is intense in light of the high quality standards associated with building and automotive window glass.

While some sectors of the glass industry may rebrick furnaces after only five years, flat glass furnaces regularly go over a decade between such repairs. As such, flexible implementation schedules are needed for to allow for coordination with upcoming cold repairs. (PNA)

The only opportunity for making substantial changes to a float glass furnace is at rebuild. The provisions of the current rule took into account furnace campaign life by establishing an implementation schedule based on furnace rebuild schedules and we recommend that amendments to the rule do the same. (PPG)

RESPONSE: District staff has carefully considered these comments in creating a compliance schedule for the new requirements. See rule for draft changes.

14. **COMMENT:** The financial implications for revising Rule 4354 are important because the glass industry, and the flat glass industry in particular, face mounting competition from the incredible growth of glass production in China. The number of new glass furnaces in China, that are under or about to begin construction, is believed to push China's glass producing capacity well beyond that in North America in the coming years. As a result, the U.S. glass industry's ability to keep pace with its Chinese counterpart will suffer with additional regulatory pressures that push domestic production costs higher. (PNA)

We note that with a baseline of over eight tons per day, the incremental reduction of 0.4 tons per day is equivalent to a 5% reduction. We urge the District to carefully analyze the cost-effectiveness and technological feasibility of requiring existing container glass furnaces where the overall environmental impact is relatively insignificant. (SGCI)

RESPONSE: District staff will consider both cost effectiveness and socioeconomic impact of the rule amendments. In order to determine the socioeconomic impact of the rule amendments, compliance costs will be compared to estimates of businesses' net profit. District staff would carefully evaluate cost data or business data submitted by furnace operators or other stakeholders to support their position as part of this rule project.

15. **COMMENT:** Before industry can furnish comments on cost effectiveness, a better understanding of emission reduction data is required. (PPG)

RESPONSE: Emission reduction analysis will compare current emissions, extrapolated from recent source test results, with estimated emissions of the furnaces emitting at the proposed emission limit. More details will be forthcoming in future workshops. District staff would carefully consider cost data submitted by stakeholders.

16. **COMMENT:** Because it is important for the District to understand the industry's view of the firing technologies, PPG wishes to point out that the Pilkington 3R process is not generally considered a success within the glass industry. The 3R process significantly degrades a furnace prematurely, and it has not been implemented at other float glass plants for that reason. (PPG)

    RESPONSE: Comment noted.

17. **COMMENT:** Rule 4354 currently has no provisions to accommodate the need for periodic maintenance of emission control equipment in order to keep the system sound and operating at its designed removal efficiency. Since float furnace campaigns are so lengthy (10 – 15 years) and the glass process cannot cease operating during this time, the rule should provide some opportunity for emission control down time for the purpose of required maintenance. It is not possible to operate control systems reliably for 10-15 year campaign without such maintenance. The District currently requires glass plants to apply for a variance to conduct such maintenance. Knowing that EPA does not recognize the validity of the variance process puts glass manufacturer at risk of federal enforcement actions. EPA does recognize the need for regularly scheduled maintenance and has included a provision in 40 CFR 60 Subpart CC Section 60.292(e). We suggest that the District adopt a provision in Rule 4354 for emission control maintenance down time. Such an amendment would conserve the District's resources by eliminating the need for repeated variances to accomplish the recognized and routine need for control equipment maintenance, and would provide more certainty and less enforcement risk to the glass plants under its jurisdiction. (PPG)

    RESPONSE: District staff agrees with commenter. See rule for changes.

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

RULE 219 - EQUIPMENT NOT REQUIRING A WRITTEN PERMIT PURSUANT TO REGULATION II

(Adopted Jan. 9, 1976)(Amended Oct. 8, 1976; February 2, 1979; Oct. 5, 1979; Sept. 4, 1981; June 3, 1988; September 11, 1992; August 12, 1994; December 13, 1996; September 11, 1998; August 13, 1999; May 19, 2000; November 17, 2000; July 11, 2003; December 3, 2004; May 5, 2006; July 7, 2006)

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Purpose

The purpose of this rule is to identify equipment, processes, or operations that emit small amounts of air contaminants that shall not require written permits, unless such equipment, process or operation is subject to subdivision (s) – Exceptions. In addition, exemption from written permit requirement in this rule is only applicable if the equipment, process, or operation is in compliance with subdivision (t).

Written permits are not required for:

(a) Mobile Equipment

(1) motor vehicle or vehicle as defined by the California Vehicle Code; or

(2) marine vessel as defined by Health and Safety Code Section 39037.1; or

(3) a motor vehicle or a marine vessel that uses one internal combustion engine to propel the motor vehicle or marine vessel and operate other equipment mounted on the motor vehicle or marine vessel; or

(4) equipment which is mounted on a vehicle, motor vehicle or marine vessel if such equipment does not emit air contaminants.

This subdivision does not apply to air contaminant emitting equipment which is mounted and operated on motor vehicles, marine vessels, mobile hazardous material treatment systems, mobile day tankers [except those carrying solely fuel oil with an organic vapor pressure of 5 mm Hg (0.1 psi) absolute or less at 21.1^{o}C (70°F)], or pavement heating machines.

(b) Combustion and Heat Transfer Equipment

(1) Piston type internal combustion engines with a manufacturer's rating of 50 brake horsepower or less, or gas turbine engines with a maximum heat input rate of 2,975,000 British thermal units (Btu) per hour or less.

(2) Boilers, process heaters or any combustion equipment that has a maximum heat input rate of 2,000,000 Btu per hour (gross) or less and is equipped to be heated exclusively with, natural gas, methanol, liquefied petroleum gas or any combination thereof that does not include piston type internal combustion engines. This exemption does not apply whenever there are emissions other than products of combustion, unless the equipment is specifically exempt under another section of this rule.

(3) Fuel cells which use phosphoric acid, molten carbonate, proton exchange membrane or solid oxide technologies.

(4) Test cells and test stands used for testing burners or internal combustion engines provided that the equipment internal combustion engines uses less than 800 gallons of diesel fuel and 3500 gallons of gasoline fuel per year, or uses other fuels with equivalent or less emissions.

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(5) Internal combustion engines used exclusively for training at educational institutions.

(6) Portable internal combustion engines, including any turbines qualified as military tactical support equipment under Health and Safety Code Section 41754, registered pursuant to the California Statewide Portable Engine Registration Program.

(c) Structures and Equipment - General

(1) Structural changes which cannot change the quality, nature or quantity of air contaminant emissions.

(2) Repairs or maintenance not involving structural changes to any equipment for which a permit has been granted.

(3) Identical replacement in whole or in part of any equipment where a permit to operate had previously been granted for such equipment under Rule 203, except seals for external or internal floating roof storage tanks.

(4) Replacement of floating roof tank seals provided that the replacement seal is of a type and model which the Executive Officer has determined is capable of complying with the requirements of Rule 463.

(5) Equipment utilized exclusively in connection with any structure which is designed for and used exclusively as a dwelling for not more than four families, and where such equipment is used by the owner or occupant of such a dwelling.

(6) Laboratory testing and quality control testing equipment used exclusively for chemical and physical analysis, non-production bench scale research equipment, and control equipment exclusively venting such equipment. Laboratory testing equipment does not include engine test stands or test cells unless such equipment is also exempt pursuant to paragraph (b)(4).

(7) Vacuum-producing devices used in laboratory operations or in connection with other equipment not requiring a written permit.

(8) Vacuum-cleaning systems used exclusively for industrial, commercial or residential housekeeping purposes.

(9) Hoods, stacks or ventilators.

(d) Utility Equipment - General

(1) Comfort air conditioning or ventilating systems which are not designed or used to remove air contaminants generated by, or released from, specific equipment units, provided such systems are exempt pursuant to paragraph (b)(2).

(2) Refrigeration units except those used as or in conjunction with air pollution control equipment.

(3) Water cooling towers and water cooling ponds not used for evaporative cooling of process water or not used for evaporative cooling of water from barometric jets or from barometric condensers and in which no chromium compounds are contained.

(4) Equipment used exclusively to generate ozone and associated ozone destruction equipment for the treatment of cooling tower water or for water treatment processes.

(5) Equipment used exclusively for steam cleaning provided such equipment is also exempt pursuant to paragraph (b)(2).

(6) Equipment used exclusively for space heating provided such equipment is exempt pursuant to paragraph (b)(2).

(7) Equipment used exclusively to compress or hold purchased quality natural gas, except internal combustion engines not exempted pursuant to paragraph (b)(1).

(8) Emergency ventilation systems used exclusively to scrub ammonia from refrigeration systems during process upsets or equipment breakdowns.

(9) Emergency ventilation systems used exclusively to contain and control emissions resulting from the failure of a compressed gas storage system.

(10) Passive carbon adsorbers using no mechanical ventilation with a volume of 55 gallons or less, used exclusively for foul air odor control from sanitary sewer systems such as sanitary sewer lines, manholes and pump stations.

(11) Refrigerant recovery and/or recycling units. This exemption does not include refrigerant reclaiming facilities.

(12) Carbon arc lighting equipment, provided such equipment is exempt pursuant to paragraph (b)(1).

(e) Glass, Ceramic, Metallurgical Processing and Fabrication Equipment

(1) Crucible-type or pot-type furnaces with a brimful capacity of less than 7400 cubic centimeters (452 cubic inches) of any molten metal and control equipment exclusively venting the equipment.

(2) Crucible furnaces, pot furnaces or induction furnaces with a capacity of 450 kilograms (992 pounds) or less each, where no sweating or distilling is conducted and where only the following materials are poured or held in a molten state and control equipment exclusively venting the equipment:

(A) Aluminum or any alloy containing over 50 percent aluminum,

(B) Magnesium or any alloy containing over 50 percent magnesium,

(C) Tin or any alloy containing over 50 percent tin,

(D) Zinc or any alloy containing over 50 percent zinc,

(E) Copper or any alloy containing over 50 percent copper,

(F) Precious metals, and

(G) Glass.

Provided these materials do not contain alloying elements of arsenic, beryllium, cadmium, chromium and/or lead and such furnaces are exempt pursuant to paragraph (b)(2).

(3) Molds used for the casting of metals and control equipment exclusively venting the equipment.

(4) Inspection equipment used exclusively for metal, plastic, glass, or ceramic products and control equipment venting exclusively such equipment.

(5) Ovens used exclusively for curing potting materials or castings made with epoxy resins, provided such ovens are exempt pursuant to paragraph (b)(2).

(6) Hand-held or automatic brazing and soldering equipment, and control equipment that exclusively vents such equipment, provided that the

equipment uses one quart per day or less or 22 quarts per calendar month or less of material containing VOC. This exemption does not include hot oil, hot air, or vapor phase solder leveling equipment and related control equipment.

(7) Brazing ovens where no volatile organic compounds (except flux) are present in the materials processed in the ovens, provided such ovens are exempt pursuant to paragraph (b)(2).

(8) Welding equipment or oxygen gaseous fuel-cutting equipment and control equipment venting such equipment. This exemption does not include plasma arc-cutting equipment that is used to cut stainless steel or rated 136 amperes or more.

(9) Sintering equipment used exclusively for the sintering of metal (excluding lead) or glass where no coke or limestone is used, and control equipment exclusively venting such equipment, provided such equipment is exempt pursuant to paragraph (b)(2).

(10) Mold forming equipment for foundry sand to which no heat is applied, and where no volatile organic materials are used in the process, and control equipment exclusively venting such equipment.

(11) Metal forming equipment or equipment used for heating metals for forging, rolling, pressing, or drawing of metals provided that any lubricants used have 50 grams or less of VOC per liter of material or a VOC composite partial pressure of 20 mm Hg or less at 20°C (68°F) ~~or~~ provided such heaters are exempt pursuant to paragraph (b)(2) and control equipment exclusively venting the equipment.

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(12) Heat treatment equipment used exclusively for heat treating glass or metals (provided no volatile organic compounds materials are present), or equipment used exclusively for case hardening, carburizing, cyaniding, nitriding, carbonitriding, siliconizing or diffusion treating of metal objects, provided any combustion equipment involved is exempt pursuant to paragraph (b)(2).

(13) Ladles used in pouring molten metals.

(14) Tumblers used for the cleaning or deburring of solid materials.

(15) Die casting machines, except those used for copper base alloys, those with an integral furnace having a brimful capacity of more than 450 kg (992 lbs.), or those using a furnace not exempt pursuant to paragraph (b)(2).

(16) Furnaces or ovens used for the curing or drying of porcelain enameling, or vitreous enameling provided such furnaces or ovens are exempt pursuant to paragraph (b)(2).

(17) Wax burnout kilns where the total internal volume is less than 0.2 cubic meter (7.0 cubic feet) or kilns used exclusively for firing ceramic ware, provided such kilns are exempt pursuant to paragraph (b)(2) and control equipment exclusively venting the equipment.

(18) Shell-core and shell-mold manufacturing machines.

(19) Furnaces used exclusively for melting titanium materials in a closed evacuated chamber where no sweating or distilling is conducted, provided such furnaces are exempt pursuant to paragraph (b)(2).

(20) Vacuum metallizing chambers which are electrically heated or heated with equipment that is exempt pursuant to paragraph (b)(2), and control equipment exclusively venting such equipment, provided the control equipment is equipped with a mist eliminator or the vacuum pump used with control equipment demonstrates operation with no visible emissions from the vacuum exhaust.

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(f) Abrasive Blasting Equipment

(1) Blast cleaning cabinets in which a suspension of abrasive in water is used and control equipment exclusively venting such equipment.

(2) Manually operated abrasive blast cabinet, vented to a dust-filter where the total internal volume of the blast section is 1.5 cubic meters (53 cubic feet) or less, and any dust filter exclusively venting such equipment.

(3) Enclosed equipment used exclusively for shot blast removal of flashing from rubber and plastics at sub-zero temperatures and control equipment exclusively venting such equipment.

(4) Shot peening operations, flywheel type and control equipment exclusively venting such equipment.

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(5) Portable sand/water blaster equipment and associated piston type internal combustion engine provided the water in the mixture is 66 percent or more by volume is maintained during operation of such equipment. Piston type internal combustion engines must be exempt pursuant to paragraph (b)(1).

(g) Machining Equipment

(1) Equipment used exclusively for buffing (except tire buffers), polishing, carving, mechanical cutting, drilling, machining, pressing, routing,

sanding, stamping, surface grinding or turning provided that any lubricants, coolants, or cutting oils used have 50 grams or less of VOC per liter of material or a VOC composite partial pressure of 20 mm Hg or less at 20°C (68°F) and control equipment exclusively venting such equipment. This exemption does not include asphalt pavement grinders.

(2) Equipment used exclusively for shredding of wood, or the extruding, handling, or storage of wood chips, sawdust, or wood shavings and control equipment exclusively venting such equipment. This exemption does not include piston type internal combustion engines over 50 bhp which are used to supply power to such equipment.

(3) Equipment used exclusively to mill or grind coatings or molding compounds where all materials charged are in the paste form.

(h) Printing and Reproduction Equipment

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(1) Printing and related coating and/or laminating equipment and associated dryers and curing equipment:

(A) provided such dryers and curing equipment are exempt pursuant to paragraph (b)(2) and the equipment is

(i) not emitting more than three (3) pounds per day or 66 pounds per calendar month of VOC emissions; or

(ii) not using more than six (6) gallons per day or 132 gallons per calendar month of plastisol type inks, including cleanup solvent; or

(iii) not using more than two (2) gallons per day or 44 gallons per calendar month of any other graphic arts materials.

using not more than six (6) gallons per day or 132 gallons per calendar month of ultra violet/electron beam (UV/EB) graphics arts materials including cleanup solvents, or

(B) UV/EB graphics arts materials containing fifty (50) grams of VOC per liter of material, and using exclusively cleanup solvents containing fifty (50) grams of VOC per liter of material, or less

Graphic arts materials are any inks, coatings, adhesives, fountain solutions (excluding water), thinners (excluding water), retarders, or cleaning

solutions (excluding water), used in printing or related coating or laminating processes.

(2) Photographic process equipment by which an image is reproduced upon material sensitized by radiant energy and control equipment exclusively venting such equipment, excluding wet gate printing utilizing perchloroethylene and its associated control equipment.

(3) Lithographic printing equipment which uses laser printing.

(4) Printing equipment used exclusively for training and non-production at educational institutions.

(5) Flexographic plate-making and associated processing equipment.

(6) Corona treating equipment and associated air pollution control equipment used for surface treatment in printing, laminating and coating operations.

(7) Hand application of materials used in printing operations including but not limited to the use of squeegees, screens, stamps, stencils and any hand tools.

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(i) Pharmaceuticals, Cosmetics, and Food Processing and Preparation Equipment

(1) Smokehouses for preparing food in which the maximum horizontal inside cross-sectional area does not exceed 2 square meters (21.5 square feet) and control equipment exclusively venting the equipment.

(2) Smokehouses exclusively using liquid smoke, and which are completely enclosed with no vents to either a control device or the atmosphere.

(3) Confection cookers where products are edible and intended for human consumption.

(4) Grinding, blending or packaging equipment used exclusively for tea, cocoa, roasted coffee, flavor, fragrance extraction, dried flowers, or spices, provided that the facility uses less than one gallon per day or twenty-two (22) gallons per month of VOC containing solvents, and control equipment exclusively venting such equipment.

(5) Equipment used in eating establishments for the purpose of preparing food for human consumption.

(6) Equipment used to convey or process materials in bakeries or used to produce noodles, macaroni, pasta, food mixes and drink mixes where products are edible and intended for human consumption provided that the facility uses less than one gallon per day or twenty-two (22) gallons per month of VOC containing solvents, and control equipment exclusively

venting such equipment. This exemption does not include storage bins located outside buildings, or equipment not exempt pursuant to paragraph (b)(2).

(7) Cooking kettles where all the product in the kettle is edible and intended for human consumption. This exemption does not include deep frying equipment used in facilities other than eating establishments.

(8) Coffee roasting equipment with a maximum capacity of 10 pounds or less and control equipment exclusively venting the equipment.

(9) Equipment used exclusively for tableting, or coating vitamins, herbs or dietary supplements provided that the facility uses less than one gallon per day or twenty-two (22) gallons per month of VOC containing solvents, and control equipment used exclusively to vent such equipment.

(10) Equipment used exclusively for tableting or packaging pharmaceuticals and cosmetics, or coating pharmaceutical tablets, provided that the facility uses less than one gallon per day or twenty-two (22) gallons per month of VOC containing solvents, and control equipment used exclusively to vent such equipment.

(11) Modified atmosphere food packaging equipment using mixture of gases of no more than 0.4% of carbon monoxide by volume.

(j) Plastics, Composite and Rubber Processing Equipment

(1) Presses or molds used for curing, post curing or forming composite products and plastic products where no VOC or chlorinated blowing agent is present, and control equipment exclusively venting these presses or molds.

(2) Presses or molds with a ram diameter of less than or equal to 26 inches used for curing or forming rubber products and composite rubber products excluding those operating above 400°F.

(3) Ovens used exclusively for the forming of plastics or composite products, where no foam forming or expanding process is involved, provided such equipment is exempt pursuant to paragraph (b)(2).

(4) Equipment used exclusively for softening or annealing plastics, provided such equipment is exempt pursuant to paragraph (b)(2).

(5) Extrusion equipment used exclusively for extruding rubber products or plastics where no organic plasticizer is present, or for pelletizing

polystyrene foam scrap, except equipment used to extrude or to pelletize acrylics, polyvinyl chloride, polystyrene, and their copolymers.

(6) Injection or blow molding equipment for rubber or plastics where no blowing agent other than compressed air, water or carbon dioxide is used, and control equipment exclusively venting such equipment.

(7) Mixers, roll mills and calendars for rubber or plastics where no material in powder form is added and no VOC containing solvents, diluents or thinners are used.

(8) Ovens used exclusively for the curing of vinyl plastisols by the closed-mold curing process, provided such ovens are exempt pursuant to paragraph (b)(2).

(9) Equipment used exclusively for conveying and storing plastic materials, provided they are not in powder form and control equipment exclusively venting the equipment.

(10) Hot wire cutting of expanded polystyrene foam and woven polyester film.

(11) Photocurable stereolithography equipment and associated post curing equipment.

(12) Laser sintering equipment used exclusively for the sintering of nylon or plastic powders and control equipment exclusively venting such equipment, provided such equipment is exempt pursuant to paragraph (b)(2).

(13) Roller to roller coating systems that create 3-dimensional images using 25 grams of VOC per liter or less of material provided that the coating used on such equipment is 12 gallons per day or less or 264 gallons per calendar month or less.

(k) Mixing, Blending, and Packaging Equipment

(1) Batch mixers which have a brimful capacity of 55 gallons or less (7.35 cubic feet) and control equipment exclusively venting the equipment.

(2) Equipment used exclusively for mixing and blending of materials where no VOC containing solvents are used and no materials in powder form are added.

(3) Equipment used exclusively for mixing and blending of materials to make water emulsions of asphalt, grease, oils or waxes where no materials in powder or fiber form are added.

(4) Equipment used to blend, grind, mix, or thin liquids to which powders are added, with a capacity of 950 liters (251 gallons) or less, where no

supplemental heat is added and no ingredient charged (excluding water) exceeds 135°F and control equipment exclusively venting the equipment.

(5) Concrete mixers, with a rated working capacity of one cubic yard or less and control equipment exclusively venting the equipment.

(6) Equipment used exclusively for the packaging of lubricants or greases.

(7) Equipment used exclusively for the packaging of sodium hypochlorite-based household cleaning or pool products and control equipment exclusively venting the equipment.

(8) Foam packaging equipment using twenty (20) gallons per day or less or 440 gallons per calendar month or less of liquid foam material or containing fifty (50) grams of VOC per liter of material, or less.

(l) Coating and Adhesive Process/Equipment

(1) Equipment used exclusively for coating objects with oils, melted waxes or greases which contain no VOC containing materials, including diluents or thinners.

(2) Equipment used exclusively for coating objects by dipping in waxes or natural and synthetic resins which contain no VOC containing materials including, diluents or thinners.

(3) Batch ovens with 1.5 cubic meters (53 cubic feet) or less internal volume where no melting occurs, provided such equipment is exempt pursuant to paragraph (b)(2). This exemption does not include ovens used to cure vinyl plastisols or debond brake shoes.

(4) Ovens used exclusively to cure 30 pounds per day or less or 660 pounds per calendar month or less of powder coatings, provided that such equipment is exempt pursuant to paragraph (b)(2).

(5) Spray coating equipment operated within control enclosures.

(6) Coating, adhesive application, or laminating equipment operated outside control enclosures such as air, airless, air-assisted airless, high volume low pressure (HVLP), and electrostatic spray equipment, and roller coaters, dip coaters, vacuum coaters and flow coaters provided that:

(A) The VOC emissions from such equipment are only three (3) pounds per day or less or 66 pounds per calendar month or less; or

(B) The total amount of coatings, adhesives and/or, organic solvent (including cleanup) used in such equipment are six (6) gallons per day or less or 132 gallons per calendar month or less of UV or

electron beam type; or UV/EB coatings containing fifty (50) grams of VOC per liter of material, or less and using exclusively cleanup solvents containing twenty-five (25) grams of VOC per liter of material, or less; or

(C) The total amount of solvent type coating and/or adhesive used is one (1) gallon per day or less or 22 gallons per calendar month or less, including cleanup solvent; or

(D) The total amount of water reducible or waterborne type coating and/or adhesive used is three (3) gallons per day or less or 66 gallons per calendar month or less, including cleanup solvent and excluding water used as a reducer or for cleanup; or

(E) The total amount of polyester resin or gel coat type material used is one (1) gallon per day or less or 22 gallons per calendar month or less, including cleanup solvent.

