

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

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Staff Report

Particulate Matter Implementation Schedule

Prepared by:
Planning and Research Division

Reviewed by:
Jean Roggenkamp
Deputy Air Pollution Control Officer

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I. BACKGROUND

A. What is Particulate Matter (PM)?

Particulate matter (referred to as PM) consists of very small liquid and solid particles suspended in the air, and includes particles smaller than 10 microns in size (PM₁₀) as well as finer particles smaller than 2.5 microns in size (PM_{2.5}). Particles with a size between 2.5 and 10 microns are sometimes referred to as "coarse particles".

Ambient PM is made up of particles that are emitted directly, such as soot and fugitive dust, as well as secondary particles that are formed in the atmosphere from reactions involving precursor pollutants such as oxides of nitrogen, sulfur oxides, volatile organic compounds, (NO_x, SO_x, and VOC), and ammonia. Secondary PM and combustion soot tend to be fine particles (PM_{2.5}) while fugitive dust is mostly coarse particles.

Some particles are directly emitted into the air. They come from a variety of sources such as cars, trucks, buses, industrial facilities, cooking, power plants, construction sites, tilled fields, unpaved roads, stone crushing, and burning of wood.

Other particles may be formed indirectly when gases from burning fuels react with sunlight and water vapor. These can result from fuel combustion in motor vehicles, at power plants, and in other industrial processes. Many combustion sources, such as motor vehicles and power plants, emit PM directly and also emit pollutants that form secondary PM.

B. What Kinds Of Problems Does PM Cause?

1. Human Health

Exposure to particulate pollution is linked to increased frequency and severity of asthma attacks and even premature death in people with pre-existing cardiac or respiratory disease. Those most sensitive to particulate pollution include infants and children, the elderly, and persons with heart and lung disease.

When we inhale, we breathe in air along with any particles that are in the air. The air and the particles travel into our respiratory system (the lungs and airway). Along the way the particles can stick to the sides of the airway or travel deeper into the lungs. The farther particles go, the worse the effect. Smaller particles can pass through the smaller airways.

Many scientific studies have linked breathing PM to a series of significant health problems, including:

- aggravated asthma
- increases in respiratory symptoms like coughing and difficult or painful breathing
- chronic bronchitis
- decreased lung function
- premature death

2. Visibility impairment

PM is the major cause of reduced visibility (haze) in the United States, including both urban and rural areas. PM reduction programs are underway in cities as well as places like the Grand

Canyon and the Great Smokey Mountains National Parks where millions of tourists come every year to take in the views.

3. Atmospheric deposition

The smaller particles are lighter and stay in the air longer and travel farther. PM₁₀ particles can stay in the air for minutes or hours while PM_{2.5} particles can stay in the air for days or weeks before settling as deposition on surfaces. PM₁₀ particles can travel as little as a hundred yards or as much as 30 miles. PM_{2.5} particles can go even farther; many hundreds of miles before settling out. The effects of this settling include:

- making lakes and streams acidic
- changing the nutrient balance in coastal waters and large river basins
- depleting the nutrients in soil
- damaging sensitive forests and farm crops

4. Aesthetic damage

Certain types of PM, such as soot, can stain and damage stone and other materials, including culturally important objects such as historic buildings, monuments, and statues. Cleaning up these landmarks is expensive and time consuming.

5. Public Nuisance

PM can become a public nuisance when it is concentrated at the local level. The nuisance effects can include soiling of personal property, increased respiratory ailments, reduced visibility, odor, or other problems. These effects can have the most impact on sensitive populations, such as children, the elderly and those with existing respiratory illness or compromised immune systems.

II. WHAT ARE PM CONDITIONS IN THE BAY AREA?

The U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (ARB) have adopted ambient air quality standards for PM₁₀ and PM_{2.5} (Table 1). California's standards are the most health-protective standards in the nation and are designed to provide additional protection for the most sensitive groups of people. According to ARB, attainment of California's standards is expected to result in the prevention of premature deaths, incidences of asthma among children, and over millions of lost work days per year.

TABLE 1: STATE AND NATIONAL PM STANDARDS AND BAY AREA ATTAINMENT STATUS

| | California Standard (µg/m ³) | Bay Area Status | National Standard (µg/m ³) | Bay Area Status |
|-----------------------------------|--|-----------------|--|-----------------|
| PM₁₀ - Annual | 20 | Nonattainment | 50 | Attainment |
| PM₁₀ - 24-hour | 50 | Nonattainment | 150 | Unclassified |
| PM_{2.5} - Annual | 12 | Nonattainment | 15 | Attainment |
| PM_{2.5} - 24-hour | -- | -- | 65 | Attainment |

State and National particulate matter ambient air quality standards. The levels of the standards are expressed in micrograms per cubic meter (µg/m³). Status of Bay Area based on data available as of 11/23/2004.

Today, virtually all of California is considered to be in "nonattainment" for the State PM₁₀ standard, with most urban areas, the Central Valley, and several other areas in nonattainment for the State PM_{2.5} standard. The Bay Area is currently in attainment of the Federal PM₁₀ and PM_{2.5} standards.

III. WHAT IS BEING DONE TO REDUCE PM POLLUTION IN THE BAY AREA?

The Bay Area Air Quality Management District (Air District) implements a number of regulations and programs to reduce PM emissions. These include rules limiting direct PM emissions from open burning of agricultural and non-agricultural waste, controlling dust from earthmoving and construction/demolition operations, limiting emissions from various combustion sources such as cement kilns and furnaces, and reducing PM from composting and chipping activities. In addition, the Air District also enforces rules that limit indirect PM precursor emissions such as NO_x from power plants, industrial facilities, and other combustion sources, and VOCs from petroleum refineries, coatings and solvents, product manufacturing, fuel storage, transfer and dispensing activities, and many other industrial and commercial facilities.

The Air District also administers programs that deal specifically with emissions from wood-burning appliances such as fireplaces, wood stoves and heaters. These programs include the Spare the Air Tonight campaign that advises Bay Area residents not to burn wood on evenings that are forecast to have conditions favorable for increased PM levels. The Air District has also developed a model wood burning ordinance for cities and counties, and administers incentive programs to replace older and dirtier wood-burning equipment with EPA-certified devices.

To reduce PM emissions from mobile sources, the Air District implements a variety of incentive programs to encourage fleet operators and the public to voluntarily replace or retrofit older higher polluting vehicles/equipment with newer lower polluting vehicles/equipment. The types of projects funded include purchasing low-emission vehicles, re-powering old polluting heavy duty diesel engines, and installing after market emissions control devices that reduce particulates and NO_x emissions. These incentives are available for a wide variety of on-road and off-road equipment. In addition, one program focuses specifically on school buses while another deals specifically with refuse trucks. The Air District also operates a vehicle buy-back program to provide financial incentives to remove the oldest most polluting light-duty vehicles from Bay Area roadways.

IV. SB 656 PM IMPLEMENTATION SCHEDULE

A. What is the SB 656 PM Schedule?

In 2003 the California Legislature enacted Senate Bill 656 (SB 656) to reduce public exposure to PM₁₀ and PM_{2.5}. SB 656 requires ARB, in consultation with local air districts, to develop and adopt, by January 1, 2005, a list of the most readily available, feasible, and cost-effective control measures that could be used by ARB and the air districts to reduce PM₁₀ and PM_{2.5}. The goal of SB 656 is to make progress in the near-term toward attainment of State and national PM₁₀ and PM_{2.5} standards.

The potential PM control measures on ARB's list are based on rules, regulations, and programs

existing in California as of January 1, 2004 to reduce emissions from new, modified, and existing stationary, area, and mobile sources.

For more information about SB 656 and to view related documents, please go to www.arb.ca.gov/pm/pmmeasures/pmmeasures.htm.

B. The SB 656 Process

As required by SB 656, ARB compiled a list of existing PM rules, regulations, and programs in California as of January 1, 2004. This list included 103 different measures that are being implemented by any air district to address both direct and indirect PM emissions. Local districts must review the ARB list and identify the measures most appropriate for their respective regions. Air Districts must adopt an implementation schedule that prioritizes the appropriate measures based on cost effectiveness and their effects on public health, air quality, and emissions reductions. The SB 656 legislation and ARB guidance directs each air district to base their evaluation of potential PM reduction measures on the nature and severity of the PM problem in their area.

SB 656 requires that local air districts not include measures on the implementation schedule if they are substantially similar to measures already adopted by the air district or if they are scheduled to be adopted within two years of adoption of the PM implementation schedule, or if the air district has determined that there are readily available, feasible, and cost-effective alternative control measures that will achieve equivalent or greater reductions.

C. Sources of PM in the Bay Area

Air District staff has analyzed both direct and indirect sources of PM throughout the Bay Area. Based on 2000-2003 ambient air monitoring data, the Air District and ARB estimated that the PM_{2.5} fraction of total PM accounted for approximately 60% of PM₁₀ during the winter and approximately 45% during the rest of the year. On days when the PM standards are exceeded, PM_{2.5} can account for as much as 90% of PM₁₀. On an annual basis, the ARB estimated that PM_{2.5} comprised approximately 50% of the PM₁₀ levels. Therefore, PM_{2.5} is seen a significant component of the region's total PM problem.