(7) Spray coating and associated drying equipment and control enclosures used exclusively for educational purposes in educational institutions.

(8) Control enclosures with an internal volume of 27 cubic feet or less, provided that aerosol cans, air brushes, or hand work are used exclusively.

(9) Portable coating equipment and pavement stripers used exclusively for the application of architectural coatings and associated internal combustion engines provided such equipment is exempt pursuant to subdivision (a) or paragraph (b)(1).

(10) Hand application such as, hand lay, brush, daubers and roll up of resins, adhesives, dyes and coatings operations.

(11) Drying equipment such as flash-off ovens, drying ovens, or curing ovens associated with coating, adhesive application, or laminating equipment provided the drying equipment is exempt pursuant to paragraph (b)(2), and provided that:

(A) The total amount VOC emissions from all coating, adhesive application, and laminating equipment that the drying equipment serves are only three (3) pounds per day or less or 66 pounds per calendar month or less; or

(B) The total amount of coatings, adhesives, and/or organic solvent (including cleanup) used in all coating, adhesive application, and laminating equipment that the drying equipment serves are six (6) gallons per day or less or 132 gallons per calendar month or less of

UV or electron beam type; or UV/EB coatings containing fifty (50) grams of VOC per liter of material, or less and using exclusively cleanup solvents containing twenty-five (25) grams of VOC per liter of material, or less. The VOC content of the UV/EB coating shall be determined using a District approved test method or other method approved by the Executive Officer; or

(C) The total amount of solvent type coating and/or adhesive used in all coating, adhesive application, and laminating equipment that the drying equipment serves is one (1) gallon per day or less or 22 gallons per calendar month or less, including cleanup solvent; or

(D) The total amount of water reducible or waterborne type coating and/or adhesive used in all coating, adhesive application, and laminating equipment that the drying equipment serves is three (3) gallons per day or less or 66 gallons per calendar month or less, including cleanup solvent and excluding water used as a reducer or for cleanup; or

(E) The total amount of polyester resin or gel coat type material used in all coating, adhesive application, and laminating equipment that the drying equipment serves is one (1) gallon per day or less or 22 gallons per calendar month or less, including cleanup solvent.

(m) Storage and Transfer Equipment

(1) Equipment used exclusively for the storage and transfer of fresh, commercial or purer grades of:

(A) Sulfuric acid or phosphoric acid with an acid strength of 99 percent or less by weight.

(B) Nitric acid with an acid strength of 70 percent or less by weight.

(C) Water based solutions of salts or sodium hydroxide.

(2) Equipment used exclusively for the storage and/or transfer of liquefied gases, not including:

(A) LPG greater than 10,000 pounds.

(B) Hydrogen fluoride greater than 100 pounds.

(C) Anhydrous ammonia greater than 500 pounds.

(3) Equipment used exclusively for the transfer of less than 75,700 liters (20,000 gallons) per day of unheated VOC containing materials, with an

initial boiling point of 150°C (302°F) or greater, or with an organic vapor pressure of 5 mm Hg (0.1 psi) absolute or less at 21.1°C (70°F).

(4) Equipment used exclusively for the storage of unheated VOC containing materials with an initial boiling point of 150°C (302°F) or greater, or with an organic vapor pressure of 5 mm Hg (0.1 psi) absolute or less at 21.1°C (70°F). This exemption does not include liquid fuel storage greater than 160,400 liters (40,000 gallons).

(5) Equipment used exclusively for transferring VOC containing liquids, materials containing VOCs, or compressed gases into containers of less than 225 liters (60 gallons) capacity, except equipment used for transferring more than 4,000 liters (1,057 gallons) of materials per day with a vapor pressure greater than 25.8 mm Hg (0.5 psia) at operating conditions.

(6) Equipment used exclusively for the storage and transfer of liquid soaps, liquid detergents, vegetable oils, fatty acids, fatty esters, fatty alcohols, waxes and wax emulsions.

(7) Equipment used exclusively for the storage and transfer of refined lubricating oils.

(8) Equipment used exclusively for the storage and transfer of crankcase drainage oil.

(9) Equipment used exclusively for VOC containing liquid storage or transfer to and from such storage, of less than 950 liters (251 gallons) capacity. This exemption does not include asphalt.

(10) Equipment used exclusively for the storage and transfer of "top white" (i.e., Fancy) or cosmetic grade tallow or edible animal fats intended for human consumption and of sufficient quality to be certifiable for United States markets.

(11) Equipment used exclusively for the storage, holding, melting and transfer of asphalt or coal tar pitch with a capacity of less than 600 liters (159 gallons).

(12) Pumps used exclusively for pipeline transfer of liquids.

(13) Equipment used exclusively for the unheated underground storage of 23,000 liters (6,077 gallons) or less, and equipment used exclusively for the transfer to or from such storage of organic liquids with a vapor pressure of 77.5 mm Hg (1.5 psi) absolute or less at actual storage conditions.

(14) Equipment used exclusively for the storage and/or transfer of an asphalt-water emulsion heated to 150°F or less.

(15) Liquid fuel storage tanks piped exclusively to emergency internal combustion engine-generators, turbines or pump drivers.

(16) Bins used for temporary storage and transport of material with a capacity of 2,080 liters (550 gallons) or less.

(17) Equipment used for material storage where no venting occurs during filling or normal use.

(18) Equipment used exclusively for storage, blending, and/or transfer of water emulsion intermediates and products, including latex, with a VOC content of 5% by volume or less or a VOC composite partial pressure of 5 mm Hg (0.1 psi) or less at 20°C (68°F).

(19) Equipment used exclusively for storage and/or transfer of sodium hypochlorite solution.

(20) Equipment used exclusively for the storage of VOC containing materials which are stored at a temperature at least 130°C (234°F) below its initial boiling point, or have an organic vapor pressure of 5 mm Hg (0.1 psia) absolute or less at the actual storage temperature. To qualify for this exemption, the operator shall, if the stored material is heated, install and maintain a device to measure the temperature of the stored VOC containing material. This exemption does not include liquid fuel storage greater than 160,400 liters (40,000 gallons), asphalt storage, or coal tar pitch storage.

(21) Stationary equipment used exclusively to store and/or transfer organic compounds that do not contain VOCs.

(22) Unheated equipment including associated control equipment used exclusively for the storage and transfer of fluorosilicic acid at a concentration of 30% or less by weight and a vapor pressure of 24 mm Hg or less at 77 degrees Fahrenheit (25 degrees Celsius). The hydrofluoric acid concentration within the fluorosilicic acid solution shall not exceed 1% by weight.

(n) Natural Gas and Crude Oil Production Equipment

(1) Well heads and well pumps.

(2) Crude oil and natural gas pipeline transfer pumps.

(3) Gas, hydraulic or pneumatic repressurizing equipment.

(4) Equipment used exclusively as water boilers, water or hydrocarbon heaters, and closed heat transfer systems (does not include steam generators used for oilfield steam injection) that have:

(A) a maximum heat input rate of 2,000,000 Btu per hour or less, and

(B) been equipped to be fired exclusively with purchased quality natural gas, liquefied petroleum gas, produced gas which contains less than 10 ppm hydrogen sulfide, or any combination thereof.

(5) The following equipment used exclusively for primary recovery, and not associated with community lease units:

(A) Gas separators and boots.

(B) Initial receiving, gas dehydrating, storage, washing and shipping tanks with an individual capacity of 34,069 liters (9,000 gallons) or less.

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(C) Crude oil tank truck loading facilities (does not include a loading rack), and gas recovery systems exclusively serving tanks exempted under subparagraph (n)(5)(B).

(D) Produced gas dehydrating equipment.

(6) Gravity-type oil water separators with a total air/liquid interfacial area of less than 45 square feet and the oil specific gravity of 0.8251 or higher (40.0 API or lower).

The following definitions will apply to subdivision (n) above:

PRIMARY RECOVERY - Crude oil or natural gas production from "free-flow" wells or from well units where only water, produced gas or purchased quality gas is injected to repressurize the production zone.

COMMUNITY LEASE UNITS - Facilities used for multiple-well units (three or more wells), whether for a group of wells at one location or for separate wells on adjoining leases.

SHIPPING TANKS - Fixed roof tanks which operate essentially as "run down" tanks for separated crude oil where the holding time is 72 hours or less.

WASH TANKS - Fixed roof tanks which are used for gravity separation of produced crude oil/water, including single tank units which are used concurrently for receipt, separation, storage and shipment.

(o) Cleaning

The exemptions in this subdivision do not include any equipment using solvents that are greater than 5 percent by weight of perchloroethylene, methylene chloride, carbon tetrachloride, chloroform, 1,1,1-trichloroethane, trichloroethylene, or any combination thereof, with either a capacity of more than 7.6 liters (2 gallons) or was designed as a solvent cleaning and drying machine regardless of size. In addition, the exemptions specified in this subdivision apply only if the equipment is also exempt pursuant to paragraph (b)(2) of this rule.

(1) Cleaning equipment and associated waste storage tanks used exclusively to store the solutions drained from this equipment:

(A) unheated batch, provided:

(i) the volume of the solvent reservoir is one (1) gallon or less, or

(ii) the VOC emissions from the equipment are not more than 3 pounds per day or 66 pounds per calendar month.

(B) devices used for cleaning of equipment used for the application of inks, adhesives, and coatings provided:

(i) the volume of the solvent reservoir is five (5) gallons or less, or

(ii) the VOC emissions from the equipment are not more than three (3) pounds per day or 66 pounds per calendar month.

(C) remote reservoir cleaners, provided the solvent from the sink-like area immediately drains into an enclosed solvent container while the parts are being cleaned.

(2) Vapor degreasers with an air/vapor interface surface area of 1.0 square foot or less, provided such degreasers have an organic solvent loss of 3 gallons per day or less excluding water or 66 gallons per calendar month or less excluding water.

(3) Cleaning equipment using materials with a VOC content of twenty-five (25) grams of VOC per liter of material, or less, and associated dryers exclusively serving these cleaners, provided such equipment is also exempt pursuant to paragraph (b)(2).

(4) Hand application of solvents for cleaning purposes including but not limited to use of rags, daubers, swabs and squeeze bottles.

(p) Miscellaneous Process Equipment

(1) Equipment, including dryers, used exclusively for dyeing, stripping, or bleaching of textiles where no VOC containing materials, including diluents or thinners are used, provided such equipment is also exempt pursuant to paragraph (b)(2) and control equipment exclusively venting the equipment.

(2) Equipment used exclusively for bonding lining to brake shoes, where no VOC containing materials are used and control equipment exclusively venting such equipment.

(3) Equipment used exclusively to liquefy or separate oxygen, nitrogen, or the rare gases from air, except equipment not exempt pursuant to paragraph (b)(1) or (b)(2).

(4) Equipment used exclusively for surface preparation, including but not limited to paint stripping, pickling, desmutting, de-scaling, passivation, and/or deoxidation, and any water and associated rinse tanks and waste storage tanks exclusively to store the solutions drained from the equipment, that exclusively uses any one or combination of the following:

(A) organic materials containing 50 grams or less of VOCs per liter of material;

(B) formic acid, acetic acid, boric acid, citric acid, phosphoric acid, and sulfuric acids;

(C) hydrochloric acid in concentrations of 12 percent by weight or less;

(D) alkaline oxidizing agents;

(E) hydrogen peroxide;

(F) salt solutions, except for air-sparged or rectified processes with salt solutions containing hexavalent chromium, chromates, dichromates, nickel, or cadmium;

(G) sodium hydroxide, provided the process is not sparged or rectified; or

(H) nitric acid, hydrochloric acid, or hydrofluoric acid, provided that the equipment in which it is used has an open surface area of one square foot or less, is unheated, and produces no visible emissions.

This exemption does not include chemical milling or circuit board etching using ammonia-based etchants.

(5) Equipment used exclusively for the plating, stripping, or anodizing of metals as described below:

(A) electrolytic plating of exclusively brass, bronze, copper, iron, tin, lead, zinc, and precious metals;

(B) electroless nickel plating, provided that the process is not air-sparged and no electrolytic reverse plating occurs;

(C) the electrolytic stripping of brass, bronze, copper, iron, tin, zinc, and precious metals, provided no chromic, hydrochloric, nitric or sulfuric acid is used;

(D) the non-electrolytic stripping of metals, provided the stripping solution is not sparged and does not contain nitric acid.

(E) anodizing using exclusively sulfuric acid and/or boric acid with a total bath concentration of 20 percent acids or less by weight and using 10,000 amp-hours per day or less of electricity;

(F) anodizing using exclusively phosphoric acid with a bath concentration of 15 percent or less phosphoric acid by weight and using 20,000 amp-hours per day or less of electricity; or

(G) water and associated rinse tanks and waste storage tanks used exclusively to store the solutions drained from equipment used for the plating, stripping, or anodizing of metals.

(6) Closed loop solvent recovery systems used for recovery of waste solvent generated on-site using refrigerated or liquid-cooled condenser, or air-cooled (where the solvent reservoir capacity is less than 10 gallons) condenser.

(7) Equipment used exclusively for manufacturing soap or detergent bars, including mixing tanks, roll mills, plodders, cutters, wrappers, where no heating, drying or chemical reactions occur.

(8) Inert gas generators, except equipment not exempt pursuant to paragraph (b)(2).

(9) Hammermills used exclusively to process aluminum and/or tin cans, and control equipment exclusively venting such equipment.

(10) Paper shredding and associated conveying systems, baling equipment, and control equipment venting such equipment.

(11) Chemical vapor type sterilization equipment where no Ethylene Oxide is used, and with a chamber volume of two (2) cubic feet or less used by

healthcare facilities and control equipment exclusively venting the equipment.

(12) Hot melt adhesive equipment.

(13) Pyrotechnic equipment, special effects or fireworks paraphernalia equipment used for entertainment purposes, provided such equipment is exempt pursuant to subdivision (b).

(14) Ammunition or explosive testing equipment.

(15) Fire extinguishing equipment using halons.

(16) Industrial wastewater treatment equipment which only does pH adjustment, precipitation, gravity separation and/or filtration of the wastewater, including equipment used for reducing hexavalent chromium and/or destroying cyanide compounds. This exemption does not include treatment processes where VOC and/or toxic materials are emitted, or where the inlet concentration of cyanide salts through the wastewater treatment process prior to pH adjustment exceeds 200 mg/liter.

(17) Rental equipment operated by a lessee and which is not located more than twelve consecutive months at any one facility in the District provided that the owner of the equipment has a permit to operate issued by the District and that the lessee complies with the terms and conditions of the permit to operate.

(18) Industrial wastewater evaporators treating water generated from on-site processes only, where no VOC and/or toxic materials are emitted and provided that the equipment is exempt pursuant to paragraph (b)(2).

(19) Foam application equipment using two component polyurethane foam where no VOC containing blowing agent is used, excluding chlorofluorocarbons or methylene chloride, and control equipment exclusively venting this equipment.

(20) Toner refilling and associated control equipment.

(21) Evaporator used at dry cleaning facilities to dispose of separator wastewater and control equipment exclusively venting the equipment.

(q) Agricultural Sources

(1) Notwithstanding the exemption under this subdivision, any internal combustion engines, or gasoline transfer and dispensing equipment purchased or modified after July 7, 2006 that are not exempt pursuant to

paragraphs (b)(1), (b)(6), and (m)(9) of this rule shall be subject to permit requirements. Emergency internal combustion engines are exempt from permit requirements for these agricultural sources.

(2) Except as provided in paragraph (q)(1), agricultural permit units at agricultural sources not subject to Title V with actual emissions less than the amounts listed in the following table:

Table

Pollutant (Tons/Year)	South Coast Air Basin	Riverside County Portion of Salton Sea Air Basin	Riverside County Portion of Mojave Desert Air Basin
VOC	5.0	12.5	50.0
NOx	5.0	12.5	50.0
SOx	50.0	50.0	50.0
CO	25.0	50.0	50.0
PM10	35.0	35.0	50.0
Single Hazardous Air Pollutant	5.0	5.0	5.0
Combination Hazardous Air Pollutants	12.5	12.5	12.5

Emissions of fugitive dust and emissions from soil amendments and fertilizers are not to be counted when evaluating emissions for purposes of this subdivision.

~~(2)~~(3) Orchard wind machines powered by an internal combustion engine with a manufacturer's rating greater than 50 brake horsepower, provided the engine is operated no more than 30 hours per calendar year.

~~(3)~~(4) Orchard heaters approved by the California Air Resources Board to produce no more than one gram per minute of unconsumed solid carbonaceous material.

(r) Registered Equipment and Filing Program

(1) Any portable equipment which is registered in accordance with the Statewide Portable Equipment Registration Program adopted pursuant to California Health and Safety Code Section 41750 et seq.

(2) Any equipment listed in Rule 222 – Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II.

(s) Exceptions

Notwithstanding equipment identified in (a) through (q) of this rule, written permits are required for:

(1) Equipment, process materials or air contaminants subject to:

(A) Regulation IX – Standards of Performance for New Stationary Sources (NSPS); or

(B) Regulation X – National Emission Standards for Hazardous Air Pollutants (NESHAP - Part 61, Chapter I, Title 40 of the Code of Federal Regulations); or

(C) Emission limitation requirements of either the state Air Toxic Control Measure (ATCM) or NESHAP - Part 63, Title 40 of the Code of Federal Regulations; or

(2) Equipment when the Executive Officer has determined that the risk will be greater than identified in subparagraph (d)(1)(A), or paragraphs (d)(2) or (d)(3) in Rule 1401 – New Source Review of Toxic Air Contaminants or the equipment may not operate in compliance with all applicable District Rules and Regulations. Once the Executive Officer makes such a determination and written notification is given to the equipment owner or operator, the equipment shall thereafter be subject to Rules 201 and 203 for non-RECLAIM sources, Rule 2006 for RECLAIM sources, and Regulation XXX – Title V Permits for major sources.

(t) Recordkeeping

Any person claiming exemptions under the provisions of this Rule shall provide adequate records pursuant to Rule 109 and any applicable Material Safety Data Sheets (MSDS), to verify and maintain any exemption. Any test method used to verify the percentages, concentrations, vapor pressures, etc., shall be the approved test method as contained in the District's Test Method Manual or any method approved by the Executive Officer, CARB, and the EPA.

(u) Compliance Date

(1) The owner/operator of equipment previously not requiring a permit pursuant to Rule 219 shall comply with Rule 203 – Permit to Operate

within one year from the date the rule is amended to remove the exemption unless compliance is required before this time by written notification by the Executive Officer. Effective on or after July 11, 2003 for purpose of Rule 301(e), emissions from equipment that has been removed from an exemption shall be considered "permitted" beginning January 1 or July 1, whichever is sooner, after Rule 219 is amended to remove the exemption, even if an application has not been submitted to obtain a permit.

(2) Agricultural sources constructed or operating prior to January 1, 2004 requiring Title V permits shall submit Title V permit applications on or before June 29, 2004.

(3) Existing agricultural permit units constructed or operating prior to January 1, 2004 at agricultural sources requiring Title V permits and requiring written permits pursuant to paragraph (q)(1) shall submit applications for a Permit to Operate by December 17, 2004. For the purpose of Rule 301(e), emissions from agricultural permit units subject to this paragraph shall be considered "permitted" July 1, 2005.

(4) Existing agricultural permit units constructed or operating prior to January 1, 2004 at agricultural sources not subject to Title V with actual emissions equal to or greater than the amounts listed in the table in subdivision (q) and requiring written permits pursuant to paragraph (q)(2) shall submit applications for a Permit to Operate by June 30, 2005. For the purpose of Rule 301(e), emissions from agricultural permit units subject to this paragraph shall be considered "permitted" July 1, 2005.

(5) Agricultural permit units built, erected, altered, modified, installed or replaced after January 1, 2004, but prior to January 1, 2005 if written permits are required pursuant to subdivision (q), shall submit applications for a Permit to Operate by March 5, 2005. For the purpose of Rule 301(e), emissions from agricultural permit units subject to this paragraph shall be considered "permitted" July 1, 2005.

(6) Agricultural permit units built, erected, altered, modified, installed or replaced on or after January 1, 2005, if written permits are required pursuant to subdivision (q) shall comply with Rule 201. For the purpose of Rule 301(e), emissions from agricultural permit units subject to this paragraph shall be considered "permitted" July 1, 2005.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

RULE 1110.2 - EMISSIONS FROM GASEOUS- AND LIQUID-FUELED ENGINES

(Adopted August 3, 1990)(Amended September 7, 1990; August 12, 1994; December 9*, 1994; November 14, 1997; June 3, 2005)*

(a) Purpose

The purpose of Rule 1110.2 is to reduce Oxides of Nitrogen (NO_x), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from engines.

(b) Applicability

All stationary and portable engines over 50 bhp are subject to this rule.

(c) Definitions

For the purpose of this rule, the following definitions shall apply:

(1) AGRICULTURAL STATIONARY ENGINE is a non-portable engine used for the growing and harvesting of crops or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution. An engine used for the processing or distribution of crops or fowl or animals is not an agricultural engine.

(2) APPROVED EMISSION CONTROL PLAN is a control plan, submitted on or before December 31, 1992, and approved by the Executive Officer prior to November 14, 1997, describing all actions and alternatives, including a schedule of increments of progress to meet or exceed the requirements or applicable emissions limitations in paragraph (d)(1).

(3) CERTIFIED SPARK-IGNITION ENGINES mean engines certified by California Air Resources Board (CARB) to meet emission standards in accordance with Title 13, Chapter 9, Article 4.5 of the California Code of Regulations (CCR).

(4) EMERGENCY STANDBY ENGINE is an engine which operates as a temporary replacement for primary mechanical or electrical power during periods of fuel or energy shortage or while the primary power supply is under repair.

(5) ENGINE is any spark- or compression- ignited internal combustion engine, not including engines used for self-propulsion.

(6) EXEMPT COMPOUNDS are defined in District Rule 102 - Definition of Terms.

(7) FACILITY means any source or group of sources or other air contaminant emitting activities which are located on one or more contiguous properties within the District, in actual physical contact or separated solely by a public roadway or other public right-of-way, and are owned or operated by the same person (or by persons under common control), or an outer continental shelf (OCS) source as determined in Section 55.2 of Title 40, Part 55 of the Code of Federal Regulations (40 CFR Part 55). Such above-described groups, if noncontiguous, but connected only by land carrying a pipeline, shall not be considered one facility. Sources or installations involved in crude oil and gas production in Southern California Coastal or OCS Waters and transport of such crude oil and gas in Southern California Coastal or OCS Waters shall be included in the same facility which is under the same ownership or use entitlement as the crude oil and gas production facility on-shore.

(8) LOCATION means any single site at a building, structure, facility, or installation. For the purpose of this definition, a site is a space occupied or to be occupied by an engine. For engines which are brought to a facility to perform maintenance on equipment at its permanent or ordinary location, each maintenance site shall be a separate location.

(9) NON-ROAD ENGINE is any engine, defined under 40 CFR Part 89, that does not remain or will not remain at a location for more than 12 consecutive months, or a shorter period of time where such period is representative of normal annual source operation at a stationary source that resides at a fixed location for more than 12 months (e.g., seasonal operations such as canning facilities), and meets one of the following:

(A) Is used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as a mobile crane); or

(B) Is used in or on a piece of equipment that is intended to be propelled while performing its function (such as lawn mowers and string trimmers); or

(C) By itself, or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Transportability includes, but is not limited to, wheels, skids, carrying handles, dolly, trailer, platform or mounting.

(10) PORTABLE ENGINE is an engine that, by itself or in or on a piece of equipment, is designed to be and capable of being carried or moved from one location to another. Indications of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, platform or mounting. The operator must demonstrate the necessity of the engine being periodically moved from one location to another because of the nature of the operation.

An engine is not portable if:

(A) the engine or its replacement remains or will reside at the same location for more than 12 consecutive months. Any engine, such as a back-up or stand-by engine, that replaces an engine at a location and is intended to perform the same function as the engine being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of both engines, including the time between the removal of the original engine and installation of the replacement engine, will be counted toward the consecutive time period; or

(B) the engine remains or will reside at a location for less than 12 consecutive months where such a period represents the full length of normal annual source operations such as a seasonal source; or

(C) the engine is removed from one location for a period and then it or its equivalent is returned to the same location thereby circumventing the portable engine residence time requirements.

The period during which the engine is maintained at a designated storage facility shall be excluded from the residency time determination.

(11) RATED BRAKE HORSEPOWER (bhp) is the rating specified by the manufacturer, without regard to any derating, and listed on the engine nameplate.

(12) STATIONARY ENGINE is an engine which is either attached to a foundation or if not so attached, does not meet the definition of a portable

or non-road engine and is not a motor vehicle as defined in Section 415 of the California Vehicle Code.

(13) TIER 2 AND TIER 3 DIESEL ENGINES mean engines certified by CARB to meet Tier 2 or Tier 3 emission standards in accordance with Title 13, Chapter 9, Article 4 of the CCR.

(14) VOLATILE ORGANIC COMPOUND (VOC) is as defined in Rule 102.

(d) Requirements

(1) Stationary Engine Emission Limits:

(A) Operators of stationary engines with an amended Rule 1110.1 Emission Control Plan submitted by July 1, 1991, or an Approved Emission Control Plan, designating the permanent removal of engines or the replacement of engines with electric motors, in accordance with subparagraph (d)(1)(B), shall do so by December 31, 1999, or not operate the engines on or after December 31, 1999 in a manner that exceeds the emission concentration limits listed in Table I:

TABLE I ALTERNATIVE TO ELECTRIFICATION CONCENTRATION LIMITS		
NO_x	VOC	CO
(ppm)[1] 11	(ppm)[1, 2] 30	(ppm)[1] 70

[1] Corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

[2] Measured as carbon.

(B) The operator of any other stationary engine subject to this rule shall

(i) Remove such engine permanently from service or replace the engine with an electric motor, or

(ii) Not operate the engine in a manner that exceeds the emission concentration limits listed in TABLE II.

TABLE II CONCENTRATION LIMITS		
NO_x	VOC	CO
(ppm)[1] 36	(ppm)[1, 2] 250	(ppm)[1] 2000

[1] Corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

[2] Measured as carbon.

(C) Notwithstanding the provisions in subparagraph (d)(1)(B), the operator of any stationary engine described in Table III shall not operate the engine in a manner that exceeds an emission concentration of 2000 ppm by volume of CO corrected to 15 percent oxygen on a dry basis and averaged over 15 minutes, or the emission concentration limits for VOC as carbon or NOx specified by the following formula:

CONCENTRATION LIMIT FORMULA				
Concentration Limit	=	Reference Limit	x	$\frac{EFF}{25\%}$

Where:

Concentration Limit = the allowable NO_x, or VOC emission limit (ppm by volume) corrected to 15 percent oxygen on a dry basis, and averaged over 15 consecutive minutes.

Reference Limit = the NO_x or VOC emission limit (ppm by volume) corrected to 15 percent oxygen on a dry basis. The reference limits for various bhp ratings (continuous rating by the manufacturer) are listed in TABLE IV.

TABLE III STATIONARY ENGINES DESCRIPTION
For electric power generation
Fired by landfill gas
Fired by sewage digester gas
Used to drive a water supply or conveyance pump except for aeration facilities
Fired by oil field-produced gas
For integral engine-compressor applications operating less than 4000 hours per calendar year
Fired by liquefied petroleum gas (LPG)

TABLE IV REFERENCE LIMITS, ppm		
Bhp Rating	NO_x	VOC
500 and greater	36	250
Greater Than 50 and Less Than 500	45	250

And,

EFF = the demonstrated percent efficiency at full load when averaged over 15 consecutive minutes of the engine only without consideration of any downstream energy recovery from the actual heat rate, in Btu/kW-hr, corrected to the HHV (higher heating value) of the fuel; or the manufacturer's continuous rated percent efficiency (manufacturer's rated efficiency) of the engine after correction from LHV (lower heating value) to the HHV of the fuel, whichever efficiency is higher. The value of EFF shall not be less than 25 percent. Engines with lower efficiencies will be assigned a 25-percent efficiency for this calculation.

$$EFF = \frac{3413 \times 100\%}{\text{Actual Heat Rate at HHV of Fuel (Btu/kW-hr)}}$$

or

$$EFF = (\text{Manufacturer's Rated Efficiency at LHV}) \times \frac{LHV}{HHV}$$

(D) The operator of any new engine subject to subparagraph (e)(2)(B) shall:

(i) Comply with the requirements of Best Available Control Technology in accordance with Regulation XIII if the engine requires a District permit; or

(ii) Not operate the engine in a manner that exceeds the emission concentration limits in TABLE I if the engine does not require a District permit.

(2) Portable Engines:

(A) The operator of any portable engine subject to this rule shall:

(i) By December 31, 1999, not operate the engine in a manner that exceeds the emission concentration limits of TABLE V for spark-ignition engines, or the emission requirements of TABLE VI for compression-ignition engines;

(ii) By January 1, 2010, meet the most stringent emissions standard which is the applicable emissions standard in effect and set forth in Title 13 of the CCR for that engine rating. If no emissions standard exists under the CCR, then the applicable emissions standard set forth in 40 CFR Part 89 shall apply. If no standard exists under the CCR and 40 CFR Part 89, then the applicable requirements of TABLE V for spark-ignition engines or TABLE VI for compression-ignition engines shall apply; and

(iii) Submit to the Executive Officer a letter certifying that the engine is in compliance with the provisions of the subparagraph, in accordance with the compliance schedule in paragraph (e)(2).

TABLE V PORTABLE SPARK-IGNITION ENGINE CONCENTRATION LIMITS		
NO_x	VOC	CO
80 ppm[3] (1.5 g/bhp-hr)	240 ppm[3] (1.5 g/bhp-hr)	176 ppm[3] (2.0 g/bhp-hr)

[3] Corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

TABLE VI **PORTABLE COMPRESSION-IGNITION ENGINE** **EMISSION REQUIREMENTS**	
Rated Brake Horsepower	Requirements
Greater Than 50 And Less Than 117	770 ppm[4] NO_x (10.0 g/bhp-hr), or turbocharger and 4-degree injection timing retard
Greater Than or Equal To 117 And Less Than 400	550 ppm[4] NO_x (7.2 g/bhp-hr), or turbocharger and aftercooler/intercooler and 4-degree injection timing retard
Greater Than or Equal To 400	535 ppm[4] NO_x (7.0 g/bhp-hr), or turbocharger and aftercooler/intercooler and 4-degree injection timing retard
[4] Corrected to 15% oxygen on a dry basis and averaged over 15 minutes.	

(B) The operator of any portable engine generator subject to this rule shall not use the portable generator for:

(i) Power production into the electric grid, except to maintain grid stability during an emergency event or other unforeseen event that affects grid stability; or

(ii) Primary or supplemental power to a building, facility, stationary source, or stationary equipment, except during unforeseen interruptions of electrical power from the serving utility, maintenance and repair operations, and

remote operations where grid power is unavailable. For interruptions of electrical power, the operation of a portable generator shall not exceed the time of the actual interruption of power.

This subparagraph shall not apply to a portable generator that complies with emission concentration limits of Table I and the other requirements in this rule applicable to stationary engines.

(e) Compliance

(1) Portable Engines:

The owner/operator of portable engines subject to the provisions of subparagraph (d)(2) shall:

(A) For engines for which engine modification or add-on control is used to comply with the applicable requirements of TABLE V for spark-ignition engines, or TABLE VI for compression-ignition engines:

(i) By April 30, 1998, submit applications for permit to construct and permit to operate engines;

(ii) By September 30, 1999, initiate engine modification or control equipment installation; and

(iii) By December 31, 1999, have engines in compliance with the applicable requirements of TABLE V for spark-ignition engines, or TABLE VI for compression-ignition engines.

(B) For engines for which engine modification or add-on control is used to comply with the most stringent emissions standard as set forth in clause (d)(2)(A)(ii):

(i) By April 30, 2008, submit applications for permit to construct and permit to operate engines;

(ii) By September 30, 2009, initiate engine modification or control equipment installation; and

(iii) By December 31, 2009, have engines in compliance with the most stringent emissions standard.

(C) By December 31, 2009, if the engines are in compliance with the most stringent emissions standard, submit to the Executive Officer

a letter certifying that the engines are in compliance with the emissions standard.

(2) Agricultural Stationary Engines:

(A) The operator of any agricultural stationary engine subject to this rule and installed or issued a permit to construct prior to June 3, 2005 shall comply with paragraph (d)(1)(B) and the other applicable provisions of this rule in accordance with the compliance schedules in Table VII:

Table VII COMPLIANCE SCHEDULES FOR STATIONARY AGRICULTURAL ENGINES		
Action Required	**Tier 2 and Tier 3 Diesel Engines, Certified Spark-Ignition Engines, and All Engines at Facilities with Actual Emissions Less Than the Amounts in the Table of Rule 219(c)**	**Other Engines**
Submit notification of applicability to the Executive Officer	January 1, 2006	January 1, 2006
Submit to the Executive Officer applications for permits to construct engine modifications, control equipment, or replacement engines	March 1, 2009	September 1, 2007
Initiate construction of engine modifications, control equipment, or replacement engines	September 30, 2009, or 30 days after the permit to construct is issued, whichever is later	March 30, 2008, or 30 days after the permit to construct is issued, whichever is later
Complete construction and comply with applicable requirements	January 1, 2010, or 60 days after the permit to construct is issued, whichever is later	July 1, 2008, or 60 days after the permit to construct is issued, whichever is later
Complete initial source testing	March 1, 2010, or 120 days after the permit to construct is issued, whichever is later	September 1, 2008, or 120 days after the permit to construct is issued, whichever is later

The notification of applicability shall include the following for each engine:

(i) Name and mailing address of the operator.

(ii) Address of the engine location.

(iii) Manufacturer, model, serial number, and date of manufacture of the engine.

(iv) Application number

(v) Engine type (diesel, rich-burn spark-ignition or lean-burn spark-ignition)

(vi) Engine fuel type

(vii) Engine use (pump, compressor, generator, or other)

(viii) Expected means of compliance (engine replacement, control equipment installation, or electrification)

(B) The operator of any new agricultural stationary engine that is not subject to the compliance schedule of subparagraph (e)(2)(A) for existing engines shall comply with the requirements of subparagraph (d)(1)(D) immediately upon installation.

(3) Agricultural Portable Engines:

(A) The operator of any agricultural portable engine subject to this rule shall comply with paragraph (f)(2) by January 1, 2006.

(f) Monitoring, Testing and Recordkeeping

(1) Stationary engines:

The operator of any engine subject to the provisions of paragraph (d)(1) of this rule shall meet the following requirements:

(A) Continuous Emission Monitoring

(i) For engines of 1000 bhp and greater, and operating more than two million bhp-hr per calendar year, install, operate and maintain in calibration a NO_x continuous emission monitoring system (CEMS) to demonstrate compliance with the emission limits of this rule. CEMS shall meet the requirements described in 40 CFR Part 60, particularly those in Appendix B, Spec. 2 and Appendix F, as well as the reporting requirements of 40 CFR Part 60 Sections 60.7(c), 60.7(d), and 60.13, and shall include equipment

that measures and records NO_x exhaust gas concentrations, corrected to 15 percent oxygen on a dry basis.

(ii) The operator of an engine that is required to install CEMS may request the Executive Officer to approve an alternative monitoring device (or system components) to demonstrate compliance with the emission limits of this rule. The applicant shall demonstrate to the Executive Officer that the proposed alternative monitoring device is at a minimum equivalent in relative accuracy, precision, reliability, and timeliness to a CEMS for that engine, according to the criteria specified in 40 CFR Part 75 Subpart E. In lieu of the criteria specified in 40 CFR Part 75 Subpart E, substitute criteria is acceptable if the applicant demonstrates to the Executive Officer that the proposed alternative monitoring device is at minimum equivalent in relative accuracy precision, reliability, and timeliness to a CEMS for that engine. Upon approval by the Executive Officer, the substitute criteria shall be submitted to the federal Environmental Protection Agency (EPA) as an amendment to the State Implementation Plan (SIP).

If the alternative monitoring device is denied or fails to be recertified, a CEMS shall be required.

(iii) The monitoring system shall have data gathering and retrieval capability approved by the Executive Officer.

(B) Elapsed Time Meter

The engine shall have an operational non-resettable totalizing time meter to determine the engine elapsed operating time.

(C) Source Testing

(i) Provide source test information regarding the exhaust gas, specifically for NO_x, VOC reported as carbon, and CO concentrations (concentrations in ppm by volume, corrected to 15 percent oxygen on dry basis) at least once every 3 years. Relative accuracy tests required by Rule 218.1 or 40 CFR Part 75 Subpart E will satisfy this requirement for those pollutants monitored by a CEMS. If

the engine has not been operated within three months of the date a source test is required, the source test shall be conducted when the engine resumes operation for a period longer than either seven consecutive days or 15 cumulative days of operation. The operator of the engine shall keep sufficient operating records to demonstrate that it meets the requirements for extension of the source testing deadlines.

(D) Operating Log

Maintain a monthly engine operating log that includes:

(i) Total hours of operation;

(ii) Type of liquid and/or type of gaseous fuel;

(iii) Fuel consumption (cubic feet of gas or gallons of liquid); and

(iv) Cumulative hours of operation since the last source test required in subparagraph (f)(1)(C).

Facilities subject to Regulation XX may maintain a quarterly log for engines that are designated as a process unit on the facility permit.

(2) Portable engines:

The operator of any portable engine shall maintain a monthly engine operating log that includes:

(i) Total hours of operation;

(ii) Type of liquid and/or type of gaseous fuel; and

(iii) Fuel consumption (cubic feet of gas or gallons of liquid).

Facilities subject to Regulation XX may maintain a quarterly log for engines that are designated as a process unit on the facility permit.

(3) Recordkeeping for All Engines

All data, logs, test reports and other information required by this rule shall be maintained for at least five years and made available for inspection by the Executive Officer.

(g) Test Methods

Testing to verify compliance with the applicable requirements shall be conducted in accordance with the test methods specified in TABLE VIII, or any test methods approved by CARB and EPA, and authorized by the Executive Officer.

TABLE VIII TESTING METHODS	
Pollutant	Method
NO_x	District Method 100.1
CO	District Method 100.1
VOC	District Method 25.1* or District Method 25.3*

* Excluding ethane and methane

A violation of any standard of this rule established by any of the specified test methods, or any test methods approved by the CARB or EPA, and authorized by the Executive Officer, shall constitute a violation of this rule.

(h) Exemptions

The provisions of subdivision (d) shall not apply to:

(1) All orchard wind machines powered by an internal combustion engine.

(2) Emergency standby engines as approved by the Executive Officer, which operate 200 hours or less per year as determined by an elapsed operating time meter.

(3) Engines used for fire-fighting and flood control.

(4) Laboratory engines used in research and testing purposes.

(5) Engines operated for purposes of performance verification and testing of engines.

(6) Engines operating in the Eastern portion of Riverside County not within the South Coast Air Basin or the Salton Sea Air Basin..

(7) Auxiliary engines used to power other engines or gas turbines during start-ups.

(8) Supplemental engines which operate between November 1 of one year and April 15 of the following year for the manufacture of snow and/or operation of ski lifts.

(9) Portable engines that are registered under the state registration program pursuant to Title 13, Article 5 of the CCR.

(10) Nonroad engines, with the exception that subparagraph (d)(2)(B) shall apply to portable generators.

(11) Engines operating on San Clemente Island.

(12) Agricultural stationary engines provided that:

(A) The operator submits documentation to the Executive Officer by the applicable date in Table VII when permit applications are due that the applicable electric utility has rejected an application for an electrical line extension to the location of the engines, or the Executive Officer determines that the operator does not qualify, due to no fault of the operator, for funding authorized by California Health and Safety Code Section 44229; and

(B) The operator replaces the engines, in accordance with the compliance schedule of Table IX, with engines certified by CARB to meet the Tier 4 emission standards of 40 CFR Part 1039 Section 1039.101, Table 1. These Tier 4 replacement engines shall be considered to comply with Best Available Control Technology; and

(C) The operator does not operate the engines in a manner that exceeds the not-to-exceed standards of 40 CFR Section 1039.101, Paragraph (e), as determined by the test methods of subdivision (g) of this rule.

Table IX
COMPLIANCE SCHEDULE FOR INSTALLATION OF NEW TIER 4 STATIONARY AGRICULTURAL ENGINES

Action Required	
Submit to the Executive Officer applications for permits to construct engine modifications, control equipment, or replacement engines	March 1, 2013
Initiate construction of engine modifications, control equipment, or replacement engines	September 30, 2013, or 30 days after the permit to construct is issued, whichever is later
Complete construction and comply with applicable requirements	January 1, 2014, or 60 days after the permit to construct is issued, whichever is later
Complete initial source testing	March 1, 2014, or 120 days after the permit to construct is issued, whichever is later

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

RULE 1117 - EMISSIONS OF OXIDES OF NITROGEN FROM GLASS MELTING FURNACES
(Adopted February 5, 1982)(Amended January 6, 1984)

(a) Definitions

For the purpose of this rule the following definitions shall apply:

1. Container Glass includes food and beverage type containers manufactured by pressing, blowing in molds, drawing, rolling, or casting.
2. Flat Glass means glass that is used in windows, windshields, plate glass, etc., and which is produced by the float, sheet, rolled, or plate glass process.
3. Pull is the term applied to the removal of glass from a glass melting furnace, generally expressed in tons.
4. Cullet is scrap glass which is added to the formulation being charged to a furnace.
5. Furnace is any fossil fuel fired glass melting furnace.
6. Furnace Rebuild is any change in furnace design configuration which requires a change in the Permit to Operate.
7. Idling is the operation of a furnace at less than 25 percent of the production capacity as stated on the Permit to Operate.
8. Start-up is that period of time during which a furnace is heated to operating temperature from a lower temperature.
9. Shutdown is that period of time during which a furnace is allowed to cool from operating temperature to a lower temperature.
10. Energy Recovery is the use of waste heat from a permit unit in another permit unit on the same premises so that at less than five percent of the total waste heat is recovered for useful purposes at the first stage of heat transfer.

(b) Requirements

1. After December 31, 1987, no person shall operate a furnace capable of discharging nitrogen oxides into the atmosphere unless such discharge of nitrogen oxides into the atmosphere is limited to no more than 5.5 pounds of nitrogen oxides per ton of glass pulled.
2. After December 31, 1992, no person shall operate a furnace capable of discharging nitrogen oxides into the atmosphere unless such discharge of nitrogen oxides into the atmosphere is limited to no more than 4.0 pounds of nitrogen oxides per ton of glass pulled.
3. The requirements of paragraphs (b)(1) and (b)(2) shall not apply to furnaces which comply with an alternative emissions control plan which satisfies all of the following requirements:

   (A) The maximum emission of any air contaminant in any 24 hour period shall not exceed the emission of such air contaminate if the furnaces complied with (b)(1) and (b)(2).

   (B) The furnaces are located within the same premises.

   (C) Prior to its implementation, the control plan shall be approved, in writing, by the Executive Officer.

   (D) The control plan shall be enforceable by the District and shall include methods acceptable to the Executive Officer for demonstrating compliance with the control plan on a daily basis.

   (E) Continuous NOx monitors shall be required for each furnace included in a control plan.

   (F) A modified alternative emission control plan shall be required prior to modification of any permit units subject to alternative emission control, or upon amendment of this rule. Such plan shall not include credit for those reductions required by amendments to this rule.

(G) The Permits to Operate for the equipment described in the control plan shall be surrendered and cancelled at the time new Permits to Construct or Operate are issued. Such new permits shall not be effective unless surrender of such existing permits has been made. If such new permits are denied, the existing permits surrendered pursuant to this section shall be reissued and restored to the same conditions which were applicable to the original permits prior to their surrender. The Executive Officer shall impose written conditions on any permits specifying emissions limits or other conditions as necessary.

(H) The person submitting the control plan shall maintain such records (for a period of two years) and submit such information on furnace operation, source tests, monitoring data, and other information as required by the Executive Officer to determine compliance with the control plan.

4. For installations using energy recovery, the NOx emission limit shall be based on the following equation:

```
Energy Recovery Based NOx Emission Limit = Emission Limit   x   A


Where:  Emission Limit = 1bs NOx/ton of glass pulled per paragraphs

        (b)(1) and (b)(2)


                 Energy Recovered (BTU/hr)

        A = 1 + ----------------------------

                 Furnace Heat Input (BTU/hr)
```

5. The energy recovered shall not be required for compliance with any other District Rule, used as an offset pursuant to Regulation XIII, banked as an emission reduction credit, nor used for alternative emission control pursuant to paragraph (b)(3).
6. Furnace heat input shall be based on the higher heating value of the fossil fuel fired and shall include the heat input due to electric boost.

(c) Compliance Determination

1. For the purposes of this rule, nitrogen oxides shall be calculated as NO_2 on a dry basis, or by an alternative method requested by the operator and approved by the Executive Officer.
2. All emission determinations shall be made in the as-found operating condition, except no compliance determination shall be made during start-up, shutdown, or under breakdown conditions.
3. The averaging time for measurement of nitrogen oxides for compliance determination shall be 3 hours, except if an operator installs and maintains a continuous NOx monitor in accordance with conditions set forth by the Executive Officer, the averaging time may be extended to 24 hours.
4. The following expression shall be used to convert uncorrected observed volume in parts per million of NOx to pounds of NOx per ton of glass pulled at standard conditions of 68 degrees F and 29.92 inches of mercury:

$$\frac{(\text{PPMv NOx})(46\ \text{grams/mole})(1.56 \times 10^{-7})(\text{SDCFM})}{\text{Ton/hour of Glass Pulled}} = \frac{\text{Lbs NOx}}{\text{Ton of glass pulled}}$$

(d) Exemptions

The provisions of this rule shall not apply to:

1. Furnaces which are limited by Permit to Operate to 15 lbs/hour of NOx or less.
2. Glass remelt facilities using exclusively glass cullet, marbles, chips, or similar feedstock in lieu of basic glass-making raw materials.
3. Furnaces used in the melting of glass for the production of glass tableware exclusively.
4. Flat glass melting furnaces.
5. Furnaces used in the melting of glass for the production of fiberglass exclusively.
6. Idling furnaces.

(e) Effective Date

Any furnace rebuilt after July 1, 1983 shall comply with the provisions of paragraph (b)(1) of this rule upon commencement of operation. All other furnaces shall comply by December 31, 1987.

Any furnace rebuilt after December 31, 1987 shall comply with the provisions of paragraph (b)(2) of this rule upon commencement of operation. All other furnaces shall comply by December 31, 1992.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

RULE 1146 - EMISSIONS OF OXIDES OF NITROGEN FROM INDUSTRIAL, INSTITUTIONAL, AND COMMERCIAL BOILERS, STEAM GENERATORS, AND PROCESS HEATERS
(Adopted September 9, 1988)(Amended January 6, 1989)(Amended May 13, 1994)(Amended June 16, 2000)(Amended November 17, 2000)

(a) Definitions

(1) ANNUAL CAPACITY FACTOR means the ratio of the amount of fuel burned by a unit in a calendar year to the amount of fuel it could have burned if it had operated at the rated heat input capacity for 100 percent of the time during the calendar year.

(2) ANNUAL HEAT INPUT means the actual amount of heat released by fuels burned in a unit during a calendar year.