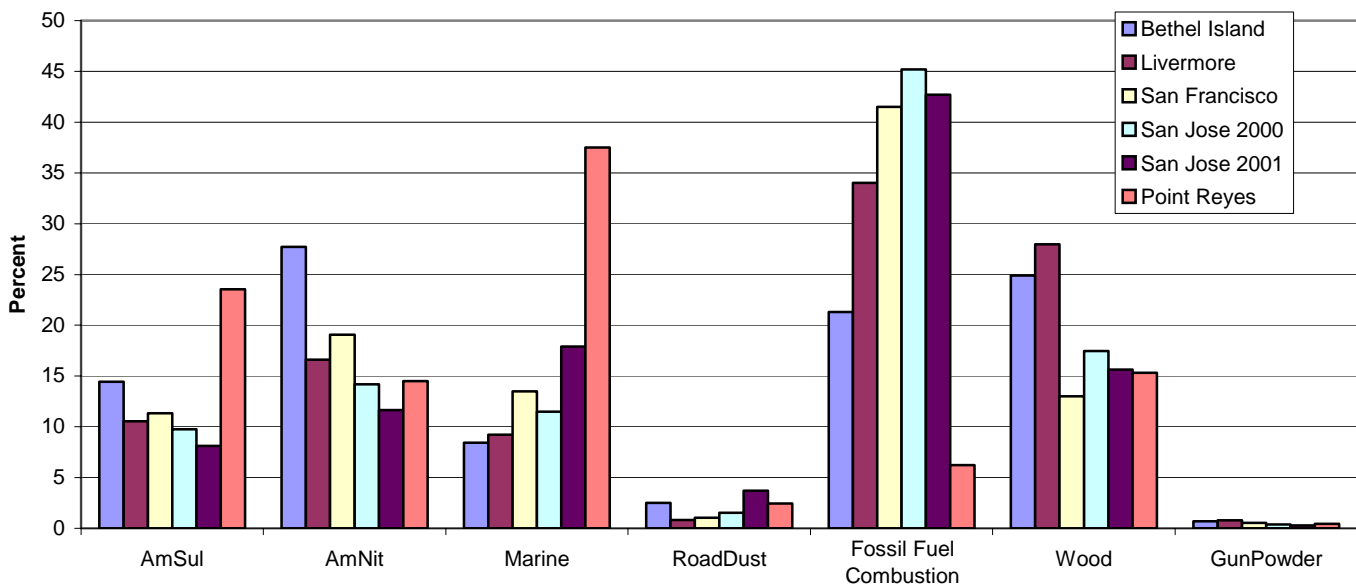
Air District staff and ARB staff have been working on ways to determine the sources of PM in the region. One method was to evaluate the Air District's source inventory for specific stationary and area sources. Another method was to analyze the nature of the PM collected as part of the region's participation in the state's PM_{2.5} speciation network of ambient air monitors.

The emissions inventory data collected by the Air District reflects PM₁₀. Based on the inventory data, combustion activities such as residential wood burning, construction/demolition activities, road dust, and emissions from on and off-road engines have been identified as significant sources of PM₁₀ emissions. While the inventory is helpful in determining potential PM₁₀ sources in the region, it does not provide the full picture of the makeup of the region's PM. The nature of particulates is that larger, coarser particles tend to settle out of the air closer to their emission source while smaller particles, such as the size of PM_{2.5}, tend to remain suspended in the air longer and travel further. In addition, direct and indirect sources of PM needed to be distinguished. Therefore, further evaluation of the sources of PM was needed.

The data collected from ambient air monitoring in the region reflects both PM₁₀ and PM_{2.5}. Recent scientific studies have found specific chemical components of PM to be associated with likely emission source categories. To help determine the sources of PM collected from ambient air monitors Air District staff applied an approach called the chemical mass balance (CMB) analysis using a computer model to apportion ambient PM collected on filters to a set of source categories, such as fossil fuel combustion, wood smoke, and geological dust. The CMB model found the mix of sources that best matches the ambient PM samples collected at monitoring sites, chemical species by chemical species. The results were then compared to the Air District's emissions inventory to further refine the source categories.

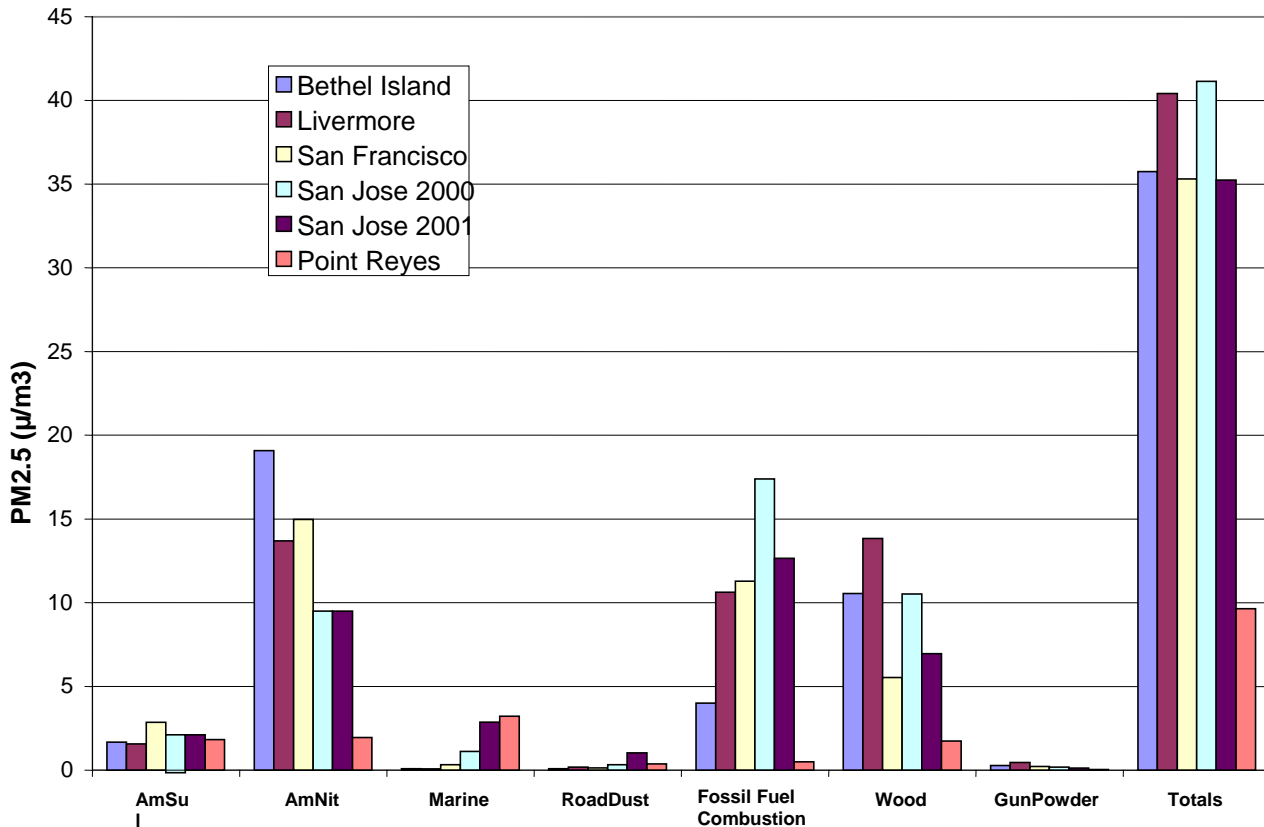
The combined analysis showed that for annual average PM_{2.5} the largest source categories are on and off road motor vehicle exhaust and carbon from cooking and wood-burning activities. These categories include both directly emitted PM and secondary PM, such as ammonium nitrate formed by atmospheric reactions of ammonia with nitrogen oxides from motor vehicles and other combustion sources. Geological dust was found to be a minor component of ambient PM. During the winter, residential wood smoke and cooking are major contributors to ambient PM. Combustion PM_{2.5}, which includes vehicle exhaust, is the second major component of PM_{2.5} and a significant component of PM₁₀. Ammonium nitrate is also a principal component of ambient PM. Winter conditions – cool temperatures, low-wind speeds, low inversion layers, and high humidity – favor the formation of ammonium nitrate and the buildup of PM in the region. Road dust and other dust producing activities also contribute to ambient PM₁₀, but not PM_{2.5}, and have a more local impact. The Figures 1 and 2 below summarize the results of the CMB analysis to determine source categories for both annual PM_{2.5} and peak PM_{2.5}.

FIGURE 1
Annual Percentage PM_{2.5} Contributions from Various Source Categories



The values shown are the mass from individual source categories as a percentage of the total estimated mass. Thus, the percentages sum to 100% for each site. Fossil Fuel Combustion category includes on-road and off-road vehicles, aircraft, refineries, and power generation sources.

FIGURE 2
Source Contributions to Peak Bay Area Ambient PM_{2.5}



Values are averages from 10 days with highest PM at each site. Totals are sums of individual source contributions. The Fossil Fuel Combustion category includes on-road and off-road vehicles, aircraft, refineries, and power generation sources.