(3) BOILER or STEAM GENERATOR means any combustion equipment fired with liquid and/or gaseous and/or solid fossil fuel and used to produce steam or to heat water and that is not used exclusively to produce electricity for sale. Boiler or Steam Generator does not include any waste heat recovery boiler that is used to recover sensible heat from the exhaust of a combustion turbine or any unfired waste heat recovery boiler that is used to recover sensible heat from the exhaust of any combustion equipment.

(4) BTU means British thermal unit.

(5) HEAT INPUT means the chemical heat released due to fuel combustion in a unit, using the higher heating value of the fuel. This does not include the sensible heat of incoming combustion air.

(6) NOx EMISSIONS means the sum of nitric oxide and nitrogen dioxide in the flue gas, collectively expressed as nitrogen dioxide.

(7) PROCESS HEATER means any combustion equipment fired with liquid and/or gaseous and/or solid fossil fuel and which transfers heat from combustion gases to water or process streams. Process Heater does not include any kiln or oven used for drying, curing, baking, cooking, calcining, or vitrifying; or any unfired waste heat recovery heater that is used to recover sensible heat from the exhaust of any combustion equipment.

(8) RATED HEAT INPUT CAPACITY means the heat input capacity specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified such that its maximum heat input is different than the heat input capacity specified on the nameplate, the new maximum heat input shall be considered as the rated heat input capacity.

(9) STANDBY BOILER is a boiler which operates as a temporary replacement for primary steam or hot water while the primary steam or hot water supply unit is out-of-service.

(10) THERM means 100,000 Btu.

(11) UNIT means any boiler, steam generator, or process heater as defined in paragraph (a)(3) or (a)(7) of this subdivision.

(b) Applicability

This rule applies to boilers, steam generators, and process heaters of equal to or greater than 5 million Btu per hour rated heat input capacity used in all industrial, institutional, and commercial operations with the exception of:

(1) boilers used by electric utilities to generate electricity; and

(2) boilers and process heaters with a rated heat input capacity greater than 40 million Btu per hour that are used in petroleum refineries; and

(3) sulfur plant reaction boilers.

(c) Requirements

(1) The owner or operator of any unit(s) with a rated heat input capacity greater than 40 million Btu per hour and with greater than 25% annual capacity factor burning gaseous and/or non-gaseous fuels, shall not discharge into the atmosphere NOx emissions, in excess of 30 ppm or 0.036 pound per 10^6 Btu of heat input.

(2) The owner or operator shall not discharge into the atmosphere NOx emissions in excess of 40 ppm or 0.052 pound per 10^6 Btu of heat input for any unit(s) with a rated heat input capacity:

(A) greater than or equal to 5 million Btu per hour burning non-gaseous fuels, excluding units subject to (c)(1); or

(B) greater than or equal to 5 million Btu per hour and less than 40 million Btu per hour burning gaseous or a combination of gaseous and non-gaseous fuels; or

(C) greater than or equal to 40 million Btu per hour with a rated heat input less than or equal to 25 percent burning a gaseous or a combination of gaseous and non gaseous fuels.

(3) On and after January 1, 2002, the owner or operator of any unit(s) with a rated heat input capacity greater than or equal to 10 million Btu per hour shall not discharge into the atmosphere NOx emissions in excess of:

(A) 30 ppm or 0.036 pound per 10^6 Btu of heat input for units burning gaseous fuels; and

(B) 30 ppm or 0.036 pound per 10^6 Btu of heat input, or a weighted average limit calculated using Equation 1, provided a totalizing fuel flow meter is installed pursuant to paragraph (c)(10), for units burning a combination of gaseous and non-gaseous fuels.

$$\textbf{Weighted Limit} = \frac{(30\ ppmv * x) + (40\ ppmv * y)}{x + y} \quad \textbf{(Equation 1)}$$

Where: x = annual heat input from gaseous fuel

y = annual heat input from non-gaseous fuel

(4) On and after July 1, 2002, the owner or operator of any unit(s) with a rated heat input capacity greater than or equal to 5 million Btu per hour and less than 10 million Btu per hour, shall not discharge into the atmosphere NOx emissions in excess of the emission limits specified in subparagraphs (c)(3)(A) and (c)(3)(B) as applicable.

(5) The owner or operator of any unit(s) with an input capacity greater than or equal to 5 million Btu per

hour and subject to (c)(1), (c)(2), (c)(3), or (c)(4) shall not discharge into the atmosphere carbon monoxide (CO) emissions in excess of 400 ppm.

(6) The owner operator of any unit(s) with a rated heat input capacity greater than or equal to 5 million Btu per hour and an annual heat input less than or equal to 9.0 x 10^9 Btu (90,000 therms) per year, shall:

(A) operate the unit(s) in a manner that maintains stack gas oxygen concentrations at less than or equal to 3 percent on a dry basis for any 15-consecutive-minute averaging period; or

(B) tune the unit(s) at least twice per year, (at intervals from 4 to 8 months apart) in accordance with the procedure described in Attachment 1 or the unit manufacturer's specified tuneup procedure. If a different tuneup procedure from that described in Attachment 1 is used then a copy of this procedure shall be kept on site. If the unit does not operate throughout a continuous six-month period within a calendar year, only one tuneup is required for that calendar year. The operator of any unit(s) who specifies the tuneup option shall maintain a record for a period of two years verifying that the tuneup has been performed. No tune-up is required during a calendar year for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use but once the test firing is completed the unit shall be shutdown. Records of test firings shall be maintained for a period of two years, and shall be made accessible to an authorized District representative upon request; or meet the applicable NOx and CO emission limits in paragraphs (c)(1), (c)(2), (c)(3), and (c)(4), and (c)(5).

(7) The owner or operator of any unit(s) subject to paragraph (c)(6) shall submit for the approval of the Executive Officer a compliance plan that demonstrates compliance with paragraph (c)(6). Such plan shall contain:

(A) A list of permits of all units with the rated heat input capacity and anticipated annual heat input.

(B) For each unit listed, a selection of one of the three options specified in paragraph (c)(6) to achieve compliance with this rule.

(C) Nonresettable fuel totalizing meter specifications for each fuel used, date of meter installation, records of fuel use for each unit during the last two years starting from March 1, 1991.

The plan shall be disapproved if for any continuous 12-month period, the annual fuel usage exceeds 90,000 therms. In this case the unit shall have to comply with the applicable emission limits specified in paragraphs (c)(1), (c)(2), (c)(3), or (c)(4).

(8) Any unit(s) with a rated heat input capacity greater than or equal to 40 million Btu per hour and an annual heat input greater than 200 x 10^9 Btu per year shall have a continuous in-stack nitrogen oxides monitor or equivalent verification system in compliance with 40 CFR part 60 Appendix B Specification 2. Maintenance and emission records shall be maintained and made accessible for a period of two years as to the Executive Officer.

(9) For owners or operators that are subject to the requirements specified in paragraph (c)(6), the provisions of paragraphs (c)(1), (c)(2), (c)(3), (c)(4), (c)(5), or (c)(8), as applicable, shall become effective for the life of the unit on March 1 of any calendar year if that unit operated for the previous calendar year at an annual heat input greater than:

(A) 90,000 therms for units greater than or equal to 5 million Btu per hour; or

(B) 200 x 10^9 Btu per year for units greater than or equal to 40 million Btu per hour.

(10) Any owner or operator who chooses the pound per million Btu compliance option specified in paragraph(s) (c)(1), (c)(2), (c)(3), or (c)(4) or chooses the weighted average emission limit using Equation 1 under subparagraph (c)(3)(B) shall install a non-resettable totalizing fuel meter to measure the total of each fuel used by each individual unit, as approved by the Executive Officer.

(11) Any owner or operator of a unit not covered under the provisions of paragraphs (c)(1), (c)(2), (c)(3), (c)(4), or (c)(8) based on annual heat input, shall:

(A) have installed by February 1, 1989 for units with a rated heat input capacity equal to or greater than 5 but less than 40 million Btu per hour, or by May 1, 1989 for units with a rated heat input capacity equal to or greater than 40 million Btu per hour, or at the time the unit is constructed, a totalizing meter for each fuel that demonstrates that the unit(s) operated at or below the applicable heat input levels; and

(B) have available for inspection by the Executive Officer by March 1 of each year, records listing cumulative annual usage of each fuel for the preceding calendar year. Records shall be maintained and made accessible to the Executive Officer for a period of two years; and

(C) demonstrate that the annual heat input is less than or equal to the applicable amount listed in the applicable paragraphs (c)(1), (c)(2), (c)(3), (c)(4), and/or (c)(8).

(12) Except as provided in subdivision (e), if any unit subject to a compliance plan submitted pursuant to paragraph (c)(7) exceeds 90,000 therms of annual heat input from all fuels used in any calendar year after 1991, the operators shall:

(A) Within 4 months after the end of the calendar year during which the unit exceeded 90,000 therms of annual heat input, submit required applications for permits to construct and operate; and

(B) Within 18 months after the end of the calendar year during which the unit exceeded 90,000 therms of annual heat input, demonstrate and maintain compliance with paragraphs (c)(1), (c)(2), (c)(3), (c)(4), and if applicable, (c)(8) for the life of the unit; and

(C) Maintain compliance with requirements of paragraph (c)(7) until compliance with paragraphs (c)(1), (c)(2), (c)(3) and (c)(4) and, if applicable, (c)(8) is achieved.

(d) Compliance Determination

(1) An owner or operator of any unit(s) shall have the option of complying with either the pound per million Btu or parts per million emission limits specified in paragraphs (c)(1), (c)(2) (c)(3), and (c)(4).

(2) All emission determinations shall be made in the as-found operating condition, except no compliance determination shall be established during start-up, shutdown, or under breakdown conditions.

(3) All parts per million emission limits specified in paragraph (c) are referenced at 3 percent volume stack gas oxygen on a dry basis averaged over a period of 15 consecutive minutes.

(4) Compliance with the NO_x and CO emission requirements of paragraphs (c)(1), (c)(2), (c)(3), (c)(4), and (c)(5) and the stack-gas oxygen concentration requirement of paragraph (c)(6)(A) shall be determined according to procedures in District Source Test Method 100.1 - Instrumental Analyzer Procedures for

Continuous Gaseous Emission Sampling (March 1989), or Method 7.1 - Determination of Nitrogen Oxide Emissions from Stationary Sources (March 1989) and Method 10.1 - Carbon Monoxide and Carbon Dioxide by Gas Chromatograph/Non-Dispersive Infrared Detector (GC/NDIR) - Oxygen by Gas Chromatograph-Thermal Conductivity (GC/TCD) (March 1989), or any other test method, such as methods that allow the use of hand-held portable monitors, determined to be equivalent and approved before the test in writing by the Executive Officers of the District and the California Air Resources Board and the Regional Administrator of the United States Environmental Protection Agency, Region IX. Records of all source tests shall be maintained for a period of two years and shall be made available to District personnel upon request. Emissions determined to exceed any limits established by this rule through the use of any of the above-referenced test methods shall constitute a violation of this rule.

(5) For any operator who chooses the pound per million Btu of heat input compliance option of paragraph (c)(1), (c)(2), (c)(3), or (c)(4), NO_x emissions in pounds per million Btu of heat input shall be calculated using procedures in 40 CFR Part 60, Appendix A, Method 19, Sections 2 and 3.

(6) Compliance determination with the NOx and CO emission requirements in paragraph (d)(4) shall be conducted on or before January 1, 2002 and every year thereafter for units with a rated heat input capacity equal to or greater than 10 million Btu per hour and on or before July 1, 2002 and every year thereafter for units with a rated heat input capacity less than 10 million Btu per hour. Notwithstanding the requirements of paragraph (d)(2), for the purposes of demonstrating compliance with the annual compliance determination, an owner or operator may tune a unit prior to conducting emissions testing. Any screening analysis while tuning the unit shall not be considered an emissions test for the annual compliance determination.

(7) Provided the emissions test is conducted within the same calendar year as the test required in (d)(6), an owner or operator may use the following emissions tests to comply with paragraph (d)(6):

(A) Periodic monitoring or testing of a unit as required in a Title V permit pursuant to Regulation XXX, or

(B) Relative accuracy testing for continuous emissions monitoring verification pursuant to Rule 218.1.

(e) Exemption

A one-time exemption from the requirements of paragraphs (c)(1), (c)(2), (c)(3), (c)(4), (c)(8) and (c)(12) is allowed for any owner or operator of a standby boiler whose fuel usage from all fuels exceeded 90,000 therms but was not greater than 110,000 therms of annual heat input during the calendar year 1996. As a condition of this exemption, an owner or operator shall submit an application for a permit modification by July 31, 2000 and accept additional permit conditions that provide for a daily emission increase, above what is allowed under paragraph (c)(1), (c)(2), (c)(3), and (c)(4) of less than 55 pounds per day of NOx for all standby boilers subject to this subdivision, an annual heat input of less than 90,000 therms for each standby boiler, and a daily recordkeeping condition.

ATTACHMENT 1

A. Equipment Tuning Procedure[1] for Forced-Draft Boilers, Steam Generators, and Process Heaters

Nothing in this Equipment Tuning Procedure shall be construed to require any act or omission that would result in unsafe conditions or would be in violation of any regulation or requirement established by Factory Mutual, Industrial

Risk Insurors, National Fire Prevention Association, the California Department of Industrial Relations (Occupational Safety and Health Division), the Federal Occupational Safety and Health Administration, or other relevant regulations and requirements.

Should a different tuning procedure be used, a copy of this procedure should be kept with the unit records for two years and made available to the District personnel on request.

1. Operate the unit at the firing rate most typical of normal operation. If the unit experiences significant load variations during normal operation, operate it at its average firing rate.

2. At this firing rate, record stack gas temperature, oxygen concentration, and CO concentration (for gaseous fuels) or smoke-spot number[2] (for liquid fuels), and observe flame conditions after unit operation stabilizes at the firing rate selected. If the excess oxygen in the stack gas is at the lower end of the range of typical minimum values[3] and if CO emissions are low and there is not smoke, the unit is probably operating at near optimum efficiency - at this particular firing rate.

However, complete the remaining portion of this procedure to determine whether still lower oxygen levels are practical.

3. Increase combustion air flow to the furnace until stack gas oxygen levels increase by one to two percent over the level measured in Step 2. As in Step 2, record the stack gas temperature, CO concentration (for gaseous fuels) or smoke-spot number (for liquid fuels), and observe flame conditions for these higher oxygen levels after boiler operation stabilizes.

4. Decrease combustion air flow until the stack gas oxygen concentration is at the level measured in Step 2. From this level gradually reduce the combustion air flow, in small increments. After each increment, record the stack gas temperature, oxygen concentration, CO concentration (for gaseous fuels) and smoke-spot number (for liquid fuels). Also observe the flame and record any changes in its condition.

5. Continue to reduce combustion air flow stepwise, until one of these limits is reached:

a. Unacceptable flame conditions - such as flame impingement on furnace walls or burner parts, excessive flame carryover, or flame instability.

b. Stack gas CO concentrations greater than 400 ppm.

c. Smoking at the stack.

d. Equipment-related limitations - such as low windbox/furnace pressure differential, built in air-flow limits, etc.

6. Develop an O_2/CO curve (for gaseous fuels) or O_2/smoke curve (for liquid fuels) similar to those shown in Figures 1 and 2 using the excess oxygen and CO or smoke-spot number data obtained at each combustion air flow setting.

7. From the curves prepared in Step 6, find the stack gas oxygen levels where the CO emissions or smoke-spot number equal the following values:

Fuel	Measurement	Value

Gaseous	CO Emissions	400 ppm
#1 and #2 oils	smoke-spot number	number 1
#4 oil	smoke-spot number	number 2
#5 oil	smoke-spot number	number 3
Other oils	smoke-spot number	number 4

The above conditions are referred to as the CO or smoke thresholds, or as the minimum excess oxygen level.

Compare this minimum value of excess oxygen to the expected value provided by the combustion unit manufacturer. If the minimum level found is substantially higher than the value provided by the combustion unit manufacturer, burner adjustments can probably be made to improve fuel and air mixing, thereby allowing operation with less air.

8. Add 0.5 to 2.0 percent of the minimum excess oxygen level found in Step 7 and reset burner controls to operate automatically at this higher stack gas oxygen level. This margin above the minimum oxygen level accounts for fuel variations, variations in atmospheric conditions, load changes, and nonrepeatability or play in automatic controls.

9. If the load of the combustion unit varies significantly during normal operation, repeat Steps 1-8 for firing rates that represent the upper and lower limits of the range of the load. Because control adjustments at one firing rate may affect conditions at other firing rates, it may not be possible to establish the optimum excess oxygen level at all firing rates. If this is the case, choose the burner control settings that give best performance over the range of firing rates. If one firing rate predominates, settings should optimize conditions at that rate.

10. Verify that the new settings can accommodate the sudden load changes that may occur in daily operation without adverse effects. Do this by increasing and decreasing load rapidly while observing the flame and stack. If any of the conditions in Step 5 result, reset the combustion controls to provide a slightly higher level of excess oxygen at the affected firing rates. Next, verify these new settings in a similar fashion. Then make sure that the final control settings are recorded at steady-state operating conditions for future reference.

11. When the above checks and adjustments have been made, record data and attach combustion analysis data to boiler, steam generator, or heater records indicating name and signature of person, title, and date the tuneup was performed.

B. Equipment Tuning Procedure for Natural Draft-Fired Boilers, Steam Generators, and Process Heaters.

Nothing in this Equipment Tuning Procedure shall be construed to require any act or omission that would result in unsafe conditions or would be in violation of any regulation or requirement established by Factory Mutual, Industrial Risk Insurers, National Fire Prevention Association, the California Department of Industrial Relations (Occupational Safety and Health Division), the Federal Occupational Safety and Health Administration, or other relevant codes, regulations, and equipment manufacturers specifications and operating manuals.

Should a different tuning procedure be used, a copy of this procedure should be kept with the unit records for two years and made available to the District personnel on request.

1. **PRELIMINARY ANALYSIS**

a. CHECK THE OPERATING PRESSURE OR TEMPERATURE.

Operate the boiler, steam generator, or heater at the lowest acceptable pressure or temperature that will satisfy the load demand. This will minimize heat and radiation losses. Determine the pressure or temperature that will be used as a basis for comparative combustion analysis before and after tuneup.

b. CHECK OPERATING HOURS.

Plan the workload so that the boiler, steam generator, or process heater operates only the minimum hours and days necessary to perform the work required. Fewer operating hours will reduce fuel use and emissions. For units requiring a tuneup to comply with the rule, a totalizing non-resettable fuel meter will be required for each fuel used and for each boiler, steam generator, and heater to prove fuel consumption is less than the heat input limit in therms per year specified in the rule.

c. CHECK AIR SUPPLY.

Sufficient fresh air supply is essential to ensure optimum combustion and the area of air supply openings must be in compliance with applicable codes and regulations. Air openings must be kept wide open when the burner is firing and clear from restriction to flow.

d. CHECK VENT.

Proper venting is essential to assure efficient combustion. Insufficient draft or overdraft promotes hazards and inefficient burning. Check to be sure that vent is in good condition, sized properly and with no obstructions.

e. COMBUSTION ANALYSIS.

Perform an "as is" combustion analysis (CO, O2, etc.) with a warmed up unit at high and low fire, if possible. In addition to data obtained from combustion analysis, also record the following:

i. Inlet fuel pressure at burner (at high & low fire)

ii. Draft above draft hood or barometric damper

1) Draft hood: high, medium, and low

2) Barometric Damper: high, medium, and low

iii. Steam pressure, water temperature, or process fluid pressure or temperature entering and leaving the boiler, steam generator, or process heater.

iv. Unit rate if meter is available.

With above conditions recorded, make the following checks and corrective actions as necessary:

2. **CHECKS & CORRECTIONS**

a. CHECK BURNER CONDITION.

Dirty burners or burner orifices will cause boiler, steam generator, or process heater output rate and thermal efficiency to decrease. Clean burners and burner orifices thoroughly. Also, ensure that fuel filters and moisture traps are in place, clean, and operating properly, to prevent plugging of gas orifices. Confirm proper location and orientation of burner diffuser spuds, gas canes, etc. Look for any burned-off or missing burner parts, and replace as needed.

b. CHECK FOR CLEAN BOILER, STEAM GENERATOR, OR PROCESS HEATER TUBES & HEAT TRANSFER SURFACES.

External and internal build-up of sediment and scale on the heating surfaces creates an insulating effect that quickly reduces unit efficiency. Excessive fuel cost will result if the unit is not kept clean. Clean tube surfaces, remove scale and soot, assure proper process fluid flow and flue gas flow.

c. CHECK WATER TREATMENT & BLOWDOWN PROGRAM.

Soft water and the proper water or process fluid treatment must be uniformly used to minimize scale and corrosion. Timely flushing and periodic blowdown must be employed to eliminate sediment and scale build-up on a boiler, steam generator or process heater.

d. CHECK FOR STEAM, HOT WATER OR PROCESS FLUID LEAKS.

Repair all leaks immediately since even small high-pressure leaks quickly lead to considerable fuel, water and steam losses. Be sure there are no leaks through the blow-off, drains, safety valve, by-pass lines or at the feed pump, if used.

3. **SAFETY CHECKS**

a. Test primary and secondary low water level controls.

b. Check operating and limit pressure and temperature controls.

c. Check pilot safety shut off operation.

d. Check safety valve pressure and capacity to meet boiler, steam generator or process heater requirements.

e. Check limit safety control and spill switch.

4. **ADJUSTMENTS**

While taking combustion readings with a warmed up boiler, steam generator, or process heater at high fire perform checks and adjustments as follows:

a. Adjust unit to fire at rate; record fuel manifold pressure.

b. Adjust draft and/or fuel pressure to obtain acceptable, clean combustion at both high, medium and low fire. Carbon Monoxide (CO) value should always be below 400 parts per million (PPM) at 3% 02. If CO is high make necessary adjustments.

Check to ensure boiler, steam generator, or process heater light offs are smooth and safe. A reduced fuel pressure test at both high and low fire should be conducted in accordance with the manufacturers

instructions and maintenance manuals.

c. Check and adjust operation of modulation controller. Ensure proper, efficient and clean combustion through range of firing rates.

When above adjustments and corrections have been made, record all data.

5. **FINAL TEST**

Perform a final combustion analysis with a warmed up boiler, steam generator, or process heater at high, medium and low fire, whenever possible. In addition to data from combustion analysis, also check and record:

a. Fuel pressure at burner (High, Medium, and Low).

b. Draft above draft hood or barometric damper (High, Medium and Low).

c. Steam pressure or water temperature entering and leaving boiler, steam generator, or process heater.

d. Unit rate if meter is available.

When the above checks and adjustments have been made, record data and attach combustion analysis data to boiler, steam generator, or process heater records indicating name and signature of person, title, company name, company address and date the tuneup was performed.

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[1] This tuning procedure is based on a tune-up procedure developed by KVB, Inc. for the United States EPA.

[2] The smoke-spot number can be determined with ASTM Test Method D-2156 or with the Bacharach method. ASTM Test Method D-2156 is included in a tuneup kit that can be purchased from the Bacharach Company.

[3] Typical minimum oxygen levels for boilers at high firing rates are:

1. For natural gas: 0.5% - 3%

2. For liquid fuels: 2% - 4%

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

RULE 1146.1 - EMISSIONS OF OXIDES OF NITROGEN FROM SMALL INDUSTRIAL, INSTITUTIONAL, AND COMMERCIAL BOILERS, STEAM GENERATORS, AND PROCESS HEATERS
(Adopted October 5, 1990)(Amended July 10, 1992)(Amended May 13, 1994)

(a) Definitions

1. ANNUAL HEAT INPUT means the actual amount of heat released by fuels burned in a unit during a calendar year, based on the fuel's higher heating value.
2. BOILER OR STEAM GENERATOR means any combustion equipment fired with liquid and/or gaseous and/or solid fossil fuel, used to produce steam or to heat water, and that is not used exclusively to produce electricity for sale. Boiler or Steam Generator does not include any waste heat recovery boiler that is used to recover sensible heat from the exhaust of a combustion turbine or any unfired waste heat recovery boiler that is used to recover sensible heat from the exhaust of any combustion equipment.
3. BTU means British thermal unit or units.
4. NO_x EMISSIONS means the sum of nitric oxide and nitrogen dioxide in the flue gas, collectively expressed as nitrogen dioxide.
5. PROCESS HEATER means any combustion equipment fired with liquid and/or gaseous and/or solid fossil fuel and which transfers heat from combustion gases to water or process streams. Process Heater does not include any kiln or oven used for drying, curing, baking, cooking, calcining, or vitrifying; or any unfired waste heat recovery heater that is used to recover sensible heat from the exhaust of any combustion equipment.
6. RATED HEAT INPUT CAPACITY means the heat input capacity specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified such that its maximum heat input is different than the heat input capacity specified on the nameplate, the new maximum heat input shall be considered as the rated heat input capacity.
7. THERM means 100,000 Btu.
8. UNIT means any boiler, steam generator, or process heater as defined in paragraph (a)(2) or (a)(5).

(b) Applicability

This rule applies to boilers, steam generators, and process heaters that are greater than 2 million Btu per hour and less than 5 million Btu per hour rated heat input capacity used in any industrial, institutional, or commercial operation.

(c) Requirements

1. The owner or operator of any unit subject to subdivision (b) shall operate such unit so that it discharges into the atmosphere no more than 30 ppm of NO_x emissions or 0.037 pound NO_x per million Btu of heat input, as specified in the permit to operate and no more than 400 ppm of carbon monoxide. For each unit, a selection must be indicated in the application for permit to construct and operate between the ppm NO_x or pounds of NO_x per million BTU heat input compliance option.
2. Any unit(s) subject to subdivision (b), and with an annual heat input of less than or equal to 18,000 therms per calendar year, shall:

   (A) be operated in a manner that maintains stack-gas oxygen concentrations at less than or equal to 3 percent on a dry basis for any 15-consecutive-minute averaging period; or

   (B) be tuned at least twice per year, (at intervals from 4 to 8 months apart) in accordance with the procedure described in Attachment 1 or the unit manufacturer's specified tuneup procedure. If a different tuneup procedure from that described in attachment 1 is used then a copy of this procedure shall be kept on site. If the unit does not operate throughout a continuous six-month period within a calendar year, only one tuneup is required for that calendar year. The owner or operator of any unit(s) who chooses to comply with subparagraph (c)(2)(B) shall

maintain a record for a period of two years verifying that the tuneup has been performed. No tune-up is required during a calendar year for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use but once test firing is completed it shall be shutdown. Records of test firings shall be maintained for a period of two years, and shall be made accessible upon request from an authorized District representative; or

(C) meet the emission limits specified in paragraph (c)(1).

3. The owner or operator of any unit(s) subject to paragraph (c)(2) shall submit and have approved by the Executive Officer, a compliance plan that demonstrates compliance with paragraph (c)(2). Such plan shall contain:

   (A) A list of permits of all units with the rated heat input capacity, anticipated annual heat input; and

   (B) For each unit listed, a selection of one of the three options specified in paragraph (c)(2) to achieve compliance with this rule; and

   (C) Non-resettable, totalizing fuel meter(s) specifications; date of installation; and recorded fuel usage since installation.

4. Any owner or operator who chooses the pound per million Btu of heat input compliance option in paragraph (c)(1) shall install a non-resettable, totalizing fuel meter for each fuel used on an individual unit basis, as approved by the Executive Officer.

(d) Compliance Determination

1. Owners or operators of any units shall have the option of complying with either the pound per million Btu of heat input or parts per million emission limits specified in paragraphs (c)(1) and (c)(2)(C).
2. All emission determinations shall be made in the as-found operating condition, except no compliance determination shall be established during unit start up, shutdown, or under breakdown conditions. Start up or shutdown intervals shall not last longer than is necessary to reach stable temperatures. In no case shall the start up or shutdown interval last longer than six hours or the time specified in the permit to operate, whichever is less. Start-ups and shutdowns shall not last longer than is necessary to reach stable conditions.
3. All parts per million emission limits specified in paragraph (c)(1) are referenced at 3 percent volume stack-gas oxygen on a dry basis averaged over a period of 15 consecutive minutes.
4. Compliance with the NO_x and CO emission requirements of paragraph (c)(1) and the stack-gas oxygen concentration requirement of paragraph (c)(2)(A) shall be determined according to procedures in District Source Test Method 100.1 - Instrumental Analyzer Procedures for Continuous Gaseous Emission Sampling (March 1989), or Method 7.1 - Determination of Nitrogen Oxide Emissions from Stationary Sources (March 1989) and Method 10.1 - Carbon Monoxide and Carbon Dioxide by Gas Chromatograph/Non-Dispersive Infrared Detector (GC/NDIR) - Oxygen by Gas Chromatograph-Thermal Conductivity (GC/TCD) (March 1989), or any other test method determined to be equivalent and approved before the test in writing by the Executive Officers of the District and the California Air Resources Board and the Regional Administrator of the United States Environmental Protection Agency, Region IX. Records of all source tests shall be maintained for a period of two years and shall be made available to District personnel upon request. Emissions determined to exceed any limits established by this rule through the use of any of the above-referenced test methods shall constitute a violation of this rule.
5. For any owner or operator who chooses the pounds of NO_x per million Btu of heat input compliance option of paragraph (c)(1), NO_x emissions in pounds per million Btu of heat input shall be calculated using the procedures in 40 CFR Part 60, Appendix A, Method 19, Sections 2 and 3.

(e) Compliance Schedule

The owner or operator of units subject to this rule shall meet the following increments of progress:

1. For owners or operators of units subject to paragraph (c)(1) shall:

   (A) By January 1, 1993, submit required applications for permits to construct and operate, and

   (B) By July 1, 1994, demonstrate compliance with paragraph (c)(1).

2. For owners or operators of units subject to paragraph (c)(2) shall:

   (A) By January 1, 1993, submit a plan pursuant to paragraph (c)(3), and

   (B) By December 31, 1993, demonstrate compliance with paragraph (c)(2).

(f) Exemption

The provisions of paragraph (c)(1) shall not apply provided the owner or operator:

1. Installs by January 1, 1992, or at the time the permit to construct for the unit is issued, a non-resettable, totalizing fuel meter for each fuel that demonstrates that the unit(s) operate with an annual heat input at or below 18,000 therms per calendar year; and
2. Has available for inspection by the Executive Officer by February 1 of each year, records listing cumulative annual usage of each fuel for the preceding calendar year. Records shall be maintained and made accessible to the Executive Officer or authorized District representative for a period of two years; and
3. Demonstrates compliance with the requirements specified in subparagraphs (c)(2)(A) or (c)(2)(B), and (c)(3).

(g) Loss of Exemption

If any unit subject to a compliance plan submitted pursuant to paragraph (c)(3) exceeds 18,000 therms of annual heat input in any calendar year after 1992, the owners or operators shall:

1. Within 4 months after the end of the calendar year during which the unit exceeded 18,000 therms of annual heat input, submit required applications for permits to construct and operate; and
2. Within 18 months after the end of the calendar year during which the unit exceeded 18,000 therms of annual heat input, demonstrate and maintain compliance with paragraph (c)(1) for the life of the unit; and
3. Maintain compliance with requirements of paragraph (c)(2) until compliance with paragraph (c)(1).

ATTACHMENT 1

A. Equipment Tuning Procedure[1] for Forced-Draft Boilers, Steam Generators, and Process Heaters

Nothing in this Equipment Tuning Procedure shall be construed to require any act or omission that would result in unsafe conditions or would be in violation of any regulation or requirement established by Factory Mutual, Industrial Risk Insurers, National Fire Prevention Association, the California Department of Industrial Relations (Occupational Safety and Health Division), the Federal Occupational Safety and Health Administration, or other relevant regulations and requirements.

1. Operate the unit at the firing rate most typical of normal operation. If the unit experiences significant load variations during normal operation, operate it at its average firing rate.
2. At this firing rate, record stack gas temperature, oxygen concentration, and CO concentration (for gaseous fuels)

or smoke-spot number[2] (for liquid fuels), and observe flame conditions after unit operation stabilizes at the firing rate selected. If the excess oxygen in the stack gas is at the lower end of the range of typical minimum values[3], and if CO emissions are low and there is not smoke, the unit is probably operating at near optimum efficiency - at this particular firing rate.

3. Increase combustion air flow to the furnace until stack gas oxygen levels increase by one to two percent over the level measured in Step 2. As in Step 2, record the stack gas temperature, CO concentration (for gaseous fuels) or smoke-spot number (for liquid fuels), and observe flame conditions for these higher oxygen levels after boiler operation stabilizes.

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[1]This tuning procedure is based on a tune-up procedure developed by KVB, Inc. for the United States EPA.

[2]The smoke-spot number can be determined with ASTM Test Method D-2156 or with the Bacharach method. ASTM Test Method D-2156 is included in a tuneup kit that can be purchased from the Bacharach Company.

[3]Typical minimum oxygen levels for boilers at high firing rates are:

1. For natural gas: 0.5% - 3%

2. For liquid fuels: 2% - 4%

However, complete the remaining portion of this procedure to determine whether still lower oxygen levels are practical.

1. Decrease combustion air flow until the stack gas oxygen concentration is at the level measured in Step 2. From this level gradually reduce the combustion air flow, in small increments. After each increment, record the stack gas temperature, oxygen concentration, CO concentration (for gaseous fuels) and smoke-spot number (for liquid fuels). Also observe the flame and record any changes in its condition.
2. Continue to reduce combustion air flow stepwise, until one of these limits is reached:

   a. Unacceptable flame conditions - such as flame impingement on furnace walls or burner parts, excessive flame carryover, or flame instability.

   b. Stack gas CO concentrations greater than 400 ppm.

   c. Smoking at the stack.

   d. Equipment-related limitations - such as low windbox/furnace pressure differential, built in air-flow limits, etc.

3. Develop an O_2/CO curve (for gaseous fuels) or O_2/smoke curve (for liquid fuels) similar to those shown in Figures 1 and 2 using the excess oxygen and CO or smoke-spot number data obtained at each combustion air flow setting.
4. From the curves prepared in Step 6, find the stack gas oxygen levels where the CO emissions or smoke-spot number equal the following values:

Fuel	Measurement	Value
Gaseous	CO Emissions	400 ppm
#1 and #2 oils	smoke-spot number	number 1

#4 oil	smoke-spot number	number 2
#5 oil	smoke-spot number	number 3
Other oils	smoke-spot number	number 4

The above conditions are referred to as the CO or smoke thresholds, or as the minimum excess oxygen level.

Compare this minimum value of excess oxygen to the expected value provided by the combustion unit manufacturer. If the minimum level found is substantially higher than the value provided by the combustion unit manufacturer, burner adjustments can probably be made to improve fuel and air mixing, thereby allowing operation with less air.

- Add 0.5 to 2.0 percent of the minimum excess oxygen level found in Step 7 and reset burner controls to operate automatically at this higher stack gas oxygen level. This margin above the minimum oxygen level accounts for fuel variations, variations in atmospheric conditions, load changes, and nonrepeatability or play in automatic controls.
- If the load of the combustion unit varies significantly during normal operation, repeat Steps 1-8 for firing rates that represent the upper and lower limits of the range of the load. Because control adjustments at one firing rate may affect conditions at other firing rates, it may not be possible to establish the optimum excess oxygen level at all firing rates. If this is the case, choose the burner control settings that give best performance over the range of firing rates. If one firing rate predominates, settings should optimize conditions at that rate.
- Verify that the new settings can accommodate the sudden load changes that may occur in daily operation without adverse effects. Do this by increasing and decreasing load rapidly while observing the flame and stack. If any of the conditions in Step 5 result, reset the combustion controls to provide a slightly higher level of excess oxygen at the affected firing rates. Next, verify these new settings in a similar fashion. Then make sure that the final control settings are recorded at steady-state operating conditions for future reference.
- When the above checks and adjustments have been made, record data and attach combustion analysis data to boiler, steam generator, or heater records indicating name and signature of person, title, and date the tuneup was performed.

B. Equipment Tuning Procedure for Natural Draft-Fired Boilers, Steam Generators, and Process Heaters.

Nothing in this Equipment Tuning Procedure shall be construed to require any act or omission that would result in unsafe conditions or would be in violation of any regulation or requirement established by Factory Mutual, Industrial Risk Insurers, National Fire Prevention Association, the California Department of Industrial Relations (Occupational Safety and Health Division), the Federal Occupational Safety and Health Administration, or other relevant codes, regulations, and equipment manufacturers specifications and operating manuals.

Should a different tuning procedure be used, a copy of this procedure should be kept with the unit records for two years and made available to the District personnel on request.

1. **PRELIMINARY ANALYSIS**

   a. CHECK THE OPERATING PRESSURE OR TEMPERATURE.

   Operate the boiler, steam generator, or heater at the lowest acceptable pressure or temperature that will satisfy the load demand. This will minimize heat and radiation losses. Determine the pressure or temperature that will be used as a basis for comparative combustion analysis before and after tuneup.

   b. CHECK OPERATING HOURS.

   Plan the workload so that the boiler, steam generator, or process heater operates only the minimum hours and days necessary to perform the work required. Fewer operating hours will reduce fuel use and emissions. For units

requiring a tuneup to comply with the rule, a totalizing non-resettable fuel meter will be required for each fuel used and for each boiler, steam generator, and heater to prove fuel consumption is less than the heat input limit in therms per year specified in the rule.

c. CHECK AIR SUPPLY.

Sufficient fresh air supply is essential to ensure optimum combustion and the area of air supply openings must be in compliance with applicable codes and regulations. Air openings must be kept wide open when the burner is firing and clear from restriction to flow.

d. CHECK VENT.

Proper venting is essential to assure efficient combustion. Insufficient draft or overdraft promotes hazards and inefficient burning. Check to be sure that vent is in good condition, sized properly and with no obstructions.

e. COMBUSTION ANALYSIS.

Perform an "as is" combustion analysis (CO, O_2, etc.) with a warmed up unit at high and low fire, if possible. In addition to data obtained from combustion analysis, also record the following:

i. Inlet fuel pressure at burner (at high & low fire)

ii. Draft above draft hood or barometric damper

1) Draft hood: high, medium, and low

2) Barometric Damper: high, medium, and low

iii. Steam pressure, water temperature, or process fluid pressure or temperature entering and leaving the boiler, steam generator, or process heater.

iv. Unit rate if meter is available.

With above conditions recorded, make the following checks and corrective actions as necessary:

2. **CHECKS & CORRECTIONS**

a. CHECK BURNER CONDITION.

Dirty burners or burner orifices will cause boiler, steam generator, or process heater output rate and thermal efficiency to decrease. Clean burners and burner orifices thoroughly. Also, ensure that fuel filters and moisture traps are in place, clean, and operating properly, to prevent plugging of gas orifices. Confirm proper location and orientation of burner diffuser spuds, gas canes, etc. Look for any burned-off or missing burner parts, and replace as needed.

b. CHECK FOR CLEAN BOILER, STEAM GENERATOR, OR PROCESS HEATER TUBES & HEAT TRANSFER SURFACES.

External and internal build-up of sediment and scale on the heating surfaces creates an insulating effect that quickly reduces unit efficiency. Excessive fuel cost will result if the unit is not kept clean. Clean tube surfaces, remove scale and soot, assure proper process fluid flow and flue gas flow.

c. CHECK WATER TREATMENT & BLOWDOWN PROGRAM.

Soft water and the proper water or process fluid treatment must be uniformly used to minimize scale and corrosion. Timely flushing and periodic blowdown must be employed to eliminate sediment and scale build-up on a boiler, steam generator or process heater.

d. CHECK FOR STEAM, HOT WATER OR PROCESS FLUID LEAKS

Repair all leaks immediately since even small high-pressure leaks quickly lead to considerable fuel, water and steam losses. Be sure there are no leaks through the blow-off, drains, safety valve, by-pass lines or at the feed pump, if used.

3. **SAFETY CHECKS**

a. Test primary and secondary low water level controls.

b. Check operating and limit pressure and temperature controls.

c. Check pilot safety shut off operation.

d. Check safety valve pressure and capacity to meet boiler, steam generator or process heater requirements.

e. Check limit safety control and spill switch.

4. **ADJUSTMENTS**

While taking combustion readings with a warmed up boiler, steam generator, or process heater at high fire perform checks and adjustments as follows:

a. Adjust unit to fire at rate; record fuel manifold pressure.

b. Adjust draft and/or fuel pressure to obtain acceptable, clean combustion at both high, medium and low fire. Carbon Monoxide (CO) value should always be below 400 parts per million (PPM) at 3% 0_2. If CO is high make necessary adjustments.

Check to ensure boiler, steam generator, or process heater light offs are smooth and safe. A reduced fuel pressure test at both high and low fire should be conducted in accordance with the manufacturers instructions and maintenance manuals.

c. Check and adjust operation of modulation controller. Ensure proper, efficient and clean combustion through range of firing rates.

When above adjustments and corrections have been made, record all data.

5. **FINAL TEST**

Perform a final combustion analysis with a warmed up boiler, steam generator, or process heater at high, medium and low fire, whenever possible. In addition to data from combustion analysis, also check and record:

a. Fuel pressure at burner (High, Medium, and Low).

b. Draft above draft hood or barometric damper (High, Medium and Low).

c. Steam pressure or water temperature entering and leaving boiler, steam generator, or process heater.

d. Unit rate if meter is available.

When the above checks and adjustments have been made, record data and attach combustion analysis data to boiler, steam generator, or process heater records indicating name and signature of person, title, company name, company address and date the tuneup was performed.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 9 - INORGANIC GASEOUS POLLUTANTS
RULE 12 - NITROGEN OXIDES FROM GLASS MELTING FURNACES

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REGULATION 9

INORGANIC GASEOUS POLLUTANTS

RULE 12

NITROGEN OXIDES FROM GLASS MELTING FURNACES

(Adopted January 19, 1994)

9-12-100 GENERAL

9-12-101 Description: This Rule limits the emission of nitrogen oxides (NO_x) from glass melting furnaces.

9-12-110 Exemptions: The requirements of this Rule shall not apply to the following:

110.1 Furnaces in which all the heat required for melting is provided by electric current from electrodes submerged in the molten glass, except that heat may be supplied by fossil fuels for start-up when the furnace contains no molten glass.

110.2 Furnaces with a production capacity of 4550 kilograms (5 short tons) of glass per day or less.

9-12-200 DEFINITIONS

9-12-201 Glass Melting Furnace: Any unit in which heat is used to produce molten glass.

9-12-202 Idling: Operation at less than 25 percent of the production capacity stated on the Permit to Operate.

9-12-203 Nitrogen Oxide Emissions (NO_x): The sum of nitric oxide (NO) and nitrogen dioxide (NO_2) in the flue gas, collectively expressed as nitrogen dioxide.

9-12-204 Pull: To remove glass from the furnace.

9-12-205 Shutdown: The period of time during which a furnace is allowed to cool from operating temperature to a cooler temperature.

9-12-206 Start-up: The period of time during which a furnace is heated to operating temperature from a lower temperature.

9-12-300 STANDARDS

9-12-301 Emission Limit: A person subject to this Rule shall reduce nitrogen oxides emissions (NO_x) from any glass melting furnace pursuant to the following increments of progress until emissions do not exceed the emission limit of 2.75 grams of NO_x per kilogram (5.5 lbs of NO_x per short ton) of glass pulled, averaged over any consecutive 3-hour period excluding start-up, shutdown, and idling periods.

301.1 Effective January 1, 1997, a person shall not emit NO_x from any glass melting furnace at a rate in excess of 90 percent of the baseline emission rate established pursuant to Section 9-12-403.

301.2 Effective January 1, 1999, a person shall not emit NO_x from any glass melting furnace at a rate in excess of 75 percent of the baseline emission rate established pursuant to Section 9-12-403.

301.3 Effective January 1, 2001, a person shall not emit NO_x from any glass melting furnace at a rate in excess of 55 percent of the baseline emission rate established pursuant to Section 9-12-403, and this percentage shall be reduced by 10 percent effective each January 1 thereafter until NO_x emissions do not exceed the emission limit set forth in Section 9-12-301.

9-12-400 ADMINISTRATIVE REQUIREMENTS

9-12-401 Compliance Schedule: A person subject to this Rule shall follow the compliance schedule below:

401.1 By February 1, 1995, submit a list of the quantity of glass produced, average cullet content, and average electric boost rate for each furnace on each day for calendar year 1994.

401.2 By March 1, 1995, submit for District approval proposed furnace operating parameters for source tests, as required by Section 9-12-402.

401.3 By August 1, 1995, conduct District-approved source tests for determining the baseline emission rate pursuant to Section 9-12-403.

401.4 By September 1, 1995, submit the results of each source test conducted pursuant to Section 9-12-401.3 accompanied by the supporting data required by Section 9-12-402.3.

401.5 By 12 months prior to the effective date of an increment of progress pursuant to Section 9-12-301, submit a complete application for any Authority to Construct necessary to achieve compliance with that increment of progress.

9-12-402 Furnace Operating Parameters for Source Tests: Source tests pursuant to Sections 9-12-403 and 9-12-404 shall be conducted while furnaces are operating within District-approved parameters established as follows:

402.1 A person subject to this Rule shall submit proposed ranges of operating parameters for APCO approval. These ranges shall be representative of operation at or near maximum sustained production capacity as determined from data submitted pursuant to Section 9-12-401.1. Proposed ranges shall include, at a minimum, ranges for excess oxygen as measured at the top of the regenerators, bridgewall temperature, firing rate, electric boost rate, cullet content, and pull rate.

402.2 The APCO shall review the proposed ranges of parameters. Ranges representative of operation at or near maximum sustained production capacity will be approved by the APCO in writing.

402.3 For each source test conducted pursuant to Sections 9-12-403 and 9-12-404, sufficient data to confirm that the furnace was operated within the approved parameters shall be submitted with the source test results. At a minimum this data shall include average excess oxygen as measured at the top of the regenerators, average bridgewall temperature, average firing rate, average electric boost rate, average cullet content, and average pull rate.

9-12-403 Baseline Emission Rate Determinations: A person subject to this Rule shall establish the baseline

emission rate for each glass melting furnace as follows:

403.1 One or more District-approved source tests shall be conducted for each furnace in accordance with the requirements of Sections 9-12-601 through 9-12-604.

403.2 Each source test shall be conducted while the furnace is operating within parameters approved by the APCO pursuant to Section 9-12-402.

403.3 Where one source test is conducted for a furnace, the baseline emission rate for that furnace shall be the emission rate per ton of glass pulled as determined by the source test.

403.4 Where more than one source test is conducted for a furnace, the baseline emission rate for that furnace shall be the sum of the mass emissions per hour as determined by each source test divided by the sum of the glass production per hour as determined for each source test.

9-12-404 Compliance Determinations: A person subject to this Rule shall demonstrate compliance with Section 9-12-301 for each glass melting furnace as follows:

404.1 By April 1, 1997, and by each April 1 thereafter, one or more District-approved source tests shall be conducted for each furnace in accordance with the provisions of Sections 9-12-601 through 9-12-604.

404.2 Each source test shall be conducted while the furnace is operating within parameters approved by the APCO pursuant to Section 9-12-402.

404.3 Where one source test is conducted for a furnace, the emission rate for that furnace shall be the emission rate per ton of glass as determined by the source test.