V. SB 656 MEASURES EVALUATION PROCESS

To address the requirement of SB 656, the ARB compiled a list of existing PM rules, regulations, and programs in California as of January 1, 2004. This list included 103 different measures that are being used by various air districts to address both direct and indirect PM emissions. Each air district in the state has characteristics and emissions sources specific to the region. For this reason, not every item on the ARB's list of 103 measures would be applicable to every region. The SB 656 legislation directed each air district to base their further reduction measures on the nature and severity of the PM problem in their area. For example, the San Joaquin Valley has a significant PM problem and is considered to be in non-attainment of the federal PM₁₀ and PM_{2.5} standards. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has had to create PM Plans to address how they will achieve attainment, and the severity of their region's problem necessitated very aggressive regulations. The Bay Area, however, is in attainment of the federal PM standards and the PM problem here is not as extreme. Therefore, some measures that may be necessary to address the PM problem in San Joaquin Valley may not be as necessary or cost effective in the Bay Area.

In addition, the most important sources of PM vary from region to region. For example, District and ARB analysis indicate that geologic dust (e.g. from agricultural activities, unpaved roads, etc.) is not a major source of PM in the Bay Area. Therefore, control measures for those sources are less important for the Bay Area than in other regions. The SB 656 legislation and ARB guidance states that the Air District should not include measures if they are substantially similar to those scheduled to be adopted within two years of the Implementation Schedule or if the Air District has determined that there is a readily available, feasible, and cost-effective alternative control measure that will achieve equivalent or greater reductions. Therefore, measures that reduce PM precursors that are included in the Air District's Bay Area 2005 Ozone Strategy are not included in the Implementation Schedule.

Following ARB's SB 656 guidance, Air District staff compared each of the 103 measures on ARB's list with existing Air District rules, regulations and programs to determine if equivalent measures are already being implemented or are being addressed in other ways. The evaluation results categories are described below. The results of the District's evaluation are represented in Table 2. In addition, Appendix A describes each measure and, where appropriate, lists any applicable District rule, regulation or program that corresponds to the measure listed by the ARB. For a full description of each ARB measure, please visit www.arb.ca.gov/pm/pmmeasures/board_approved_list.pdf.

EVALUATION RESULTS CATEGORIES

Equivalent measures that are already being implemented by the District

District staff compared each of the 103 control measures on the ARB list with existing District rules, regulations and programs to determine if equivalent control measures are already being implemented or if the emission sources are being addressed in other ways. The measures listed in this category were found to have equivalent District rules, regulations or programs that accomplished the same or similar emission reductions.

No Bay Area sources

Each measure on the ARB list applies to a specific emissions source category. In some cases, those types of sources do not exist in the Bay Area and so the District does not need to employ rules, regulations or programs to address that particular source category.

Insignificant potential emissions reductions

This category includes several kinds of measures:

- The difference in the specific requirements of the ARB listed measures, such as specific emission standards or operational requirements was found to have limited potential additional emissions reduction benefits compared to the existing District rule, regulation or program.
- The number of facilities in the Bay Area that would be impacted by the measure was so small that the new rule, regulation or program would not provide significant emissions reductions.
- The source category affected by the measure would not provide significant regional emissions reductions and provide relatively little local reductions to warrant implementation.

Proposed in the Ozone Strategy Control Measures

The Health and Safety Code and ARB's SB 656 guidance indicate that air districts may not include on their PM Implementation Schedule any measures that are scheduled for adoption within two years of the adoption of the PM Implementation Schedule. The measures in this category are already proposed for adoption in the next two years in the District's Draft 2005 Ozone Strategy. Therefore, they are not being included as part of this PM Implementation Schedule. For a full list of the 2005 Ozone Strategy Control Measures and the timing of rule adoption, please see the Draft 2005 Ozone Strategy, Table 10: Regulatory Agenda 2005-2007 (pg. 49 of the Draft Bay Area 2005 Ozone Strategy).

Identified as further study measures in the Ozone Strategy

This category of measures includes measures that are also being addressed in the District's Draft 2005 Ozone Strategy as further study measures. In most cases, these are sources that the District already addresses in some way through existing rules, regulations, or programs, but needs to conduct further analysis to determine whether it is feasible and beneficial to amend existing rules or adopt new rules or programs. The District does not currently have enough information to determine whether these ARB listed measures meet the appropriate standards for improving air quality, public health, cost effectiveness, and technical feasibility for implementation at this time. The District will continue to evaluate these further study measures to determine whether they are viable PM and/or ozone control measures for adoption at some point in the future.

Identified for enhancement/amendment

Measures identified for enhancement and amendment include existing District rules, regulations and/or programs that the District believes could be significantly improved to further reduce emissions and increase protection of public health. These measures have been added to the Proposed PM Implementation Schedule for adoption beginning in 2005.

Identified for new rulemaking

These measures address significant PM emission sources in the region and are expected to produce emission reduction benefits that have been proven to be cost-effective and technologically feasible. These measures have been added to the Proposed PM Implementation Schedule for adoption beginning in 2006 and will undergo a full rule-making process.

Identified for further study and evaluation

The District has determined that insufficient information currently exists to determine that the measures in this category meet the appropriate standards of technical feasibility, total emission reduction potential, rate of emissions reduction, public acceptability, enforcement and cost-effectiveness per Health and Safety Code Section 40922 and ARB's SB 656 guidance to include in the PM Implementation Schedule at this time. The District will be gathering additional information and will further evaluate these measures to determine if they would be appropriate to adopt in the future.

Table 2: Measures Evaluation Results

| Measure Evaluations Results | ARB Control Measure Number |
|---|---|
| Equivalent measures that are already being used by the Air District | 1, 3, 13-18, 20-32, 36, 39-41, 49, 51, 52, 54, 57-60, 63, 65, 68, 71, 73-78, 81, 85-98, 100-103 (62 total) |
| No Bay Area Sources | 19, 35, 48, 61, 66 (5 total) |
| Insignificant potential emissions reductions | 33, 34, 37, 38, 42-44, 50, 69, 72 (10 total) |
| Already being proposed in Ozone Strategy Control Measures | 45, 46, 64, 70, 79, 80, 82, 84 (8 total) |
| Identified as further study measure in Draft Bay Area 2005 Ozone Strategy | 55, 56, 62, 67, 83, 99 (6 total) |
| Identified for further study and evaluation. | 2, 4-12 (10 total) |
| Identified for enhancement/amendment – wood burning. Added to Implementation Schedule. | 1 and 3 (2 total) |
| Identified for new rulemaking – combustion emissions from stationary and portable IC engines and charbroiling operations. Added to Implementation Schedule. | 47 and 53 (2 total) |

VI. PROPOSED PM IMPLEMENTATION SCHEDULE

The next step in the process was to evaluate the potential air quality and health benefits, cost effectiveness, and feasibility of the measures that are not currently being used by the Air District and propose additional measures for the Air District to adopt. The proposed new or amended measures are listed in Table 3.

Table 3: PROPOSED PM IMPLEMENTATION SCHEDULE

| Measure | ARB Control Measure Number | Adopt/ Amend | Full Implementation |
|--|-----------------------------------|---------------------|----------------------------|
| Further limit NOx and VOC emissions from stationary and portable internal combustion engines. | 47 | 2006 | TBD |
| Limit PM and VOC emissions from commercial broiling operations that use chain-driven broilers. | 53 | 2006 | TBD |
| Amend existing public awareness program to provide additional outreach and educational resources. Enhance existing wood-burning ordinance program. | 1 | 2005 | 2005 |
| Amend existing program aimed at voluntary curtailment of wood burning during periods of predicted high PM by adjusting the threshold for "Spare the Air Tonight" alerts. | 3 | 2005 | 2005 |

Internal Combustion Engines (ICE) – Measure 47

Through an extensive rule development process, the District will consider new standards that will address NOX, PM and VOC emissions from stationary and portable internal combustion engines. The new standards will address a variety of engine sizes and types and will complement the ARB standards currently under development.

Broiling Operations – Measure 53

The District will develop a new rule that will require the installation of emissions control devices on new and existing chain driven commercial broiling operations preparing food for human consumption. The most likely devices, catalytic oxidizer devices, are used to limit PM and VOC emissions and have been proven to be very cost-effective and to create significant emissions reductions in other regions. The District will conduct an extensive rule development process prior to the adoption of the new rule.

Wood Burning Program Enhancements – Measures 1 and 3

The District currently operates two programs that address wood burning. One is the District’s Model Wood Burning Ordinance program and the other is the Spare the Air Tonight voluntary wood burning curtailment and public awareness program. These programs will be enhanced beginning in November 2005.

The District plans to expand its public awareness program by increasing outreach activities and dissemination of educational materials to inform the public about the potential health hazards associated with wood smoke, to encourage better wood burning practices and use of more environmentally friendly heating devices in lieu of wood burning. The District will also increase efforts to have more cities and counties adopt its Model Wood Burning Ordinance. The District will also significantly expand outreach to print and electronic media regarding health effects and costs of wood burning and regarding the Spare the Air Tonight program.