404.4 Where more than one source test is conducted for a furnace, the emission rate for that furnace shall be the sum of the mass emissions per hour as determined by each source test divided by the sum of the glass production per hour as determined for each source test.

404.5 Source test results shall be submitted to the APCO (Attn: Source Test Section) by May 1 of each year.

9-12-500 MONITORING AND RECORDS

9-12-501 Production Monitoring: Any person who operates a glass melting furnace subject to this Rule shall maintain a means of determining the quantity of glass pulled during a source test administered pursuant to Sections 9-12-601 through 9-12-604.

9-12-502 Fuel Monitoring: Any person who operates a glass melting furnace subject to this Rule shall maintain a non-resettable totalizing fuel meter which monitors fuel usage for each glass melting furnace.

9-12-600 MANUAL OF PROCEDURES

9-12-601 Determination of Nitrogen Oxides: Emissions of nitrogen oxides shall be determined using the source test procedure set forth in the District Manual of Procedures, Volume IV, ST-13A or B, as modified by Section 9-12-603.

9-12-602 Determination of Oxygen: Emissions of oxygen shall be determined using the source test procedure set forth in the District Manual of Procedures, Volume IV, ST-14, as modified by Section 9-12-603.

9-12-603 Sampling and Averaging Period: Sampling shall be conducted for three hours of continuous furnace

operation as specified in Section 9-12-301. Concentrations of nitrogen oxides and oxygen shall be averaged over three hours.

9-12-604 Calculation of Mass Emission Rate Per Ton of Glass Pulled: For purposes of determining compliance with Section 9-12-301, concentration of nitrogen oxides shall be converted to a mass emission rate pursuant to EPA Method 19, 40 CFR Part 60 Appendix A, and this result shall be converted to a mass emission rate per ton of glass pulled.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

RULE 12-12 –MISCELLANEOUS STANDARDS OF PERFORMANCE – FLARES AT PETROLEUM REFINERIES

(Adopted July 20, 2005)

REGULATION 12
MISCELLANEOUS STANDARDS OF PERFORMANCE
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REGULATION 12
MISCELLANEOUS STANDARDS OF PERFORMANCE
RULE 12
FLARES AT PETROLEUM REFINERIES

(Adopted July 20, 2005)

12-12-100 GENERAL

12-12-101 Description: The purpose of this rule is to reduce emissions from flares at petroleum refineries by minimizing the frequency and magnitude of flaring. Nothing in this rule should be construed to compromise refinery operations and practices with regard to safety.

12-12-110 Exemption, Organic Liquid Storage and Distribution: The provisions of this rule shall not apply to flares or thermal oxidizers used to control emissions exclusively from organic liquid storage vessels subject to Regulation 8, Rule 5 or exclusively from loading racks subject to Regulation 8 Rules 6, 33, or 39.

12-12-111 Exemption, Marine Vessel Loading Terminals: The provisions of this rule shall not apply to flares or thermal oxidizers used to control emissions exclusively from marine vessel loading terminals subject to Regulation 8, Rule 44.

12-12-112 Exemption, Wastewater Treatment Systems: The provisions of this rule shall not apply to thermal oxidizers used to control emissions exclusively from wastewater treatment systems subject to Regulation 8, Rule 8.

12-12-113 Exemption, Pumps: The provisions of this rule shall not apply to thermal oxidizers used to control emissions exclusively from pump seals subject to Regulation 8, Rule 18. This exemption does not apply when emissions from a pump are routed to a flare header.

12-12-200 DEFINITIONS: For the purposes of this rule, the following definitions apply:

12-12-201 Emergency: A condition at a petroleum refinery beyond the reasonable control of the owner or operator requiring immediate corrective action to restore normal and safe operation that is caused by a sudden, infrequent and not reasonably preventable equipment failure, natural disaster, act of war or terrorism or external power curtailment, excluding power curtailment due to an interruptible power service agreement from a utility.

12-12-202 Feasible: Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

12-12-203 Flare: A combustion device that uses an open flame to burn combustible gases with combustion air provided by uncontrolled ambient air around the flame. This term includes both ground-level and elevated flares. When used as a verb, the term “flare” means the combustion of vent gas in a flare.

12-12-204 Flare Minimization Plan (FMP): A document intended to meet the requirements of Section 12-12-401.

12-12-205 Gas: The state of matter that has neither independent shape nor volume, but tends to expand indefinitely. Gas includes aerosols and the terms “gas” and “gases” are interchangeable.

12-12-206 Petroleum Refinery: A facility that processes petroleum, as defined in the North American Industrial Classification Standard No. 32411 and including any associated sulfur recovery plant.

12-12-207 Prevention Measure: A component, system, procedure or program that will minimize or eliminate flaring.

12-12-208 Reportable Flaring Event: Any flaring where more than 500,000 standard cubic feet per calendar day of vent gas is flared. A reportable flaring event ends when it can be demonstrated by monitoring required in Section 12-12-501 that the integrity of

the water seal has been maintained sufficiently to prevent vent gas to the flare tip. For flares without water seals or water seal monitors as required by Section 12-12-501, a reportable flaring event ends when the rate of flow of vent gas falls below 0.5 feet per second.

12-12-209 **Responsible Manager:** An employee of the facility or corporation who possesses sufficient authority to take the actions required for compliance with this rule.

12-12-210 **Shutdown:** The intentional cessation of a petroleum refining process unit or a unit operation within a petroleum refining process unit due to lack of feedstock or the need to conduct periodic maintenance, replacement of equipment, repair or other operational requirements. A process unit includes subsets and components of the unit operation. Subsets and components includes but are not limited to reactors, heaters, vessels, columns, towers, pumps, compressors, exchangers, accumulators, valves, flanges, sample stations, pipelines or sections of pipelines.

12-12-211 **Startup:** The setting into operation of a petroleum refining process unit for purposes of production. A process unit includes subsets and components of the unit operation. Subsets and components includes but are not limited to reactors, heaters, vessels, columns, towers, pumps, compressors, exchangers, accumulators, valves, flanges, sample stations, pipelines or sections of pipelines.

12-12-212 **Thermal Oxidizer:** An enclosed or partially enclosed combustion device, other than a flare, that is used to oxidize combustible gases.

12-12-213 **Vent Gas:** Any gas directed to a flare excluding assisting air or steam, flare pilot gas, and any continuous purge gases.

12-12-300 STANDARDS

12-12-301 **Flare Minimization:** Effective November 1, 2006, flaring is prohibited unless it is consistent with an approved FMP and all commitments due under that plan have been met. This standard shall not apply if the APCO determines, based on an analysis conducted in accordance with Section 12-12-406, that the flaring is caused by an emergency and is necessary to prevent an accident, hazard or release of vent gas directly to the atmosphere.

12-12-400 ADMINISTRATIVE REQUIREMENTS

12-12-401 **Flare Minimization Plan Requirements:** The owner or operator of a petroleum refinery with one or more flares subject to this rule shall submit to the APCO a FMP in accordance with the schedule in Section 12-12-402. The FMP shall be certified and signed by a Responsible Manager and shall include, but not be limited to:

401.1 **Technical Data:** A description and technical information for each flare that is capable of receiving gases and the upstream equipment and processes that send gas to the flare including:

1.1 A detailed process flow diagram accurately depicting all pipelines, process units, flare gas recovery systems, water seals, surge drums and knock-out pots, compressors and other equipment that vent to each flare. At a minimum, this shall include full and accurate as-built dimensions and design capacities of the flare gas recovery systems, compressors, water seals, surge drums and knockout pots.

1.2 Full and accurate descriptions including locations of all associated monitoring and control equipment.

401.2 **Reductions Previously Realized:** A description of the equipment, processes and procedures installed or implemented within the last five years to reduce flaring. The description shall specify the year of installation.

401.3 **Planned Reductions:** A description of any equipment, processes or procedures the owner or operator plans to install or implement to eliminate or reduce flaring. The description shall specify the scheduled year of installation or implementation.

401.4 **Prevention Measures:** A description and evaluation of prevention measures, including a schedule for the expeditious implementation of all feasible prevention measures, to address the following:

4.1 Flaring that has occurred or may reasonably be expected to occur during planned major maintenance activities, including startup and shutdown. The evaluation shall include a review of flaring that has occurred during these activities in the past five years, and shall consider the feasibility of performing these activities without flaring.

4.2 Flaring that may reasonably be expected to occur due to issues of gas quantity and quality. The evaluation shall include an audit of the vent gas recovery capacity of each flare system, the storage capacity available for excess vent gases, and the scrubbing capacity available for vent gases including any limitations associated with scrubbing vent gases for use as a fuel; and shall consider the feasibility of reducing flaring through the recovery, treatment and use of the gas or other means.

4.3 Flaring caused by the recurrent failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. The evaluation shall consider the adequacy of existing maintenance schedules and protocols for such equipment. For purposes of this Section, a failure is recurrent if it occurs more than twice during any five year period as a result of the same cause as identified in accordance with Section 12-12-406.

401.5 Any other information requested by the APCO as necessary to enable determination of compliance with applicable provisions of this rule.

Failure to implement and maintain any equipment, processes, procedures or prevention measures in the FMP is a violation of this section.

12-12-402 **Submission of Flare Minimization Plans**: On or before August 1, 2006, the owner or operator of a petroleum refinery with one or more flares subject to this rule shall submit a FMP as required by Section 12-12-401. On or before November 1, 2005 and every three months thereafter until a complete FMP is submitted, the owner or operator shall provide a status report detailing progress towards fulfilling the requirements of Section 12-12-401. Upon the submission of each status report, the APCO may require a consultation regarding the development of the plan to ensure that the plan meets the requirements of Section 12-12-401.

12-12-403 **Review and Approval of Flare Minimization Plans:** The procedure for determining whether the FMP meets the applicable requirements of this regulation is as follows:

403.1 **Completeness Determination:** Within 45 days of receipt of the FMP, the APCO will deem the plan complete if he determines that it includes the information required by Section 12-12-401. If the APCO determines that the proposed FMP is not complete, the APCO will notify the owner or operator in writing. The notification will specify the basis for this determination and the required corrective action.

403.2 **Corrective Action:** Upon receipt of such notification, the owner or operator shall correct the identified deficiencies and resubmit the proposed FMP within 45 days. If the APCO determines that the owner or operator failed to correct any deficiency identified in the notification, the APCO will disapprove the FMP.

403.3 **Public Comment:** The complete FMP (with exception of confidential information) will be made available to the public for 60 days. The APCO will consider any written comments received during this period prior to approving or disapproving the FMP.

403.4 **Final Action:** Within 45 days of the close of the public comment period, the APCO will approve the FMP if he determines that the plan meets the requirements of Section 12-12-401, and shall provide written notification to the owner or operator. This period may be extended if necessary to comply with state law. If the APCO determines that the FMP does not meet the

requirements of Section 12-12-401, the APCO will notify the owner or operator in writing. The notification will specify the basis for this determination. Upon receipt of such notification, the owner or operator shall correct the identified deficiencies and resubmit the FMP within 45 days. If the APCO determines that the owner or operator failed to correct any deficiency identified in the notification, the APCO will disapprove the FMP.

If the owner or operator submitted a complete FMP in accordance with Section 12-12-402, and the APCO has not disapproved the FMP under this section, the FMP shall be considered an approved FMP for the purposes of Section 12-12-301 until the APCO takes final action under Section 12-12-403.4.

12-12-404 Update of Flare Minimization Plans: The FMP shall be updated as follows:

404.1 No more than 12 months following approval of the original FMP and annually thereafter, the owner or operator of a flare subject to this rule shall review the FMP and revise the plan to incorporate any new prevention measures identified as a result of the analyses prescribed in Sections 12-12-401.4, 12-12-406, and 12-12-407. The updates must be approved and signed by a Responsible Manager.

404.2 Prior to installing or modifying any equipment described in Section 12-12-401.1.1 that requires a District permit to operate, the owner or operator shall obtain an approved updated FMP addressing the new or modified equipment.

404.3 Annual FMP updates (with exception of confidential information) shall be made available to the public for 30 days. The APCO shall consider any written comments received during this period prior to approving or disapproving the update.

404.4 Within 45 days of the close of the public comment period, the APCO shall approve the FMP update if he determines that the update meets the requirements of Section 12-12-401, and shall provide written notification to the owner or operator. The previously approved FMP together with the approved update constitutes the approved plan for purposes of Section 12-12-301. This period may be extended if necessary to comply with state law. If the APCO determines that the FMP update does not meet the requirements of Section 12-12-401, the APCO will notify the owner or operator in writing. The notification will specify the basis for this determination and the required corrective action. Upon receipt of such notification, the owner or operator shall correct the identified deficiencies and resubmit the FMP update within 30 days. If the APCO determines that the owner or operator failed to correct the deficiencies identified in the notification, the APCO will disapprove the FMP update. For purposes of Section 12-12-301, disapproval of the update constitutes disapproval of the existing FMP, unless otherwise specified by the APCO.

404.5 If the owner or operator fails to submit a plan update as required by this Section, the APCO shall provide written notification of the lapse. If the owner or operator fails to submit an update within 30 days of receipt of the notification, the existing FMP shall no longer be considered an approved plan for purposes of Section 12-12-301.

12-12-405 Notification of Flaring: Effective August 20, 2005, the owner or operator of a flare subject to this rule shall notify the APCO as soon as possible, consistent with safe operation of the refinery, if the volume of vent gas flared exceeds 500,000 standard cubic feet per calendar day. The notification, either by phone, fax or electronically, shall be in a format specified by the APCO and include the flare source name and number, the start date and time, and the end date and time.

12-12-406 Determination and Reporting of Cause: The owner or operator of a flare subject to this rule shall submit a report to the APCO within 60 days following the end of the month in which a reportable flaring event occurs. The report shall include, but is not limited to, the following:

406.1 The results of an investigation to determine the primary cause and contributing factors for the flaring event.

406.2 Any prevention measures that were considered or implemented to prevent recurrence together with a justification for rejecting any measures that were considered but not implemented.

406.3 If appropriate, an explanation of why the flaring is consistent with an approved FMP.

406.4 Where applicable, an explanation of why the flaring was an emergency and necessary to prevent an accident, hazard or release of vent gas to the atmosphere or where, due to a regulatory mandate to vent to a flare, it cannot be recovered, treated and used as fuel gas at the refinery.

12-12-407 **Annual Reports:** Effective twelve months after approval of the original FMP and annually thereafter, the owner or operator of a flare subject to this rule shall submit a report to the APCO that summarizes the use of a flare at rates less than 500,000 standard cubic feet per day where sulfur dioxide (SO_2) emissions are greater than 500 lbs per day. The summary shall include, but not be limited to, the date and duration, the reason for flaring and any prevention measures considered or implemented.

12-12-408 **Designation of Confidential Information:** When submitting the initial FMP, any updated FMP or any other report required by this Rule, the owner or operator shall designate as confidential any information claimed to be exempt from public disclosure under the California Public Records Act, Government Code section 6250 et seq. If a document is submitted that contains information designated confidential in accordance with this Section, the owner or operator shall provide a justification for this designation and shall submit a separate copy of the document with the information designated confidential redacted.

12-12-500 MONITORING AND RECORDS

12-12-501 **Water Seal Integrity Monitoring:** Effective August 1, 2006, the owner or operator of a flare subject to this rule with a water seal shall continuously monitor and record the water level and pressure of the water seal that services each flare. Any new installation of a water seal shall be subject to this requirement immediately. Records of these measurements shall be retained for one year. Monitoring devices required pursuant to this section shall be subject to the reporting and record keeping requirements of Regulation 1, Section 523: Parametric Monitors.

VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT

RULE 23 - EXEMPTIONS FROM PERMIT

(Adopted 10/22/68, Revised 5/23/72, 7/18/72, 8/26/74, 3/9/76, 6/14/77, 1/17/78, 6/20/78,11/21/78, 6/17/80, 5/5/81, 7/2/85, 10/21/86, 11/22/88, 5/16/89, 6/20/89, 6/27/89, 9/12/89, 5/8/90, 1/8/91, 7/16/91, 1/28/92, 6/8/93, 3/22/94, 12/13/94, 7/9/96, 11/11/03, 4/13/04, 10/12/04, 9/12/06)

The following operations, equipment or emission sources are exempt from the requirements of Rule 10, but must comply with emission standards and prohibitions. The owner or operator shall provide, as required by the District, calculations, usage records, emissions records and/or operational data as necessary to substantiate any exemptions that apply to the subject facility.

A. Burning, Incineration, Smoke

1. Open outdoor fires used only for recreational purposes, heating or occasional cooking of food for human consumption, where such use is accomplished in a fireplace or barbecue pit.

2. Smoke generators that are intentionally operated for purposes of training observers in observing the shade or opacity of emissions.

3. Acceptable incinerators used exclusively in connection with any structure designed and used exclusively as a residential dwelling for not more than four (4) families. (Revised 5/23/72)

4. Safety flares exclusively used for emergency standby for the disposal of process gases in the event of unavoidable process upsets. (Adopted 6/14/77)

B. Dust

1. Material stock piles.

2. Blasting with explosives.

3. Mobile equipment that is used solely for the movement of solid materials. (Revised 5/23/72)

4. Equipment used for buffing (except automatic or semi-automatic tire buffers), polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding or turning of ceramic artwork, ceramic precision parts, leather, metals, plastics, rubber, fiberboard, masonry, carbon or graphite.

5. Equipment used for carving, cutting, drilling, surface grinding, planing, routing, sanding, sawing, shredding, or turning of wood or paper, or the pressing or storing of sawdust, wood chips or wood shavings.

6. Blast cleaning equipment using a suspension of abrasives in water.

7. Abrasive blast cabinet-dust filter integral combination units where the total internal volume of the blast section is 50 cubic feet or less.

8. Batch mixers of 5 cubic feet rated working capacity or less.

9. Tumblers used for the cleaning or deburring of metal products without abrasive blasting.

10. Lint traps used exclusively in conjunction with dry cleaning tumblers.

11. Laundry dryers, extractors or tumblers used for fabrics cleaned only with water solutions of bleach or detergents.

C. Heaters, Boilers

1. Space heating and heat transfer equipment rated at less than one million BTU/s per hour, except reboilers that are part of a glycol dehydration unit. (Revised 6/14/77, 12/13/94)

2. Equipment rated at less than one million BTUs per hour and used exclusively for steam cleaning. (Revised 6/20/89)

3. Natural draft hoods, natural draft stacks or natural draft ventilators.

D. Vehicles, Engines

1. Vehicles, as defined by the Vehicle Code of the State of California. A vehicle may have an engine that both propels the vehicle and powers equipment mounted on the vehicle. Not included is any equipment mounted on a vehicle that would otherwise require a permit under the provisions of these Rules and Regulations.

2. Locomotives, aircraft, marine vessels, and recreational watercraft used to transport passengers or freight. Not included is any equipment mounted on a locomotive, aircraft or marine vessel that would otherwise require a permit under the provisions of these Rules and Regulations.

3. (Reserved)

4. Internal combustion engines used exclusively for frost protection.

5. (Reserved)

6. Internal combustion engines with a maximum continuous design power rating of less than 50 brake horsepower and gas turbines with a rated full load output of less than 0.30 megawatts (300 kilowatts) at ISO Standard Day Conditions.

7. Emergency internal combustion engines, as follows:

   a. Spark-ignited internal combustion engines used exclusively for the emergency pumping of water for either fire protection or flood relief. The engines may either drive pumps directly or generate electricity to drive pumps. Such engines may be operated for engine maintenance.

   b. Spark-ignited emergency internal combustion engines used only when electrical power line or natural gas service fails. Such engines may be operated for engine maintenance.

   c. Portable engines used for emergency purposes.

   Engine maintenance operation is limited to 50 hours per calendar year per engine.

   An emergency internal combustion engine may not be operated to replace an internal combustion engine or a turbine that has failed or requires maintenance; to supplement a primary power source when the load capacity or rating of the primary power source has been either reached or exceeded; nor to reduce the demand for electrical power when normal electrical power line service has not failed.

8. (Reserved)

9. Portable internal combustion engines, including any turbines qualified as military technical support equipment under Health and Safety Code Section 41754, used pursuant to registration in the California Statewide Portable Engine Registration Program (PERP) under Health and Safety Code Section 41753.

E. Food Preparation, Processing, Household

1. Equipment used in connection with any structure designed and used exclusively as a residential dwelling.

2. (Reserved)

3. Vacuum cleaning systems used exclusively for industrial, commercial, institutional or residential housekeeping purposes.

4. Comfort air conditioning or ventilating systems which are not designed to remove air contaminants generated by or released from specific units of equipment.

5. Refrigeration units except those used as, or in conjunction with, air pollution control operations.

6. Smokehouses for food preparation in which the maximum horizontal inside cross-sectional area does not exceed 2 square meters (21.5 square feet).

7. Smokehouses that use liquid smoke exclusively and are completely enclosed. To qualify, a smokehouse must vent to neither a control device nor the atmosphere.

8. Confection cookers where products are edible and intended for human consumption.

9. Grinding, blending or packaging equipment used exclusively for tea, cocoa, roasted coffee, flavor, fragrance extraction, dried flowers, or spices, and control equipment used exclusively with such equipment, provided no organic solvents are used.

10. Equipment used for the purpose of preparing food for human consumption, except conveyorized charbroilers and coffee roasting equipment with a maximum capacity of greater than 25 pounds, in either eating establishments or retail establishments.

11. Equipment used to produce noodles, macaroni, pasta, food mixes or drink mixes, and control equipment used exclusively with such equipment, where products are edible and intended for human consumption, provided no organic solvents are used. Not included are storage bins located outside buildings and combustion equipment not exempt pursuant to Subsection C.1.

12. Non-retail cooking kettles, excluding deep-frying equipment, where the product is edible and intended for human consumption.

13. Coffee roasting equipment with a maximum capacity of 25 pounds or less.

14. Ovens, mixers, scales, blenders used in bakeries, and control equipment used exclusively with such equipment, where products are edible and intended for human consumption and where total production is less than 1,000 pounds of product per operating day.

F. Organic Compound Emissions

1. Storage in or loading into any tank having a capacity of 550 gallons or less that is equipped with a submerged fill pipe and is not required to have a vapor recovery system. (Revised 11/22/88)

2. Equipment for loading and storing of a reactive organic compound liquid into any stationary storage tank having a capability of holding 250 gallons or less. (Revised 5/23/72)

3. Equipment for loading of reactive organic compound liquid into transportable containers of 100 gallons or less.

4. Equipment for loading of a maximum of 500 gallons per calendar day or less of reactive organic compound liquid into transportable containers.

5. Containers for the storage of unheated asphalt. (Revised 5/23/72)

6. Nonrefillable aerosol cans.

7. Products used for facility, grounds, and building maintenance and repair, including solvents, coatings, adhesives, lubricants, and sealants. Facility maintenance and repair does not include the use of these products for maintenance and repair of process and industrial equipment when this activity is being conducted by contractors.

8. Janitorial services and use of products for routine janitorial maintenance, including graffiti removal.

9. Office and administrative use of products such as ink, marking pens, ink pads, glues and adhesives, and cleaning solvents. Office and administrative use does not include production activities by facilities involved in graphic arts operations.

10. Cleaning operations and materials as follows:

    a. Cleaning agents certified by the SCAQMD as Clean Air Solvents.

    b. Cleaning agents that contain no more than 25 grams per liter of ROC as used or applied, and no more than 5 percent by weight combined of methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, and chloroform.

    c. Cold cleaners using non-boiling organic solvent(s) with an initial boiling point (excluding water) greater than 150 ^{o}C (302 ^{o}F) having a liquid surface area of less than 1 square meter (10.8 square feet), at any stationary source where less than 1000 pounds of ROC, are lost to the atmosphere from all such cold

cleaners during every rolling period of 12 consecutive calendar months.

d. Solvent cleaning operations, including cold cleaners, vapor degreasers, wipe cleaning, dip cleaning and flush cleaning, but excluding coating, graphic arts, adhesive/sealant and polyester resin operations, where less than 200 pounds each of ROC, methylene chloride, 1,1,1 trichloroethane, and perchloroethylene are lost to the atmosphere from all such activities at the stationary source during any rolling period of 12 consecutive calendar months. Emissions from activities exempted by subsections a, b, and c, above, shall not be included in this determination.