The Spare the Air Tonight program enhancements will include lowering the Air Quality Index (AQI) threshold for issuing Spare the Air Tonight alerts from 150 AQI to 130 AQI. The lower AQI represents a more health-protective threshold and more alerts are anticipated than in previous years. Increased media outreach, newspaper advertisements and internet-based communication at the District website will be used to notify the public when high particulate matter levels are anticipated and Spare the Air Tonight advisories are issued.

VII. ADDITIONAL PM REDUCTION EFFORTS

The process prescribed by SB 656 focuses on the measures list compiled by the ARB. However, in addition to the measures included on the Implementation Schedule through that process, the Air District plans to address PM emissions through other programs.

A. Community Air Risk Evaluation (CARE) Program

The Air District has initiated a Community Air Risk Evaluation (CARE) program to evaluate health risk associated with toxic air pollutants in the Bay Area. When completed, the study will be a tool the Air District can use to reduce toxic air pollution in areas with the highest health risk. The program will look at all toxic air pollutants with an emphasis on diesel particulate matter, which is considered to be the major source of airborne health risk in California.

The program includes enhanced air monitoring that will better determine the relative contribution of air pollution sources, including vehicles, industrial emissions and/or wood burning to ambient particulate levels. As a result of the study, a "gridded" emission inventory (2 km x 2 km grid) for air toxics will be developed for the Bay Area. Based on the technical analyses, the Air District can focus on reducing toxic pollutants in areas with the highest health risk by using incentives, grant program funding and regulatory controls. A CARE Task Force of diverse stakeholders is assisting the Air District in its efforts.

B. Vehicle Incentive Programs

The Air District currently operates a variety of vehicle incentive programs aimed at reducing mobile sources of emissions. These programs address light-duty fleet and heavy-duty vehicles as well as school buses and off-road engines.

The Carl Moyer program, for example, provides funds on an incentive basis for the incremental cost of cleaner than required engines and equipment. Eligible projects include cleaner on-road, off-road, marine, locomotive and stationary agricultural pump engines, as well as forklifts, airport ground support equipment, and auxiliary power units. The program achieves near-term reductions in emissions of oxides of nitrogen (NOx) and reduces PM. The types of projects and the available funding under this program have recently been expanded. In addition, the District operates other incentive programs such as the Low-Emission School Bus and the Solid Waste Collection Vehicle programs which address emissions from specific categories of heavy duty diesel vehicles as well as the Transportation Fund for Clean Air grant program and the Vehicle Buy-Back program.

The incentive programs are all contingent on funding available to the Air District. In some cases the funding comes from the Air Resources Board and in other cases the funding comes from local vehicle registration fees. The Air District looks for opportunities to garner additional funds that can be used for emission reduction projects in the Bay Area. Air District staff will continue to pursue additional resources for the region which can then be disbursed to applicable PM reduction programs.

C. Wood Burning

In addition to the enhanced wood burning activities listed in the SB 656 Implementation Schedule in Table 3, the District will also be implementing a number of additional activities to reduce emissions, gain a better understanding of the nature and severity of wood smoke in the Bay Area and to help inform potential emission reduction strategies.

The table below provides a summary of the additional methods that the District will use to address residential wood burning in the Bay Area:

| Program | Approach | Target Audience Scale of Program |
|-----------------------------|---|-------------------------------------|
| Wood smoke air monitoring | Identify areas particularly affected by wood burning and estimate local PM concentrations | Neighborhood level |
| Fireplace Change-outs | Provides funding incentives for voluntary wood burning appliance changes | Public at-large /County |
| Enforcement Response | Education, curtailment request and solution guidance | Wood burning household/individual |
| Wintertime Public Survey | Solicits information about wood burning activities, public attitudes, and effectiveness of District Spare the Air Tonight program | Public at-large/Regional |
| Study additional activities | Monitor programs in other regions such as enhanced incentive programs and regulatory wood burning programs | Public at-large/individual |

Wood Smoke Air Monitoring

In order to improve the emission inventory for wood smoke and to better identify areas that may be particularly affected by wood smoke, the District will be conducting a focused air monitoring study in specific neighborhoods. This data, supplemented by survey data discussed below, will help identify factors that are conducive to high PM concentrations in residential neighborhoods, where such neighborhoods are located, and what PM levels may be experienced.

Fireplace Change-Outs

The District provides financial incentives in specific locations within the Bay Area for residents to remove non-EPA certified wood burning devices and install EPA certified devices and to replace wood burning fireplaces with natural gas fireplaces.

Enforcement Response

When air pollution complaints about wood smoke are received about a residential source the District attempts to obtain a mailing address for the responsible party and then an information packet of materials is mailed. Included in the packet are the District's "Wood Burning Handbook", educational materials that describe the adverse health effects attributed to wood smoke, and a request that the wood burning be reduced or eliminated. The educational materials also include specific tips on how to burn cleanly.

Wintertime Survey

Wintertime surveys have been conducted the day after a Spare the Air Tonight advisory was issued. The purpose of the study is to better understand the public's attitudes and behavior with respect to burning wood, their awareness of the Spare the Air Tonight Program, as well as the impact that the Program has had on awareness, opinions and behavior relevant to burning wood and air quality. The 2005 Wintertime Survey will be expanded to gather information about wood burning activities, including the quantities of wood being burned, the types of appliances being used, and the frequency of burning.

Monitor Additional Activities

The District will also continue to examine programs in other regions, such as enhanced incentive programs and regulatory limits to wood burning, for potential applicability in the Bay Area.

D. Ozone Strategy Further Study Measures

The Air District, in cooperation with the Metropolitan Transportation Commission and the Association of Bay Area Governments, has prepared the Draft Bay Area 2005 Ozone Strategy. The Ozone Strategy addresses California air quality planning requirements. A critical component of the Ozone Strategy is the set of control measures to further reduce ozone precursor emissions in order to reduce ozone levels in the Bay Area and to reduce transport of pollution to neighboring regions. The control strategy includes stationary source measures, mobile source measures and transportation control measures. In addition, the Air District has also identified a number of further study measures. Some of the further study measures identified in the Ozone Strategy are also on the ARB's list of 103 control measures for indirect PM emissions. The further study measures in the Ozone Strategy need to be researched in greater depth to determine their potential impact on air quality and public health, cost effectiveness, and feasibility. The Air District will continue to evaluate the further study measures to determine whether they are viable PM control measures as well as ozone control measures. For more information and to view a copy of the Draft Bay Area 2005 Ozone Strategy please visit www.baaqmd.gov/pln/plans/ozone/2005_strategy/index.htm.

Appendix A: BAAQMD Review of SB 656 List of Air District Measures

| Measure # | Strategy | District Rule | BAAQMD Rule/Measure | Evaluation Result ¹ |
|-----------|--|--|--|---|
| 1. | <u>Wood Burning Public Awareness Program</u> Informs the public about the indoor wood combustion control program. The goal is to inform the public about potential health hazards of wood smoke and to encourage better wood burning practices or use of heating devices. | <u>SJVAPCD</u> Rule 4901 | BAAQMD Spare the Air Tonight program | Equivalent Measure |
| 2. | <u>Mandatory Curtailment During Periods with Predicted High PM Levels</u> a) Exempts households that use wood as primary sole source of heat and households in areas where natural gas service is not available. b) Exempts U.S. EPA certified wood-burning appliances. A secondary source of heat is required in all dwellings. | a) <u>SJVAPCD</u> Rule 4901 b) <u>GBUAPCD</u> <u>Town of Mammoth</u> <u>Lakes</u> Rule 431 | BAAQMD Model Wood Burning Ordinance contains this provision ² Currently adopted by 7 cities | Identified for further study and evaluation |
| 3. | Voluntary curtailment during periods with predicted high PM levels. | <u>SCAQMD</u> , <u>YSAQMD</u> <u>SLOAPCD</u> Programs | BAAQMD Spare the Air Tonight program | Equivalent Measure |
| 4. | Require All U.S. EPA-certified or equivalent Wood-Burning Heaters. | <u>SJVAPCD</u> Rule 4901 | None | Identified for further study and evaluation |
| 5. | Require All U.S. EPA-certified or equivalent Wood-Burning Heaters and Wood-Burning Fireplaces. | <u>NSoCAPCD</u> Reg. 4-1-400 <u>SLOAPCD</u> Rule 504 | BAAQMD Model Wood Burning Ordinance contains this provision Currently adopted by 39 cities and 7 counties | Identified for further study and evaluation |

¹ For a full description of each evaluation category, please see the Particulate Matter Implementation Schedule Staff Report.

² The District's Model Wood Burning Ordinance contains a variety of provisions that correspond to measures 2, 5, 7-10, and 12 which can be adopted by cities and counties in the region. Each city and county has chosen to adopt specific elements of the Model Wood Burning Ordinance. The number of cities and counties that have adopted each element of the model ordinance is represented for each measure.

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| 6. | Prohibits the Installation of Non-EPA Certified Wood-Burning Appliances & Wood-Burning Fireplaces (except pellet stoves). | <u>GBUAPCD Town of Mammoth Lakes</u> Rule 431 | Federal New Source Performance Standards | Identified for further study and evaluation |
| 7. | Limits Number of wood-burning fireplaces and wood-burning heaters in new residential developments. | <u>SJVAPCD</u> Rule 4901 | BAAQMD Model Wood Burning Ordinance contains this provision Currently adopted by 38 cities and 7 counties | Identified for further study and evaluation |
| 8. | Limits the number of wood-burning appliances that may be installed in new nonresidential properties. | <u>GBUAPCD Town of Mammoth Lakes</u> Rule 431 | BAAQMD Model Wood Burning Ordinance contains this provision Currently adopted by 2 cities | Identified for further study and evaluation |
| 9. | Limits the number of additional wood-burning appliances that may be installed in existing residential and nonresidential properties. | <u>GBUAPCD Town of Mammoth Lakes</u> Rule 431 | BAAQMD Model Wood Burning Ordinance contains this provision Currently adopted by 24 cities and 3 counties | Identified for further study and evaluation |
| 10. | a) Replacement of Non-EPA Certified Appliances Upon Sale of Property - Non-complying devices must be removed or rendered inoperable. b) Requires replacing, removing or rendering inoperable any non-U.S. EPA certified wood-burning appliance upon sale of a dwelling (excluding pellet stoves, but including fireplaces). | a) <u>SJVAPCD</u> Rule 4901 b) <u>GBUAPCD Town of Mammoth Lakes</u> Rule 431 | BAAQMD Model Wood Burning Ordinance contains this provision a) Adopted by Sebastopol, CA | Identified for further study and evaluation |
| 11. | Sets moisture standard for "seasoned wood" offered for sale. | <u>SJVAPCD</u> Rule 4901 | None | Identified for further study and evaluation |

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| 12. | Prohibits the burning of materials not intended for use in wood-burning fireplaces and wood-burning heaters. | <u>SJVAPCD</u> Rule 4901 | BAAQMD Model Wood Burning Ordinance contains this provision Currently adopted by 39 cities and 7 counties | Identified for further study and evaluation |
| 13. | Prohibition of All Residential Open Burning. | <u>SJVAPCD</u> Rules 4103 & 4106 | BAAQMD Regulation 5 | Equivalent Measure |
| 14. | Prohibition of Residential Open Burning where waste service is available. | <u>MBUAPCD</u> Rule 438 | BAAQMD Regulation 5 | Equivalent Measure |
| 15. | Prohibition of Residential Open Burning in specified highly populated areas. | <u>SMAQMD</u> Rule 407 | BAAQMD Regulation 5 | Equivalent Measure |
| 16. | Prohibition of Residential Open Burning within small lots and setbacks. | <u>LCAQMD</u> Rule 433 | BAAQMD Regulation 5 | Equivalent Measure |
| 17. | Mandatory Curtailment of Non-Agricultural Open Burning during periods of predicted high PM or Ozone levels. | <u>MBUAPCD</u> Rule 438 | BAAQMD Regulation 5 | Equivalent Measure |
| 18. | Limits during Burn Days in Smoke Sensitive Areas. | <u>MBUAPCD</u> Rule 438 | BAAQMD Regulation 5 | Equivalent Measure |
| 19. | Emission Limits for Mechanized Burners. | <u>SCAQMD</u> Rule 2.6 | None | No Bay Area Sources |
| 20. | Establishes minimum drying times for any green waste to be burned and pile size limits. | <u>BAAQMD</u> Regulation 5 (to be consistent) | BAAQMD Regulation 5 | Equivalent Measure |
| 21. | Restricts ignition hours and requires smoldering fires to be extinguished. | <u>LCAQMD</u> Rules 431-433.5 | BAAQMD Regulation 5 | Equivalent Measure |
| 22. | a) Sets requirements for burn piles prior and during burning. b) Sets requirements for burns on land to be cleared for residential or commercial development. APCO can restrict or prohibit the burning of poison oak. | a) <u>MaCAPCD</u> Rule 300 b) <u>MBUAPCD</u> Rule 438 | BAAQMD Regulation 5 | Equivalent Measure |

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| 23. | Requires permits for all types of outdoor burning. | <u>NCUAQMD</u> Regulation 2 | BAAQMD Regulation 5 | Equivalent Measure |
| 24. | <u>Fugitive Dust – Construction Earthmoving</u> a) Requires water or chemical stabilizers/dust suppressants be applied, in conjunction with optional wind barriers, to limit visible dust emissions to 20% opacity. Specifies that a Dust Control Plan must be submitted. b) Sets standards for visible dust emissions, requires BACM for all sources of visible dust, lists BACM, requires dust control plan, and other requirements. | a) <u>SJVAPCD</u> Rule 8021 b) <u>SCAQMD</u> Rule 403 | BAAQMD Regulation 6 | Equivalent Measure |
| 25. | <u>Fugitive Dust – Construction/Demolition</u> a) Requires application of dust suppressants to limit VDE. b) Prohibits VDE beyond property line. Requires application of BACM. Specifies that upwind-downwind PM10 levels, Sets bulk material and track-out requirements. | a) <u>SJVAPCD</u> Rule 8021 b) <u>SCAQMD</u> Rule 403 | BAAQMD Regulation 6 | Equivalent Measure |
| 26. | <u>Fugitive Dust – Construction/Grading Operations</u> a) Requires pre-watering to limit VDE. Requires phasing of work to reduce disturbed soil. b) Requires water application to increase moisture content to proposed cut, and grading each phase separately to coincide with the construction phase. Specifies that chemical stabilizers are to be applied to graded areas where construction will not begin for more than 60 days after grading. | a) <u>SJVAPCD</u> Rule 8021 b) <u>SCAQMD</u> Rule 403 | BAAQMD Regulation 6 | Equivalent Measure |
| 27. | <u>Fugitive Dust – Inactive Disturbed Land</u> a) Requires restricting vehicle access. Specifies that water/dust suppressants must be applied. b) Prohibits VDE beyond property line and an upwind/downwind Requires BACM at all times and high wind measures. | a) <u>SJVAPCD</u> Rule 8021 b) <u>SCAQMD</u> Rule 403 | BAAQMD Regulation 6 | Equivalent Measure |

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| 28. | <p><u>Bulk Materials: Handling/Storage</u></p> <p>a) Establishes wind barrier and watering or stabilization requirements. Specifies bulk materials must be stored in accordance with the definition for stabilized surface. Requires outdoor materials be covered with tarps or plastic.</p> <p>b) Prohibits VDE beyond property line and an upwind/downwind PM10 differential. Requires use of BACM.</p> | <p>a) <u>SJVAPCD</u> Rule 8031</p> <p>b) <u>SCAQMD</u> Rule 403</p> | BAAQMD Regulation 6 | Equivalent Measure |
| 29. | Addresses storage, handling, and transport of petroleum coke, coal, and sulfur. | <u>SCAQMD</u> Rule 1158 | BAAQMD Regulation 6 | Equivalent Measure |
| 30. | <p><u>Carryout and Track-out</u></p> <p>a) Requires track-out removal at the end of the workday, specifies a track-out control device must be installed at all access points to public roads. Requires maintaining sufficient length of paved interior roads to allow dirt/mud to drop off before leaving site and mud/dirt removal from interior paved roads with sufficient frequency to prevent track-out.</p> <p>b) Requires removing any track-out within one hour; or selecting a Table 3 track-out prevention option and removing track-out at the end of the workday.</p> | <p>a) <u>SJVAPCD</u> Rule 8041</p> <p>b) <u>SCAQMD</u> Rule 403</p> | BAAQMD Regulation 6 | Equivalent Measure |
| 31. | Carryout and Track-out Clean-Up Methods. | <u>SJVAPCD</u> Rule 8041 | BAAQMD Regulation 6 | Equivalent Measure |
| 32. | <p><u>Disturbed Open Areas</u></p> <p>a) Applies to non-agricultural areas of 3 acres or larger which have been unused for 7 days or more.</p> <p>b) Applies to non-agricultural areas of one-half acre or larger for residential use, and all non-residential areas.</p> | <p>a) <u>SJVAPCD</u> Rule 8051</p> <p>b) <u>SCAQMD</u> Rule 403</p> | BAAQMD Regulation 6 | Equivalent Measure |
| 33. | <p><u>Paved Road Dust: New/Modified Public and Private Roads</u></p> <p>a) Requires paved shoulders for all roads with average daily vehicle trips (ADVT) of 500 or more.</p> <p>b) Establishes curbing or paved shoulder requirements in the event of a contingency notification.</p> | <p>a) <u>SJVAPCD</u> Rule 8061</p> <p>b) <u>SCAQMD</u> Rule 1186</p> | BAAQMD Regulation 6 | Insignificant Potential Emissions Reductions |