11. Coating operations and materials as follows:

a. (Reserved)

b. Coating operations, other than motor vehicle or mobile equipment coating operations, where less than 200 pounds each of ROC, methylene chloride, 1,1,1 trichloroethane, and perchloroethylene are lost to the atmosphere during every rolling period of 12 consecutive calendar months.

For the purpose of this section, coating operations shall include emissions from coatings, thinning, substrate surface preparation, and application equipment cleaning, associated with the coating operation. Emissions from cold cleaners and vapor degreasers shall not be included in this determination. Emissions included in a graphic arts operation shall not be included in this determination.

c. Coatings used in mobile automotive touch-up operations where application is done using either a paint brush or an air brush with a cup that holds no more than 4 ounces of paint.

12. Adhesive/sealant operations where less than 200 pounds each of ROC, methylene chloride, 1,1,1 trichloroethane, and perchloroethylene are lost to the atmosphere during every rolling period of 12 consecutive calendar months.

For the purpose of this section, adhesive/sealant operations shall include emissions from adhesives, sealants, adhesive/sealant primers, thinning, substrate surface preparation, and application equipment cleaning, associated with the adhesive/sealant operation. Emissions from cold cleaners and vapor degreasers shall not be included in this determination. Emissions included in a graphic arts operation shall not be included in this determination.

13. Graphic arts operations (including but not limited to packaging gravure, publication gravure, flexographic printing, screen printing, letterpress, lithographic printing, or ink jet

printing) where less than 200 pounds each of ROC, methylene chloride, 1,1,1 trichloroethane, and perchloroethylene are lost to the atmosphere during every rolling period of 12 consecutive calendar months.

For the purpose of this section, graphic arts operations shall include emissions from inks, ink additives, fountain solutions, substrate surface preparation, application equipment cleaning, coatings, and adhesives for binding or gluing printed substrates, associated with the graphic arts operation. Emissions from cold cleaners and vapor degreasers shall not be included in this determination.

14. Polyester resin operations using less than 20 gallons of polyester resin materials each month including unsaturated polyester resins, cross-linking agents, catalysts, gel coats, inhibitors, accelerators, promoters, and any other material containing ROC and used in the polyester resin operation. Inert filler and cleaning material is specifically excluded from this determination.

15. Operations using organic solvent (other than solvent cleaning operations, coating operations, adhesive operations, graphic arts operations, polyester resin operations, semiconductor manufacturing, dry cleaning, and other defined exempted uses) that emit less than 200 pounds each of ROC, methylene chloride, 1,1,1 trichloroethane, and perchloroethylene during every rolling period of 12 consecutive calendar months.

16. Equipment for melting and applying coatings of oils, waxes, greases, resins, and like substances where no reactive organic solvents, diluents or thinners are used.

17. Equipment used exclusively for the manufacture of water emulsions of asphalt, greases, oils or waxes or the manufacture of waterbased adhesives or waterbased paints.

18. Equipment used to compress, store, liquefy or separate gases from the air or to compress or store natural hydrocarbon gases, other than engines. (Revised 5/23/72)

19. Equipment used exclusively to mill or grind coatings and molding compounds where all materials charged are in a paste form.

20. Oilfield wastewater sumps, pits or ponds, where the ROC content of the wastewater entering the sump, pit or pond is less than 5 milligrams per liter.

21. Any tank or container used to hold or store reactive organic compound liquids, except gasoline and crude oil, that is not required to have reactive organic compound vapor emission controls.

22. (Reserved)

23. Any soil aeration project exempt from the soil aeration limit in Rule 74.29 pursuant to Subsection C.1, C.2, or C.3 of Rule 74.29.

24. Any soil remediation project where collected organic vapors are not emitted to the atmosphere by any means. For the purpose of this subsection, this may include, but is not limited to, routing the vapors into the ground.

G. Experimental Operations

Bench scale experimental or research operations and equipment used exclusively for investigation, experimentation or research to advance the state of air pollution control knowledge or to improve techniques. This exemption is subject to express prior approval from the Air Pollution Control Officer and shall include a time limitation. (Revised 5/23/72, 4/13/04)

H. Plastics and Rubber

1. Presses used for the curing of rubber products and plastic products.

2. Ovens used exclusively for the curing of plastics that are concurrently being vacuum held to a mold or for the softening or annealing of plastics.

3. Equipment used for compression molding or injection moulding of plastics.

4. Mixers for rubber or plastics where no material in powder form is added and no organic solvents, diluents or thinners are used.

5. Ovens used exclusively for the curing of vinyl plastisols by the closed mold curing process.

6. Roll mills or calendar for rubber or plastics where no organic solvents, diluents or thinners are used.

7. Ovens used exclusively for curing potting materials or castings made with epoxy resins.

8. Equipment used exclusively for conveying and storing plastic pellets.

9. Presses used exclusively for extruding plastics where no heat is applied.

I. Metals and Ceramics

1. Porcelain enameling furnaces, porcelain enameling drying ovens, vitreous enameling furnaces or vitreous enameling drying ovens of one million BTU/s per hour or less heat input. (Revised 5/23/72)

2. Kilns used for firing ceramic ware of one million BTU/s per hour or less heat input. (Revised 6/14/77)

3. Equipment used exclusively for heat treating or sintering glass or metals or for case hardening metals of one million BTU/s per hour or less heat input. (Revised 5/23/72)

4. Presses used exclusively for extruding metals, minerals or wood where no heat is applied.

5. Equipment used for hydraulic or hydrostatic testing.

6. Equipment used for inspection of metal products.

7. Brazing, soldering or welding equipment.

8. Molds used for the casting of metals.

9. Equipment using dilute aqueous solutions for surface preparation, cleaning, stripping, etching (does not include chemical milling) or the electrolytic plating, electrolytic polishing or the electrolytic stripping of brass, bronze, cadmium, copper, iron, lead, nickel, tin, and zinc. This exemption does not apply to chrome plating or chromic acid anodizing. (Revised 5/23/72, 6/27/89)

10. Equipment used for washing or drying products fabricated from metal or glass, provided that no volatile organic materials are used in the process and that no oil or solid fuel is burned.

11. Crucible furnaces, pot furnaces, or induction furnaces, with a capacity of 1000 pounds or less each with fail-safe temperature controllers preventing vapor boil-off, in which no sweating or distilling is conducted and from which only the following metals are poured or in which only the following metals are held in a molten state. (Revised 5/23/72)

    a. Aluminum or any alloy containing over 50 percent aluminum.

    b. Magnesium or any alloy containing over 50 percent magnesium.

    c. Lead or any alloy containing over 50 percent lead.

    d. Tin or any alloy containing over 50 percent tin.

    e. Zinc or any alloy containing over 50 percent zinc.

f. Copper

g. Precious metals

12. Crucible furnaces, pot furnaces or induction furnaces with a brimful capacity of less than 450 cubic inches of any molten metal. (Revised 6/14/77)

13. Wax burnout kilns with an internal volume of 0.2 cubic meters (7.0 cubic feet) or less and a rated capacity of less than one million BTUs per hour.

J. Miscellaneous

1. Bench scale laboratory equipment used exclusively for chemical or physical analyses or experiments. (Revised 6/14/77)

2. Vacuum producing devices in laboratory operations or in connection with other equipment that is exempt by this Rule.

3. Fuel cells that use phosphoric acid, molten carbonate, proton exchange membrane or solid oxide technologies.

4. Photographic process equipment by which an image is reproduced upon material sensitized to radiant energy.

5. Equipment used exclusively to package pharmaceuticals or cosmetics or to coat pharmaceutical tablets.

6. Shell-core and shell-mold manufacturing machines.

7. Die casting machines.

8. Equipment used exclusively for bonding lining to brake shoes.

9. Valves and flanges.

10. Cooling towers and ponds.

11. Equipment used exclusively for the dyeing or stripping (bleaching) of textiles where no organic solvents, diluents, thinners or sulfur compounds are used.

12. Any article, machine, equipment, contrivance or their exhaust systems, the discharge from which contains airborne radioactive materials and which is emitted into the atmosphere in concentrations above the natural radioactive background concentration in

air. "Air-borne radioactive material" means any radioactive material dispersed in the air in the form of dusts, fumes, smoke, mists, liquids, vapors or gases.

Atomic energy development and radiation protection are controlled by the State of California to the extent it has jurisdiction thereof, in accordance with the advice and recommendations made to the Governor by the Advisory Council on Atomic Energy Development and Radiation Protection. Such development and protection are fully regulated by the United States Atomic Energy Commission to the extent that such authority has not been delegated to the states.

13. Repairs, including the replacement of worn or defective parts, to any article, machine, equipment or other contrivance where a Permit to Operate had previously been granted for such equipment, so long as such repairs do not constitute a substantial replacement of the equipment as a whole. (Revised 1/17/78)

14. Any sterilizer or aerator at a stationary source where the amount of ethylene oxide charged to all sterilizers at the stationary source is no more than 4 pounds per year (lb/yr).

15. Equipment used exclusively to generate ozone and associated ozone destruction equipment for the treatment of cooling tower water or for water treatment processes.

16. Emission units used exclusively in agricultural operations, except where the total actual annual emissions, excluding fugitive PM10 emissions, from an agricultural source is equal to or greater than 50 percent of any of the following federal major source thresholds:

Pollutant	Threshold (Tons Per Year)
Any single HAP	10
Combination of HAPs	25
CO, PM10, or SOx	100

Attainment / Nonattainment Classification (Ozone)	Threshold (TPY) (ROC, NOx)
Attainment, Marginal, or Moderate	100
Serious	50
Severe	25
Extreme	10

This provision shall not exempt any large confined animal facility or any source required to be issued a permit pursuant to Title I (42 U.S.C. Sec. 7401 et seq.) or Title V (42 U.S.C. Sec. 7661 et seq.) For the purpose of this subsection, agricultural operations are operations conducted in the raising of fowl or animals or the production of products

of the soil, including crops, orchard fruits, trees, vines, rose bushes, ornamental plants, floricultural crops, and other horticultural crops. An agricultural source includes all emissions units that are not exempt pursuant to other provisions of this rule which are used in agricultural operations located on contiguous property under common ownership or control. For the purpose of this subsection a "large confined animal facility" is defined at Cal. Code Regs, tit. 17, § 86500.

EL DORADO COUNTY AIR QUALITY MANAGEMENT DISTRICT

RULE 501 - GENERAL PERMIT REQUIREMENTS
(Adopted: April 26, 1994, Amended June 06, 2006)

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RULE 501 - GENERAL PERMIT REQUIREMENTS

501.1 GENERAL

A. **PURPOSE:** To provide an orderly procedure for the review of new sources of air pollution and the orderly review of the modification and operation of existing sources through the issuance of permits. Procedures for issuing, modifying, or renewing Title V permits to operate for stationary sources which are subject to Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, shall also be consistent with the procedures specified in that rule.

B. **EXEMPTION, GENERAL:** The exemptions contained in this rule shall not apply to an otherwise exempt piece of equipment which is part of a process that requires a permit. An Authority to Construct and Permit to Operate shall not be required for the equipment listed in Sections 501.1 C. to 501.1 N., unless an emissions unit, is:

1. Subject to New Source Performance Standards; or

2. Subject to National Emission Standards for Hazardous Air Pollutants; or

3. Subject to the requirements of Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM; or

4. Emits, in levels deemed appropriate for review by the Air Pollution Control Officer (APCO), substances identified as a toxic air contaminant or which are under review pursuant to Health and Safety Code Section 39650 et. seq.; or

5. The Air Pollution Control Officer makes a determination that the emission unit may not operate in compliance with the District Rules and Regulations; or

6. An emissions unit or stationary source for which emission reduction credits have been requested or granted in accordance with Rule 524 EMISSION REDUCTION CREDITS.

C. **EXEMPTION, VEHICLES:**

1. Vehicles used to transport passengers or freight, but not including any article, machine, equipment or other contrivance mounted on such a vehicle that would otherwise require a permit under the provisions of these rules and regulations.

2. Locomotives, airplanes and watercraft used to transport passengers or freight. This exemption shall not apply to equipment used for dredging of waterways or equipment used in pile driving adjacent to or in waterways.

D. **EXEMPTION, COMBUSTION AND HEAT TRANSFER EQUIPMENT:**

1. Internal combustion engines with a manufacturer's maximum continuous rating of 50 brake horsepower or less or gas turbine engines with a maximum heat input rate of

3,000,000 British Thermal Units (Btu) per hour or less at ISO standard day conditions (288 degrees Kelvin, 60 percent relative humidity, and 101.3 kilopascals pressure). The ratings of all engines or turbines used in the same process will be accumulated to determine whether this exemption applies.

2. Any combustion equipment that has a maximum heat input of less than 1,000,000 Btu per hour (gross) and is equipped to be fired exclusively with purchased quality natural gas, liquefied petroleum gas or any combination thereof. The ratings of all combustion equipment used in the same process will be accumulated to determine whether this exemption applies.

E. **EXEMPTION, RESIDENTIAL STRUCTURES:** Equipment utilized exclusively in connection with any structure, when the structure is designed for and used exclusively as a dwelling for not more than four families.

F. **EXEMPTION, AGRICULTURAL OPERATIONS:** Equipment used exclusively in the growing of agricultural crops, or in the commercial raising of fowl or other animals. This exemption does not apply to agricultural sources as defined in Section 501.2.C that are:

1. Major stationary sources or Major Modifications, as defined in Rule 523, New Source Review,or

2. Large confined animal facilities as defined in California Health and Safety Code 40724.6,or

3. A stationary source that emits in any 12-month period air emissions equal to or more than the following quantities of emissions:
   a. 50 percent of the major source thresholds for regulated air pollutants (excluding Hazardous Air Pollutants (HAPs));
   b. 5 tons per year of a single HAP;
   c. 12.5 tons per year of any combination of HAPs; and
   d. 50 percent of any lesser threshold for a single HAP as the U.S.EPA may establish by rule.

G. **EXEMPTION, COOLING SYSTEMS AND VACUUM CLEANING:** Water cooling towers that have a circulation rate of less than 10,000 gallons per minute and which are not used for cooling of process water, water from barometric jets or water from barometric condensers. Refrigeration, air conditioning, ventilating, or vacuum cleaning systems not designed to remove air contaminants generated by equipment which would require a permit under these rules and regulations.

H. **EXEMPTION, PLASTICS AND CERAMICS PROCESSING:** Ovens, kilns, or furnaces fired by electricity used exclusively for the heating, curing, softening, or annealing of plastics or ceramics, and not emitting more than 5 pounds of Volatile Organic Compound (VOC) emissions in any one day. This Section shall not apply to ovens used for heating or curing of fiberglass reinforced plastics.

I. **EXEMPTION, STORAGE AND TRANSFER:** Tanks, reservoirs, vessels or other containers and their associated dispensing, pumping and compression systems used exclusively for the storage of:

1. Liquefied or compressed gases.

2. Unheated organic materials with an initial boiling point of 150 degrees Celsius (302 degrees Fahrenheit) or greater, as determined by the testing procedure specified in Section 501.2, or with an organic vapor pressure of 5 mm Hg (0.1 psia) or less at 20oC, as determined by the testing procedure specified in Section 501.3.

3. Organic liquids with a vapor pressure of 77.5 mm Hg (1.5 psia) or less at 20oC, as determined by the testing procedure specified in Section 501.3, having a capacity of 23,000 liters (6076 gallons or less). Equipment used exclusively for the transfer of organic liquids with a vapor pressure of 77.5 mm Hg (1.5 psia) at 20oC to or from storage.

4. Unheated solvent dispensing containers of 380 liters (100 gallons) capacity or less.

J. **EXEMPTION, SURFACE COATING AND PREPARATION:**

1. Water solution for surface preparation, cleaning, stripping, etching (other than chemical milling) or the electrolytic plating with electrolytic polishing of, or the electrolytic stripping of brass, bronze, cadmium, copper, iron lead, nickel, tin, zinc, and precious metals.

2. Surface coating operations using a combined total of one gallon per day or less of coating material and solvent.

3. Unheated non-conveyorized solvent rinsing containers or unheated non-conveyorized coating dip tanks of 380 liters (100 gallons) capacity or less.

K. **EXEMPTION, FOOD PROCESSING:** The following processing equipment for food or other human consumables and exhaust systems or collectors serving exclusively such equipment:

1. Used in eating establishments for the purpose of preparing food for human consumption.

2. Smokehouses in which the maximum horizontal inside cross sectional area does not exceed 2 square meters (21.5 square feet).

3. Mixers and blenders used in bakeries.

4. Confection cookers.

5. Used exclusively to grind, blend or package tea, cocoa, spices, or roasted coffee.

L. **EXEMPTION, LABORATORY EQUIPMENT:** Laboratory equipment used exclusively for chemical or physical analysis and bench scale tests, including associated vacuum-producing equipment.

M. **EXEMPTION, REPAIRS AND MAINTENANCE:** Repairs or maintenance not involving changes to any equipment for which a permit has been granted under Section 501.3 A., of this rule.

N. **EXEMPTION, OTHER EQUIPMENT:** Unless subject to the requirements of Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, other equipment authorized for exemption by the Air Pollution Control Officer and which would emit less than 2 pounds in any 24 hour period of any pollutants without the benefit of air pollution control devices.

501.2 DEFINITIONS

Unless otherwise defined below, the terms used in this rule are defined in Rule 523 NEW SOURCE REVIEW; Rule 524 EMISSIONS REDUCTION CREDITS; and Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM.

A. **ADMINISTRATIVE PERMIT AMENDMENT** - An amendment to a permit to operate which:

1. Corrects a typographical error; or

2. Identifies a minor administrative change at the stationary source; for example, a change in the name, address, or phone number of any person identified in the permit; or

3. Requires more frequent monitoring or reporting by a responsible official of the stationary source; or

4. Transfers ownership or operational control of a stationary source, provided that, prior to the transfer, the Air Pollution Control Officer receives a written agreement which specifies a date for the transfer of permit responsibility, coverage, and liability from the current to the prospective permittee.

B. **AFFECTED POLLUTANTS** - Reactive organic compounds (ROC), nitrogen oxides (NOx), sulfur oxides (SOx), PM10, carbon monoxide (CO), lead, vinyl chloride, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds, or any other pollutant or precursor for which an ambient air quality standard has been established by the U.S. Environmental Protection Agency or the California Air Resources Board.

C. **AGRICULTURAL SOURCE**: A source of air pollution or a group of sources used in the production of crops, or the raising of fowl or animals located on contiguous property under common ownership or control that meets any of the following criteria:

1. Is a confined animal facility, including but not limited to, any structure, building, installation, barn, corral, coop, feed storage area, milking parlor, or system for the collection, storage, treatment and distribution of liquid and solid manure, if domesticated animals, including, but not limited to, cattle, calves, horses, sheep, goats, swine, rabbits, chickens, turkeys, or ducks are corralled, penned, or otherwise caused to remain in restricted areas for commercial agricultural purposes and feeding is by means other than grazing.

2. Is an internal combustion engine used in the production of crops or the raising of fowl or animals, including, but not limited to, an engine subject to Article 1.5 (commencing with Section 41750) of Chapter 3 of Part 4 except an engine that is used to propel implements of husbandry, as that term is defined in Section 36000 of the Vehicle Code, as that section existed on January 1, 2003.

D. **ANNIVERSARY DATE** - The day and month of issuance of a permit to operate and that same day and month of each succeeding year.

E. **APPLICABLE REQUIREMENTS** - Air quality requirements which a facility must comply pursuant to the District's regulations, codes of California statutory law, the Federal Clean Air Act as amended in 1990 and implementing regulations, other provisions of the United States Code, and the Code of Federal Regulations.

F. **AUTHORITY TO CONSTRUCT** - A preconstruction permit authorizing construction prior to the starting of construction and conforming to the requirements of Rule 523 NEW SOURCE REVIEW, and Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM.

G. **COMMENCE** - As applied to construction, means that the owner or operator has all of the necessary permits or approvals required under State and Federal air quality control laws, District Rules and Regulations, and those air quality control laws and regulations which are part of the California State Implementation Plan, and has:

1. Begun, or caused to begin, a continuous program of on-site construction of the source, to be completed in a reasonable time; or

2. Entered into binding agreements or contractual obligations which cannot be cancelled or modified without substantial loss to the owner or operator, to undertake a program of actual construction of the source to be completed within a reasonable time.

H. **CONTIGUOUS PROPERTY** - Two or more parcels of land with a common boundary or separated solely by a public roadway or other public right-of-way.

I. **EMISSIONS UNIT** - An identifiable operation or piece of process equipment such as an article, machine, or other contrivance which controls, emits, may emit, or results in the emissions of any affected air pollutant, regulated air pollutant or Hazardous Air Pollutant (HAP), directly or as fugitive emissions. An emissions unit shall not include the open burning of agricultural biomass.

J. **RESPONSIBLE OFFICIAL** - An individual with the authority to certify that a source complies with all applicable requirements, including the conditions of permits issued to sources in accordance with Regulation V PERMITS TO OPERATE. A "responsible official" means one of the following:

1. For a corporation, a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:
   a. The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars); or
   b. The delegation of authority to such representative is approved in advance by the Air Pollution Control Officer;

3. For a partnership or sole proprietorship, a general partner or the proprietor, respectively; or

4. For a municipality, state, federal, or other public agency, either a principal executive officer or a ranking elected official; or

5. For an acid rain unit subject to Title IV (Acid Deposition Control) of the Clean Air Act, the "responsible official" is the designated representative of that unit for any purposes under Title IV and Rule 522 TITLE V - FEDERAL OPERATING PERMITS PROGRAM.

K. **STARTUP** - means the setting in operation of a stationary source or emission unit for any purpose.

L. **STATIONARY SOURCE (SOURCE OR FACILITY)** - Any building, structure, facility, or emissions unit which emits or may emit any affected pollutant directly or as fugitive emissions.

1. Building, structure, facility, or emissions unit includes all pollutant emitting activities which:
   a. belong to the same industrial grouping; and
   b. are located on one property or on two or more contiguous properties; and
   c. are under the same or common ownership, operation, or control or which are owned or operated by entities which are under common control.

2. Pollutant emitting activities shall be considered as part of the same industrial grouping if:
   a. they belong to the same two-digit standard industrial classification code under the system described in the 1987 Standard Industrial Classification Manual; or
   b. they are part of a common production process. (Common production process includes industrial processes, manufacturing processes and any connected processes involving a common material.)

3. The emissions within District boundaries of cargo carriers associated with the stationary source shall be considered emissions from the stationary source to the extent that emission reductions from cargo carriers are proposed as offsets.

M. **TITLE V PERMITS** - A permit issued, denied, renewed, amended, or reopened pursuant to Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, and the Federal Clean Air Act as amended in 1990 (42 U.S.C. Section 7401 et seq.), and Part 70 Code of Federal Regulations, "State Operating Permit Programs".

501.3 STANDARDS

A. **AUTHORITY TO CONSTRUCT:** Any person building, erecting, altering or replacing any article, machine, equipment or other contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants, shall first obtain authorization for such construction from the Air Pollution Control Officer (APCO) as specified in Section 501.4 C., of this rule. An authority to construct shall remain in effect until a permit to operate the equipment is granted or denied or the application is cancelled. With the exception of Authority to Construct permit(s) for stationary sources or equipment units subject to the

requirements of Title V of the Federal Clean Air Act as amended in 1990, and pursuant to Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, the emissions unit(s) shall not commence operation until the Air Pollution Control Officer takes final action to approve the permit. A stationary source or emission unit subject to Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, requirements may commence operation subject to the limitations and restrictions of Rule 522 upon such operation.