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| 34. | Requires use of certified PM10 efficient street sweepers by governmental agencies or their street sweeping contractors where the contract date, purchase date, or lease date is after January 1, 2000. | <u>SCAQMD</u> Rule 1186 | None | Insignificant Potential Emissions Reductions |
| 35. | Requires vacuum-street sweeping on roads to remove sand and cinders that were placed on the road during winter storms as an anti-skid material. | <u>GBUAPCD Town of Mammoth Lakes</u> Rule 431 | None | No Bay Area Sources |
| 36. | Requirements for Unpaved Parking Lots/Staging Areas. | <u>SJVAPCD</u> Rule 8061 | BAAQMD Regulation 6-301 | Equivalent Measure |
| 37. | <u>Unpaved Roads: Control Requirements</u> a) Sets requirements for days with 75 or more vehicle trips. Sets requirements for days with 100 or more vehicle trips. Sets as option to above, obtaining a Fugitive PM10 Management Plan. b) Sets applicability standard. Specifies all roads with ADT greater than the average ADT of all unpaved roads within its jurisdiction must be treated. Requires annual treatment of unpaved public roads beginning in 1998 and continuing for each of 8 years. | a) <u>SJVAPCD</u> Rule 8061 b) <u>SCAQMD</u> Rule 1186 | None | Insignificant Potential Emissions Reductions |
| 38. | <u>Weed Abatement Activities</u> a) Sets pre-activity requirements. Requires applying water to limit visible dust emissions. Sets stabilization requirements during periods of inactivity. b) Specifies weed abatement activities are subject to standards of Rule 403 with exemptions. Specifies that after discing, the requirement for taking action on disturbed surface areas applies. | a) <u>SJVAPCD</u> Rule 8021 b) <u>SCAQMD</u> Rule 403 | None | Insignificant Potential Emissions Reductions |
| 39. | Defines windblown dust as any visible emissions from any disturbed surface area which is generated by wind action alone. Specifies wind gusts as maximum instantaneous wind speed. | <u>SCAQMD</u> Rule 403 | BAAQMD Regulation 6 | Equivalent Measure |
| 40. | Sets windblown dust construction/earth moving activity abatement requirements. | <u>SCAQMD</u> Rule 403 | BAAQMD Regulation 6 | Equivalent Measure |
| 41. | Sets windblown dust abatement requirements for disturbed areas. | <u>SCAQMD</u> Rule 403 | BAAQMD Regulation 6 | Equivalent Measure |

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| 42. | <u>Windblown Dust: Bulk Materials/Storage Piles</u> a) Requires application of if subject to large operation requirements or if seeking an exemption from property line or upwind/downwind standard. b) Additional bulk material control requirements for Coachella Valley sources. | a) <u>SCAQMD</u> Rule 403 b) <u>SCAQMD</u> Rule 403 | BAAQMD Regulation 6 | Insignificant Potential Emissions Reductions |
| 43. | Wind Blown Dust abatement requirements for open areas. | <u>GBUAPCD for Owens Lake Board Order #981116-01</u> | BAAQMD Regulation 6 | Insignificant Potential Emissions Reductions |
| 44. | <u>Agricultural Operations</u> a) Limits fugitive dust from off-field agricultural sources such as unpaved roads. Requires producers to draft and implement a Fugitive Dust Management Plan. b) Exemption from the Rule 403 general requirements for producers that voluntarily implement district approved conservation practices and complete and maintain the self-monitoring plan. c) Cease tilling/mulching activities when wind speeds are greater than 25 mph (Coachella Valley). d) Limits fugitive dust from paved , unpaved roads and livestock operations. e) Reduces fugitive dust from livestock feed yards by requiring by limiting manure moisture and outlines manure management practices. | a) <u>SJVAPCD</u> Rule 8081 b) <u>SCAQMD</u> Rule 403 c) <u>SCAQMD</u> Rule 403.1 d) <u>SCAQMD</u> Rule 1186 e) <u>ICAPCD</u> Rule 420 | BAAQMD Regulation 6 | Insignificant Potential Emissions Reductions |
| 45. | <u>Boilers, Steam Generators, and Process Heaters (each rule has specific size and output thresholds)</u> a) Limits NOx emissions from gaseous fuel or liquid fuel fired boilers, steam generators, or process heaters. b) Limits NOx emissions from any petroleum refinery boiler or process heater. Alternative Emission Control Plans allowed which result in equivalent emissions. All units subject to this rule are now under the SCAQMD's RECLAIM Program. | a) <u>SJVAPCD</u> Rule 4306 b) <u>SCAQMD</u> Rule 1109 c) <u>SMAQMD</u> | BAAQMD Regulation 9-7 Regulation 9-10 Regulation 9-11 | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measures in 2005 Ozone Strategy |

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| | <p>c) Limits NOx emissions from gaseous fuel or liquid fuel fired boilers, steam generators, or process heaters with a total rated heat input greater than 5 million Btu/hr to between 30-40 ppmv depending on fuel type.</p> <p>d) Limits NOx emissions from gaseous, liquid, or solid fossil fuel fired boilers, steam generators, or process heaters.</p> <p>e) Limits NOx emissions from any boilers, steam generators, or process heaters.</p> <p>f) Limits NOx emissions from new and existing natural gas-fired large (commercial) water heaters, small (industrial) boilers, and process heaters. Exempts residential and low use units.</p> <p>g) Limits NOx emissions from new natural gas-fired large (commercial) water heaters, small (industrial) boilers, and process heaters. Exempts residential and low use units.</p> | <p>Rule 411 and SCAQMD Rule 1146</p> <p>d) <u>SCAQMD</u> Rule 1146.1</p> <p>e) <u>VCAPCD</u> Rule 74.15.1</p> <p>f) <u>SCAQMD</u> Rule 1146.2</p> <p>g) <u>SBAPCD</u> Rule 360 and <u>VCAPCD</u> Rule 74.11.1</p> | | |
| 46. | <p><u>Turbines (NOx) - each rule has specific requirements depending on turbine operating capacity, yearly run time, and fuel type</u></p> <p>a) Limits NOx emissions from the operation of stationary gas turbines to between 9-65 ppmv. Exemptions include emergency standby and laboratory units.</p> <p>b) Limits NOx emissions to the atmosphere from the operation of stationary gas turbines to between 3-65 ppmv. Exemptions include emergency standby and laboratory units.</p> <p>c) Limits NOx emissions from the operation of gas turbines to 9-25 ppm for turbines in size range of 2.9 to 10 MW.</p> | <p>a) <u>SMAQMD</u> Rule 413</p> <p>b) <u>SJVAPCD</u> Rule 4703</p> <p>c) <u>SCAQMD</u> Rule 1134</p> | BAAQMD Regulation 9-9 | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measures in 2005 Ozone Strategy |
| 47. | <p><u>IC Engines (NOx, VOC)</u></p> <p>a) Limits NOx emissions from gaseous- and liquid-fueled stationary and portable engines over 50 bhp depending on use category of engine.</p> | <p>a) <u>SCAQMD</u> Rule 1110.2</p> | BAAQMD Regulation 9-8 | Identified for New Rulemaking |

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| | <p>b) Limits NOx emissions from spark ignited internal combustion engines over 50 bhp 250 and CO emissions depending on engine type and size.</p> <p>c) Limits NOx emissions from spark ignited internal combustion engines over 50 bhp depending on engine type and size and NMHC depending on engine size.</p> | <p>b) <u>SJVAPCD</u> Rule 4702</p> <p>c) <u>SMAQMD</u> Rule 412</p> | | |
| 48. | Limits NOx emissions from lime kilns depending on fuel type. | <u>SJVAPCD</u> Rule 4313 | None | No Bay Area Sources |
| 49. | <p><u>Cement Kilns (NOx, PM10, PM2.5)</u></p> <p>a) Limits NOx emissions from cement kilns during periods of operation other than start-up or shut-down. Additional limits are specified for start-up and shut-down periods.</p> <p>b) Limits NOx emissions from cement kilns.</p> <p>c) Limits PM emissions to 30 pounds per hour for kiln feed rates of 75 tons per hour or greater. Limits PM emissions.</p> | <p>a) <u>MDAQMD</u> Rule 1161</p> <p>b) <u>KCAPCD</u> Rule 425-3</p> <p>c) <u>SCAQMD</u> Rule 1112.1</p> | 1 Source in Bay Area currently complying with SIP-approved permit conditions | Equivalent Measure |
| 50. | Does not allow operation of petroleum coke calcining equipment unless the uncontrolled emissions of oxides of sulfur from such basic equipment, expressed as sulfur dioxide (SO2), are reduced by at least 80 percent. | <u>SCAQMD</u> Rule 1119 | BAAQMD Regulation 9-1-310.2 Additional permit requirements | Insignificant Potential Emissions Reductions |
| 51. | <p><u>Furnaces (NOx)</u></p> <p>a) Sets NOx emission limits of 4.0 pounds per ton of glass pulled for glass melting furnaces.</p> <p>Sets NOx emission limits of 5.5 pounds per ton of glass pulled for glass melting furnaces.</p> <p>b) Sets a NOx emission limit for gas fired residential units with rating less than 175,000 Btu/hr.</p> | <p>a) <u>SCAQMD</u> Rule 1117</p> <p>BAAQMD Rule 9-12</p> <p>b) <u>SCAQMD</u> Rule 1111 <u>SDAPCD</u> Rule 69.6</p> | BAAQMD Rule 9-12 | Equivalent Measure |
| 52. | <p><u>Residential Water Heaters (NOx)</u></p> <p>a) Limits NOx emissions from water heaters with heat input rates</p> | a) <u>SCAQMD</u> | BAAQMD Regulation 9-6 | Equivalent Measure |

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| | <p>equal to or less than 75,000 Btu per hour to 20 ng/joule of heat output and sets future limit to 10 ng/joule of heat output.</p> <p>b) Limits NOx emissions from water heaters with heat input rates equal to or less than 75,000 Btu per hour to 40 ng/joule of heat output.</p> | <p>Rule 1121</p> <p>b) <u>SJVAPCD</u> Rule 4902</p> | | (SCAQMD standards have been found to be technically infeasible – replaced by mitigation fees) |
| 53. | Requires new and existing chain driven charbroilers to be equipped with a catalytic oxidizer control device. | <u>SJVAPCD</u> Rule 4692 and <u>SCAQMD</u> Rule 1138 | None | Identified for New Rulemaking |
| 54. | General Administrative Requirements for composting and chipping and grinding facilities. | <u>SCAQMD</u> Rule 1133 | BAAQMD Regulation 2-1 | Equivalent Measure |
| 55. | Prevents inadvertent decomposition associated with stockpiling of green and/or food wastes by establishing holding or processing time requirements for chipping and grinding activities. | <u>SCAQMD</u> Rule 1133.1 | None | Identified as further study measure in 2005 Ozone Strategy |
| 56. | Requires co-composting operations (biosolids and/or manure combined with bulking agents) to reduce VOC and ammonia emissions by 80%. Requires recordkeeping and source testing. | <u>SCAQMD</u> Rule 1133.2 | None | Identified as further study measure in 2005 Ozone Strategy |
| 57 | Limits emissions of VOC from gasoline dispensing facilities through equipment and operational requirements. | <u>BAAQMD</u> Rule 8-7 | BAAQMD Regulation 8-7 | Equivalent Measure |
| 58. | <p><u>Organic Liquid Storage</u></p> <p>a) Limits VOC emissions from storage tanks with a capacity of 264 gallons and greater through operational and equipment requirements.</p> <p>b) Limits VOC emissions from any above-ground stationary tank with a capacity of 19,815 gallons or greater used for storage of organic liquids, and any above-ground tank with a capacity between 251 gallons and 19,815 gallons used for storage of gasoline by setting tank roof, other performance, and self-inspection requirements. Sets conditions for cleaning and degassing of aboveground and underground stationary tanks, reservoirs, or other containers storing or last used to store VOC.</p> | <p>a) <u>BAAQMD</u> Rule 8-5</p> <p>b) <u>SCAQMD</u> Rule 463 in combination with <u>SCAQMD</u> Rule 1149</p> | BAAQMD Regulation 8-5 | Equivalent Measure |

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| 59. | <u>Equipment Leaks (Valves and Flanges)</u> a) Limits VOC and methane emissions from leaking equipment at petroleum refineries, chemical plants, bulk plants, and bulk terminals depending on equipment type. b) Limits VOC emissions from leaking equipment at petroleum facilities and chemical plants by setting forth leak standards and requirements for component identification, operator inspection, maintenance, and atmospheric pressure relief devices. | a) <u>BAAQMD</u> Rule 8-18 b) <u>SCAQMD</u> Rule 1173 | BAAQMD Regulation 8-18 | Equivalent Measure |
| 60. | Sets forth operational and "housekeeping" requirements for coatings and ink manufacturing. | <u>SCAQMD</u> Rule 1141.1 | BAAQMD Regulation 8-35 | Equivalent Measure |
| 61. | Limits VOC emissions from fiberboard manufacturing by requiring use of capture and control systems with specified efficiencies | <u>PCAPCD</u> Rule 229 | None | No Bay Area Sources |
| 62. | Limits VOC emissions from solvents used in food product manufacturing and processing operations by limiting the VOC content of products depending on product, or by the use of a control device. | <u>SCAQMD</u> Rule 1131 | BAAQMD Regulation 8-2 Regulation 8-4 | Identified as further study measure in 2005 Ozone Strategy |
| 63. | Sets forth equipment and operational requirements for pharmaceuticals and cosmetic manufacturing. | <u>SCAQMD</u> Rule 1103 | BAAQMD Regulation 8-24 | Equivalent Measure |
| 64. | Limits VOC emissions from all polyester resin operations that fabricate, rework, repair, or touch-up products through operational controls and by limiting the monomer content of products depending on product type. | <u>SCAQMD</u> Rule 1162 | BAAQMD Regulation 8-50 | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measures in 2005 Ozone Strategy |
| 65. | <u>Polymeric Cellular Products (Foam)</u> a) Sets forth emission limits for polymeric cellular products manufacturing operations. b) Limits VOC emissions from the manufacture of foam products composed of polystyrene, polyethylene or polypropylene. A control device with at least 98% efficiency may be used. | a) <u>SCAQMD</u> Rule 1175 b) <u>BAAQMD</u> Rule 8-52 | BAAQMD Regulation 8-52 | Equivalent Measure |

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| 66. | Requires the total emissions of VOC from the surfactant manufacturing equipment, before being vented to the atmosphere, be reduced; and all ports used for inspection, taking samples, or adding ingredients must be closed when not in use. | <u>SCAQMD</u> Rule 1141.2 | None | No Bay Area Sources |
| 67. | <u>Adhesives and Sealants</u> a) Reduces VOC emissions from the application of adhesives, adhesive primers, sealants, sealant primers, or any other primers through operational controls and by limiting the VOC content of products. Emission control equipment can be used in lieu of meeting VOC limits. b) Reduces VOC emissions from the application of adhesives, adhesive primers, sealants, sealant primers, or any other primers through operational controls and by limiting the VOC content of products. Emission control equipment can be used in lieu of meeting VOC limits. This rule has more stringent standards for a few categories than the rule above. | a) <u>VCAPCD</u> Rule 74.20 b) <u>SCAQMD</u> Rule 1168 | BAAQMD Regulation 8-51 | Identified as further study measure in Ozone Strategy |
| 68. | Several districts have adopted regulations consistent with ARB's Suggested Control Measure (SCM) which limits the content of VOC in architectural coatings | SJVAPCD, SDAPCD, SMAQMD, SBAPCD, TeCAPCD, MDAQMD, and AVAQMD. | BAAQMD Regulation 8-3 | Equivalent Measure |
| 69. | Limits VOC emissions from the coating of glass products by limiting the VOC content of coating products or installing control equipment. | <u>SJVAPCD</u> Rule 4610 | BAAQMD Regulation 8-4 1 Source in Bay Area currently complying with SIP-Approved permit conditions | Insignificant Potential Emissions Reductions |
| 70. | Limits VOC emissions from graphic arts operations by limiting the VOC content of products or by installing a control device. | <u>SCAQMD</u> Rule 1130 | BAAQMD Regulation 8-20 | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measure in |

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| | | | | 2005 Ozone Strategy |
| 71. | Applies to all coating operations on magnet wire, where the wire is continuously drawn through a coating applicator. Prohibits use or application of any magnet wire coating which contains more than 200 grams VOC per liter (1.67 lb/gal) of coating, less water and exempt compounds. The rule also provides for use of approved emission control systems. | <u>SCAQMD</u> Rule 1126 | BAAQMD Regulation 8-26 | Equivalent Measure |
| 72. | Applies to coating operations of marine and fresh water vessels, oil drilling platforms, navigational aids and component parts; and structures intended for exposure to a marine environment. Limits VOC emissions. Allows use of specified air pollution control equipment which captures VOC emissions associated with coating, cleaning, and surface preparation, in lieu of use of low-VOC coatings and non-VOC materials used in cleaning and surface preparation. | <u>SDAPCD</u> Rule 67.18 | BAAQMD Regulation 8-43 | Insignificant Potential Emissions Reductions |
| 73. | Limits VOC emissions from metal container, metal closure and metal coil coating operations through operational controls and by limiting the VOC content of products. | <u>SCAQMD</u> Rule 1125 | BAAQMD Regulation 8-11 | Equivalent Measure |
| 74. | Limits VOC emissions from the coating of metal parts and products not regulated by other specific regulations by limiting coating VOC content. | <u>SCAQMD</u> Rule 1107 | BAAQMD Regulation 8-19 | Equivalent Measure |
| 75. | Sets forth VOC emission limits and VOC content of motor vehicle coatings. This rule applies to all assembly line coating operations conducted during the manufacturing of new motor vehicles. | <u>SCAQMD</u> Rule 1115 | BAAQMD Regulation 8-13 | Equivalent Measure |
| 76. | Applies to coatings or wash primers for paper, fabric, or film substrates. Includes drying and curing processes such as heated, forced-air dried, and non-heated processes. The rule specifies VOC content of applicable coatings and sets forth application method and cleaning requirements. | <u>SCAQMD</u> Rule 1128 | BAAQMD Regulation 8-12 | Equivalent Measure |
| 77 | Specifies VOC content of coatings used on plastic, rubber, and glass and sets forth transfer efficiency requirements. The rule allows for use of an approved emission control system in lieu of VOC content limits. | <u>SCAQMD</u> Rule 1145 | BAAQMD Regulation 8-31 (plastics coatings) No Bay Area sources for coatings of rubber. 1 glass coating facility | Equivalent Measure |