1. An authority to construct, unless extended or application for a Title V operating permit is submitted, shall expire no later than one year following the construction completion date given by the applicant, or no later than two years following the date of permit issuance, whichever occurs first.

2. If a written request to extend the authority to construct is received by the Air Pollution Control Officer prior to the expiration of the authority to construct, an extension may be granted for up to two years if the Air Pollution Control Officer determines that:
   a. commencement of construction has occurred, and a good faith effort to complete the project has been made; and
   b. the parameters of the project remain the same as in the initial application.

3. The Air Pollution Control Officer shall be notified of the anticipated date of initial startup or operation of any permitted article, machine, equipment or other contrivance. Such notice shall be made no less than 30 days prior to the startup date.
4. The Air Pollution Control Officer shall be notified of the actual date of initial startup within 5 days after such date.

B. **PERMIT TO OPERATE:** Any person operating an article, machine, equipment or other contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants, shall first obtain a written permit from the Air Pollution Control Officer. Stationary sources subject to the requirements of Rule 522 TITLE V -FEDERAL OPERATING PERMIT PROGRAM, must also obtain a Title V permit pursuant to the requirements and procedures of that rule.

C. **STANDARDS FOR GRANTING APPLICATIONS:**

1. The Air Pollution Control Officer shall deny an authority to construct or permit to operate, except as provided in Rule 523 NEW SOURCE REVIEW, if the applicant does not show that every article, machine, equipment or other contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants, is so designed, controlled, equipped, and operated with such air pollution control equipment that it may be shown to operate without emitting or without causing to be emitted air contaminants in violation of these rules and regulations or of such state or federal statutes as may be enforceable by the Air Pollution Control Officer on the date the application is deemed complete. Permits to operate, and permit amendments, for sources subject to the requirements of Title V of the Federal Clean Air Act as amended in 1990 (42 U.S.C. Section 7401 et seq.), and Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, must comply with all applicable federal requirements. In addition, the Air Pollution Control Officer shall require the applicant, as a condition of the authority to construct, to comply with the requirements of California Health and Safety Code Part 6, (Section 44300 et. seq.), Air Toxics "Hot Spots" Information and Assessment Act.

2. No permit to operate shall be granted, either by the Air Pollution Control Officer or the Hearing Board, for any article, machine, equipment or contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants, which has been constructed or installed without authorization as required by Section 501.3 A., of this rule, until:
   a. The information necessary to enable the Air Pollution Control Officer to make the determination required by Section 501.3 C., of this rule, Rule 523 NEW SOURCE REVIEW, and Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, for those sources subject to that rule, is presented to the Air Pollution Control Officer; and
   b. Such article, machine, equipment or contrivance, is altered, if necessary, and made to conform to the standards set forth in Section 501.3 C., of this rule, elsewhere in these rules and regulations, and in the California Health and Safety Code.

3. In acting upon a permit to operate, if the Air Pollution Control Officer finds that the article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, has not been constructed in accordance with the authority to construct, he or she shall deny the permit to operate. The Air Pollution Control Officer shall not accept any further application for a permit to operate the article, machine, equipment, or other contrivance so constructed until he or she finds that the article, machine, equipment or other contrivance has been reconstructed in accordance with the authority to construct.

4. The Air Pollution Control Officer shall require enforceable emission limitations as permit conditions in authorities to construct and permits to operate to assure the permanence of surplus actual emissions reductions applied for use as internal reductions or emission reduction credits in accordance with Rule 523, NEW SOURCE REVIEW; Rule 524, EMISSION REDUCTION CREDITS; and Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM.

5. The Air Pollution Control Officer shall determine that an applicant for a permit to construct or modify a potential source of air contaminants located within 1,000 feet from the outer boundary of a school has complied with the applicable requirements of California Health and Safety Code Section 42301.6, preparation and distribution of a public notice, prior to approving an application for an authority to construct permit.

6. Approval to construct shall not relieve any owner or operator of the responsibility to comply fully with applicable requirements, including applicable provisions of the California State Implementation Plan, District Rules and Regulations, or State or Federal law.

7. No permit to operate shall be issued, modified, or renewed for stationary sources which are subject to Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, unless the permit contains conditions consistent with those specified in that rule.

D. **PROVISION OF SAMPLING AND TESTING FACILITIES:** In addition to the monitoring and testing required to comply with State or Federal laws or regulations, the Air Pollution Control Officer may, upon reasonable written notice or before an authority to construct or permit to operate is granted, require the applicant or the owner or operator of any article, machine, equipment, or other contrivance, the use of which may cause the issuance of

air contaminants, or the use of which may eliminate, reduce, or control the issuance of air contaminants to:

1. Provide and maintain such facilities as are necessary for sampling and testing purposes in order to secure information that will disclose the nature, extent, quantity or degree of air contaminants discharged into the atmosphere from the equipment in question. In the event of such a requirement, the Air Pollution Control Officer shall notify the applicant in writing of the required size, number and location of sampling holes; the size and location of the sampling platform; the access to the sampling platform; and the utilities for operating the sampling, testing, and air monitoring equipment. Such platform and access shall be constructed in accordance with the applicable General Industry Safety Orders of the State of California.

2. Provide and maintain sampling and monitoring apparatus to measure emissions of air contaminants when the Air Pollution Control Officer has determined that such apparatus is available and should be installed.
   a. Continuous emission monitoring systems as a minimum shall be installed when required, and to the performance specifications required, by Section 501.5 B., of this rule.
   b. A violation of emission standards of these rules, as shown by the stack-monitoring system, shall be reported by the owner or operator to the Air Pollution Control Officer within 96 hours, or such earlier time as may be required by Rule 516, UPSET AND BREAKDOWN CONDITIONS
   c. In the event of a breakdown of monitoring equipment, the owner or operator shall notify the Air Pollution Control Officer within 48 hours and shall initiate repairs. The owner or operator shall inform the Air Pollution Control Officer of the intent to shutdown any monitoring equipment at least 24 hours prior to the event.
   d. Compliance with Subsection (b) and (c), above, does not exempt the owner or operator from applicable provisions of Rule 516 UPSET AND BREAKDOWN CONDITIONS, the emergency provisions of Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, pursuant to 40 CFR 70.6(g), or the separate reporting requirements of other federal regulations to which the stationary source or emissions unit is subject.

3. If the Air Pollution Control Officer determines that technological or economic limitations on the application of measurement methodology to a particular class of sources would make the imposition of a numerical emission standard infeasible, the Air Pollution Control Officer may instead prescribe a design, operational, or equipment standard. In such cases, the Air Pollution Control Officer may require the installation or modification of process monitoring devices such that the design characteristics or equipment will be properly maintained, or that the operational conditions will be properly performed, so as to continuously achieve the assumed degree of control. To the extent applicable, reporting requirements for process monitors shall be the same as for continuous emission monitoring systems.

4. A person operating or using a stack monitoring system shall, upon written notice from the Air Pollution Control Officer, provide a summary of the data obtained from such systems. This summary of the data shall be in the form and manner prescribed by the Air Pollution Control Officer. The summary of data shall be available for public inspection at the office of the Air Pollution Control District. Records from the monitoring equipment

shall be kept by the owner or operator for a period of two years, during which time they shall be available to the Air Pollution Control Officer in such form as he or she directs.

5. The responsible official of a source using a stack monitoring system and subject to Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, shall in addition to the requirements of Section 501.3 D.4., above, submit data summaries and retain monitoring records in accordance with the applicable federal requirements of that rule.

E. **TRANSFER:** An authority to construct or permit to operate shall not be transferable, whether by operation of law or otherwise, either from one location to another, from one piece of equipment to another, or from one person to another. In the event any person contemplates or desires to make any such transfer as herein above described, said person shall make an application for authorization in accordance with Section 501.4 C., of this rule.

F. **PERMIT RENEWAL:** Except for Title V permits, which shall be renewed in accordance with Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, every permit to operate, except as specified below, shall be renewable annually on the permit's anniversary date, commencing one year after the date of issuance.

1. Action to suspend or revoke the permit has been initiated and such action has resulted in a final determination to suspend or revoke the permit by the Air Pollution Control Officer or the Hearing Board and all appeals, or time for appeals, has been exhausted.

2. Fees applicable to the renewal of the permit(s) to operate have not been paid, as specified in Regulation VI, FEES.

3. The Air Pollution Control Officer shall review every permit to operate upon annual renewal, pursuant to Health and Safety Code Section 42301(c), to determine that permit conditions are adequate to ensure compliance with, and the enforceability of, District Rules and Regulations applicable to the article, machine, equipment, or contrivance for which the permit was issued. Applicable District Rules and Regulations shall include those which were in effect at the time the permit was issued or modified, or which have subsequently been adopted and made retroactively applicable to an existing article, machine, equipment, or contrivance, by the District Air Pollution Control Board. During this annual review the Air Pollution Control Officer shall reopen the permit if cause for reopening is discovered for a permit to operate issued pursuant to Rule 522 TITLE V - FEDERAL OPERATING PERMITS PROGRAM. The Air Pollution Control Officer shall revise the conditions, if such conditions are not consistent, in accordance with all applicable District Rules and Regulations.

4. The Air Pollution Control Officer may establish an annual permit renewal date for all permits to operate held by a stationary source. Thereafter, permits to operate shall be renewable that same day and month of each succeeding year, subject to any other requirements of these Rules and Regulations and of state law, regarding validity, voiding or revocation of permits.

G. **PERFORMANCE TESTING:** Within 60 days after achieving the maximum production rate or the maximum rate of emissions to which the source is limited by enforceable conditions, but not later than 180 days after initial startup of such source, or as otherwise required by the Air Pollution Control Officer to determine continuous compliance with emission limitations

or to confirm emission reductions claimed, the owner or operator of such source shall conduct performance test(s) in accordance with methods and under operating conditions as are approved by the Air Pollution Control Officer and furnish the Air Pollution Control Officer a written report of the results of such performance test(s).

1. Such test(s) shall be at the expense of the owner or operator.

2. Testing shall be conducted with the source(s) of emissions operating at maximum capacity or other rate conforming to the maximum rate of emissions to which the source(s) are limited by enforceable condition(s).

3. The Air Pollution Control Officer may monitor such test and may also conduct performance tests.

4. The owner or operator of a source shall provide the Air Pollution Control Officer 15 days prior notice of the performance test to afford the Air Pollution Control Officer the opportunity to have an observer present.

5. The Air Pollution Control Officer may waive the requirement for performance tests if the owner or operator of a source has demonstrated by other means to the Air Pollution Control Officer's satisfaction that the source is being operated in compliance with all local, State and Federal regulations which are part of the California State Implementation Plan.

501.4 ADMINISTRATIVE REQUIREMENTS

A. **POSTING:** A person who has been granted a permit to operate any article, machine, equipment, or other contrivance described in Section 501.3 B., of this rule shall maintain a legible copy of said permit on the premises of the subject equipment. Other information, analysis, plans or specifications which disclose the nature, extent, quantity, or degree of air contaminants which are or may be discharged from such source shall be readily available for inspection by the Air Pollution Control Officer.

B. **ALTERING OF PERMIT:** A person shall not willfully deface, alter, forge, counterfeit, or falsify a permit to operate any article, machine, equipment, or other contrivance described in Section 501.3 B., of this rule. A permit amendment or revision requested by the owner or operator, other than an administrative permit amendment or an amendment pursuant to Subsection 501.3 F.3., shall require the filing of an application. For an administrative permit amendment, a responsible official may implement the change addressed in the written request immediately upon submittal of the request. The Air Pollution Control Officer shall take final action no later than 60 days after receiving the written request for an administrative permit amendment.

1. After designating the permit revisions as an administrative permit amendment, the Air Pollution Control Officer may revise the permit without providing notice to the public or any affected state.

2. The Air Pollution Control Officer shall provide a copy of the revised permit to the responsible official and for Title V permits to the U.S. Environmental Protection Agency.

3. While the Air Pollution Control Officer need not make a completeness determination on a written request, the Air Pollution Control Officer shall notify the responsible official if the Air Pollution Control Officer determines that the permit can not be revised as an administrative permit amendment.

C. **APPLICATIONS:** An application for an authority to construct, permit to operate, change of ownership, or an application for a permit amendment, permit reopening, or revision shall be filed in the manner and form prescribed by the Air Pollution Control Officer, and shall give all the information necessary to enable the Air Pollution Control Officer to make the determinations required by Section 501.3 C., of this rule, Rule 523, NEW SOURCE REVIEW; Rule 524, EMISSION REDUCTION CREDITS; and Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM.

1. A responsible official representing the owner or operator shall certify the truth, accuracy and completeness of application forms.

2. When the information submitted with the application is insufficient for the Air Pollution Control Officer to make the determination required by Section 501.3 C., of this rule, Rule 523, NEW SOURCE REVIEW, by Rule 522 TITLE V - FEDERAL OPERATING PERMITS PROGRAM, for subject sources, and any other applicable rule, regulation, or order, upon the written request of the Air Pollution Control Officer a responsible official shall supplement any complete application with additional information within the time frame specified by the Air Pollution Control Officer.

3. A responsible official shall promptly provide additional information in writing to the Air Pollution Control Officer upon discovery of submittal of any inaccurate information as part of the application or as a supplement thereto, or of any additional relevant facts previously omitted which are needed for accurate analysis of the application.

4. Intentional or negligent submittal of inaccurate information shall be reason for denial of an application.

5. An application for an authority to construct, permit to operate, or permit amendment or revision shall be accompanied by payment of the application filing fee specified in Regulation VI, FEES.

D. **ACTION ON APPLICATIONS:** The Air Pollution Control Officer shall notify the applicant in writing of his or her approval, conditional approval, suspension, or denial of the application for an authority to construct or permit to operate.

1. With the exception of applications of sources subject to the requirements of Rule 522 TITLE V - FEDERAL OPERATING PERMIT PROGRAM, in the event said notification or notification of application completeness pursuant to Rule 523, NEW SOURCE REVIEW, is not received by applicant within 30 days of the filing of the application, or within 30 days of providing further information as required by Section 501.4 C., the applicant may, at his or her option, deem the application to construct or permit to operate denied.

2. Service of said notification may be made in person or by mail, and such service may be proved by the written acknowledgement of the person(s) served or affidavit of the person making the service.

3. For sources subject to the requirements of Rule 522 TITLE V - FEDERAL OPERATING PERMITS PROGRAM, action on applications for initial operating permits, permit renewal, or permit modification shall be taken in accordance of the provisions of that rule.

E. **CONDITIONAL APPROVAL:** The Air Pollution Control Officer may issue an authority to construct or a permit to operate subject to conditions which will bring the operation of any article, machine, equipment or other contrivance, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, within the standards of Section 501.3 C., of this rule. The conditions shall be specified in writing. Commencing work under such an authority to construct, or operation under such a permit to operate, shall be deemed acceptance of all the conditions so specified. The Air Pollution Control Officer shall issue an authority to construct or a permit to operate with revised conditions upon receipt of a new application, if the applicant demonstrates that the article, machine, equipment or other contrivance, the use of which may cause the issuance of air contaminants, can operate under the revised conditions within the standards of Section 501.3 C., of this rule.

F. **DENIAL OF APPLICATION:** In the event of a denial of an authority to construct or permit to operate, the Air Pollution Control Officer shall notify the applicant in writing of the reasons therefore. Service of this notification may be made in person or by mail, and such service may be proved by the written acknowledgement of the person(s) served or affidavit of the person making the service. The Air Pollution Control Officer shall not accept a further application unless the applicant has complied with the objections specified by the Air Pollution Control Officer as his or her reasons for denial of the authority to construct or the permit to operate.

G. **DISCLOSURE:** The Air Pollution Control Officer, at any time, may require from an applicant, or holder of, any permit provided for in these rules and regulations, such information, analyses, plans, or specifications which will disclose the nature, extent, quality, or degree of air contaminants which are, or may be, discharged by the source for which the permit was issued or applied. The Air Pollution Control Officer may require that such disclosures be certified by a professional engineer registered in the State of California. A responsible official representing the owner or operator shall certify the truth, accuracy and completeness of disclosures. Studies necessary to provide such information, shall be at the expense of the owner or operator of the source for which a permit was issued or applied.

H. **EMISSION STATEMENT:** Upon the request of the Air Pollution Control Officer and as directed by the Air Pollution Control Officer, the owner or operator of any stationary source operation which emits or may emit oxides of nitrogen or reactive organic gas shall provide the Air Pollution Control Officer with a written statement, in accordance with Rule 1000, EMISSION STATEMENT, showing actual emissions of oxides of nitrogen and reactive organic gas from that source.

I. **SUSPENSION:** The Air Pollution Control Officer may suspend a permit if a holder of such permit willfully fails and refuses to furnish information, analyses, plans, and specifications, within a reasonable time, as requested by the Air Pollution Control Officer pursuant to California Health and Safety Code Section 42303, District Rules and Regulations, or any other law, rule, regulation, agreement, or order enforceable by the District. The Air Pollution Control Officer shall serve notice, in writing, of such suspension and the reasons therefor. Service of said notification may be made in person or by mail, and such service may be

proved by the written acknowledgement of the persons served or affidavit of the person making the service. The permit shall be reinstated when the Air Pollution Control Officer is furnished with all requested information, analyses, plans, and specifications.

J. **CANCELLATION OF APPLICATION:** An authority to construct or permit to operate application may be cancelled by the Air Pollution Control Officer:

1. At the request of the applicant; or

2. If additional information has been requested of the applicant in accordance with Section 501.4 C., without the subsequent submittal of information within a reasonable time.

K. **CANCELLATION OF PERMIT TO OPERATE:** If, prior to the surrender of the operating permit, the Air Pollution Control Officer determines that the source or the emissions unit has been removed or fallen into an inoperable or un-maintained condition, the Air Pollution Control Officer may notify the owner of the intent to cancel the permit, providing the owner or operator with 30 days to respond. If the owner cannot demonstrate to the satisfaction of the Air Pollution Control Officer that the owner intended to operate again, or the owner does not respond within 30 days from the date a second noticing of the District's intent to cancel the permit is mailed by the District to the owner or operator, then the Air Pollution Control Officer may cancel the permit and deem the source or emissions unit shutdown as of the last known date the source or emissions unit discharged emissions.

a. The owner or operator may request an extension of time, in writing prior to the end of the 60 day period following the initial notice, from the Air Pollution Control Officer.

b. The Air Pollution Control Officer may grant an extension of time not to exceed 90 days.

c. The owner or operator may claim emissions reductions resulting from the shutdown in accordance with the provisions of Rule 524, EMISSION REDUCTION CREDITS, prior to the end of the 60 day period following the initial notice, or prior to the expiration of an extension.

d. The Air Pollution Control Officer shall advise, in writing, the owner or operator of the stationary source or emissions unit for which a permit is cancelled of the cancellation decision.

e. The owner or operator may appeal the decision to cancel the permit pursuant to Section 501.4 M., of this rule.

L. **TEMPORARY PERMIT:** The Air Pollution Control Officer may issue a temporary permit to operate. The temporary permit to operate shall specify a reasonable period of time during which the article, machine, equipment, or contrivance may be operated in order for the District to determine whether it will operate in accordance with the conditions specified in the permit.

M. **APPEALS:** Within ten days after notice, by the Air Pollution Control Officer, of cancellation, suspension, denial, or conditional approval of an authority to construct, permit

to operate, or emissions reduction credit application, the applicant or any other aggrieved person who participated in the permit issuance proceedings may petition the Hearing Board, in writing, for an order modifying or reversing that decision. The Hearing Board after public notice and a public hearing held within thirty days after filing the petition, may sustain or reverse the action of the Air Pollution Control Officer; such order may be made subject to specified conditions.

N. **COMPLIANCE DATES:** Not withstanding earlier compliance dates for sources subject to the requirements of Rule 522 TITLE V - OPERATING PERMIT PROGRAM, an application for a permit to operate shall be submitted to the Air Pollution Control Officer by **October 26, 1994**, for existing equipment constructed prior to **April 26, 1994**, except:

1. Existing internal combustion engines constructed prior to **April 26, 1994**, with a manufacturer's continuous rating of less than 150 brake horsepower and not subject to Section 501.1 D.1., shall submit an application for Permit to Operate by **April 26, 1995**.

2. Existing boilers constructed prior to **April 26, 1994**, with a maximum heat input greater than 10,000,000 Btu per hour (gross) shall submit an application for Permit to Operate by **April 26, 1995**.

3. Existing boilers constructed prior to **April 26, 1994**, with a maximum heat input less than 10,000,000 Btu per hour (gross) and not subject to Section 501.1 D.2., shall submit an application for Permit to Operate by **October 26, 1995**.

501.5 MONITORING AND RECORDS

A. **TESTING PROCEDURES:**
1. GENERAL REQUIREMENTS: Except as otherwise specified in the District Rules and Regulations, the State Implementation Plan, and the applicable federal requirements of Rule 522 TITLE V - FEDERAL OPERATING PERMITS PROGRAM, testing methods for determining compliance with emission limits shall be:
   a. The appropriate methods adopted by the California Air Resources Board and cited in Title 17, California Code of Regulations, Division 3, Subchapter 8, Compliance with Nonvehicular Emission Standards; or
   b. The appropriate methods of 40 CFR part 50, Appendix M, Recommended Test Methods for State Implementation Plans; or
   c. Any appropriate method of 40 CFR part 60, Appendix A, Test Methods; or
   d. An alternative method following review and approval of that method by the California Air Resources Board and U.S. Environmental Protection Agency.

2. INITIAL BOILING POINT: ASTM D-1078-86, "Test Method for Distillation Range of Volatile Organic Liquids".

3. VAPOR PRESSURE: ASTM D-2879-86, "Vapor Pressure-Temperature Relation and Initial Decomposition Temperature of Liquids by Isoteniscope".

B. **MONITORING**: As applicable, each emission source subject to the requirements of Section 501.3A., and 501.3 B., shall comply with the following monitoring requirements:
1. The requirements of Title 40, Code of Federal Regulations, Part 51, Appendix P, <u>Minimum Emission Monitoring Requirements</u>.

2. The applicable federal requirements for monitoring of Title V of the Federal Clean Air Act as amended in 1990 (42 U.S.C. Section 7401 et seq.).

C. **RECORDKEEPING**:

1. The following records shall be maintained and provided to the Air Pollution Control Officer upon request.
   a. Emissions monitoring and process data records necessary for the determination and reporting of emissions, in accordance with applicable provisions of the District Rules and Regulations, shall be maintained. Records shall be kept for 5 years.
   b. Other records of the nature and amounts of emissions or any other information as may be deemed necessary by the Air Pollution Control Officer to determine whether the stationary source or emissions unit is in compliance with applicable emission limitations, credited emission reductions, exemptions from rule provisions, or other requirements. The information must include emission measurements, continuous emission monitoring system performance testing measurements, performance evaluations, calibration checks and adjustments, maintenance performed on such monitoring systems, and other records and reports required by Title 40, Code of Federal Regulations, Part 51, Appendix P, Minimum Emission Monitoring Requirements.
   c. Operation and maintenance plans shall be submitted to the District for all add-on capture and control equipment for review and approval by the Air Pollution Control Officer. Such plans shall demonstrate, through the use of specific recordkeeping requirements, continuous operation of the add-on control equipment when emission producing operations are occurring. The plan shall also specify records to be kept to document the performance of required periodic maintenance. Records shall be consistent with compliance time frames and employ the most recent US Environmental Protection Agency recordkeeping guidance.

2. The Air Pollution Control Officer may require recordkeeping to verify or maintain any exemption.