| | | | controlled by permit requirements | |
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| 78. | Specifies VOC content of screen printing materials and applies to persons performing screen printing operations or who sell, distribute, or require the use of screen printing materials. | <u>SCAQMD</u> Rule 1130.1 | BAAQMD Regulation 8-20 | Equivalent Measure |
| 79. | Further reduces VOC emissions from spray coating or laminating operations in high VOC-emitting facilities. | <u>SCAQMD</u> Rule 1132 | None | Proposed as Control Measure in 2005 Ozone Strategy |
| 80. | Limits VOC emissions from coatings applied on Group I vehicles and equipment and Group II vehicles through operating requirements and by limiting VOC content. | <u>SCAQMD</u> Rule 1151 | BAAQMD Regulation 8-45 | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measure in 2005 Ozone Strategy |
| 81. | Limits VOC content of coatings, inks, and adhesives applied to wood flat stock for the purpose of manufacturing a finished wood panel intended for attachment to the inside walls of buildings, including, but not limited to, homes and office buildings, mobile homes, trailers, prefabricated buildings and similar structures, boats and ships, or a finished exterior wood siding. | <u>SCAQMD</u> Rule 1104 | BAAQMD Regulation 8-23 | Equivalent Measure |
| 82. | Specifies VOC content of wood products coatings. Requires wood strippers to have a maximum VOC content. The rule allows for use of an approved emission control system in lieu of VOC content limits and also includes an averaging provision. | <u>SCAQMD</u> Rule 1136 | BAAQMD Regulation 8-32 | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measure in 2005 Ozone Strategy |
| 83 | <u>Cleaning operations – Limits on VOC emissions</u> a) Reducing VOC content of cleaning products to between 25 g/l-900 g/l depending on process. b) Reducing VOC content of cleaning products to between 50 g/l-900 g/l depending on process | a) <u>SCAQMD</u> Rule 1171 b) <u>SMAQMD</u> Rule 466 | BAAQMD Regulation 8 | Identified as further study measure in 2005 Ozone Strategy |

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| 84. | <p><u>Degreasing Operations – Limits on VOC emissions</u></p> <p>a) Applies to cold cleaners and vapor degreasers by limiting product VOC content to 25 g/l. Air-tight and airless cleaning systems can be used in lieu of meeting the VOC limit.</p> <p>b) Applies to cold cleaners by limiting product VOC content to 25 g/l for (900g/l for exempted categories.)</p> <p>c) Applies to batch-loaded vapor degreasers by setting equipment and operating requirements.</p> <p>d) Applies to cold cleaners limit to 50 g/l. Limits VOC emissions from vapor degreasers by setting equipment requirements. Air-tight and airless cleaning systems can be used in lieu of meeting the VOC limit.</p> | <p>a) <u>SCAQMD</u> Rule 1122</p> <p>b) <u>VCAPCD</u> Rule 74.6</p> <p>c) <u>VCAPCD</u> Rule 74.6.1</p> <p>d) <u>SMAQMD</u> Rule 454</p> | BAAQMD Regulation 8-16 | Additional controls not included in existing BAAQMD regulations are being proposed as a further study measure in 2005 Ozone Strategy |
| 85. | Limits VOC emissions from VOC containing materials or equipment not subject to VOC limits in any other, specific district regulation to no more than 833 lbs/month. A control device may be used in lieu of the monthly throughput limit. | <u>SCAQMD</u> Rule 442 | BAAQMD Regulation 8-4 | Equivalent Measure |
| 86. | <p><u>Soil Decontamination (VOC)</u></p> <p>a) Limits the emissions of organic compounds from soil that has been contaminated by organic chemical or petroleum chemical leaks or spills, and requires description of an acceptable procedure for controlling emissions from underground storage tanks during removal or replacement through the use of operational requirements and by limiting the amount of soil to be processed daily.</p> <p>b) Limits VOC emissions from excavating, grading, handling and treating VOC contaminated soil as a result of leakage from storage or transfer operations, accidental spillage, or other deposition by requiring that soil with VOC concentrations above 1000 ppm be containerized, sealed, and shipped away for disposal.</p> | <p>a) <u>BAAQMD</u> Rule 8-40</p> <p>b) <u>SCAQMD</u> Rule 1166</p> | BAAQMD Regulation 8-40 | Equivalent Measure |
| 87. | <p><u>Solid Waste Landfills (VOC)</u></p> <p>a) Limits VOC emissions from municipal solid waste landfills through installation of gas collection and control systems.</p> <p>b) Limits VOC emissions from the waste decomposition process at solid waste disposal sites through requirements for gas collection and</p> | <p>a) <u>SCAQMD</u> Rule 1150.1</p> <p>b) <u>BAAQMD</u> Rule 8-34</p> | BAAQMD Regulation 8-34 | Equivalent Measure |

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| | control systems. | | | |
| 88. | Requires any woodworking facility that uses a pneumatic conveyance system connected to woodworking equipment to vent sawdust emissions to a PM10 emissions control device, such that there are no visible emissions; to cover sawdust storage bins at all times; and to take measures to prevent visible emissions from waste disposal activities from crossing any property line. | <u>SCAQMD</u> Rule 1137 | BAAQMD Regulation 6 | Equivalent Measure |
| 89. | Applies Visible Emission Limits (PM10, PM2.5) by prohibiting discharges into the atmosphere from any single source of emission of any air contaminant for specified periods of time. Provides the option of exempting permitted outdoor residential burns. | <u>MaCAPCD</u> Rule 202 <u>SMAQMD</u> <u>BAAQMD</u> <u>SCAQMD</u> <u>SDAPCD</u> | BAAQMD Regulation 6 | Equivalent Measure |
| 90. | Prohibits discharges into the atmosphere from the burning of fuel of combustion contaminants. | <u>MDAQMD</u> Rule 409 | BAAQMD Regulation 6 | Equivalent Measure |
| 91. | <u>Grain Loading (PM10)</u> Prohibits release or discharge into the atmosphere from any source or single processing unit, exclusive of sources emitting combustion contaminants only. | <u>MaCAPCD</u> Rule 207 | BAAQMD Regulation 6 | Equivalent Measure |
| 92. | <u>DMV Funds (AB 2766 Funds): Motor Vehicle Registration Fee Program (Many districts implement this program)</u> State law authorizes air districts to assess motor vehicle registration fees of between \$2-\$4 (MV Fees) to reduce air pollution from motor vehicles and for related planning, monitoring, enforcement, and technical studies necessary for the implementation of the California Clean Air Act. | SCAQMD BAAQMD SJVAPCD Programs | BAAQMD Transportation Fund for Clean Air | Equivalent Measure |
| 93. | <u>Heavy-Duty Engine Incentive Program</u> a) Helps fleets pay for new lower emission heavy-duty engines, lower emission retrofits, and engine replacements. Applies to public and private fleets. The program is funded by the air district and by the Carl Moyer Incentive Program sponsored by ARB. b) Provides incentive funds for the differential cost associated with the reduced emission technology as compared with the cost of | a) <u>SMAQMD</u> Program b) <u>SJVAPCD</u> Program | BAAQMD Transportation Fund for Clean Air Carl Moyer Program Low Emissions School Bus Program Solid Waste Collection Vehicle Program | Equivalent Measure |

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| | conventional technology. Eligible funding categories include heavy-duty on-road vehicles, off-road vehicles, locomotives, marine vessels, electric forklifts, electric airport ground support equipment and stationary agricultural irrigation pump engines. The SJVAPCD received \$25 million in State transportation funds from special legislation for the Valley Emergency Clean Air Program (VECAP). The air district added the VECAP funds to the Heavy Duty Engine Incentive Program. | | | |
| 94. | <u>Lower Emission School Bus Program</u> Provides financial incentives to school districts to replace older school buses using both air district and ARB grant funding. | <u>BAAQMD</u> <u>VCAPCD</u> <u>SCAQMD</u> Programs | BAAQMD Lower Emission School Bus Program | Equivalent Measure |
| 95. | <u>Moyer Program</u> Provides funds on an incentive-basis for the incremental cost of cleaner than required engines and equipment. Eligible projects include cleaner on-road, off-road, marine, locomotive and stationary agricultural pump engines, as well as forklifts, airport ground support equipment, and auxiliary power units. The program achieves near-term NOx and PM reductions. | <u>Most Districts</u> | BAAQMD Carl Moyer Program | Equivalent Measure |
| 96. | <u>Sacramento Emergency Clean Air Transportation (SECAT) Program</u> Encourages cleanup of the existing HDD truck fleet by providing funds to pay for the cost of retrofitting existing engines with newer, cleaner engines or paying a significant amount of the cost of a newer vehicle. The goal is to reduce NOx emissions from HDD trucks by 3 tons per day by 2005 by upgrading 3,000 to 6,000 trucks. Uses State transportation funds under special legislation plus funds from the federal Congestion Mitigation and Air Quality Improvement (CMAQ) Program. | <u>SMAQMD</u> Program | BAAQMD Carl Moyer Program | Equivalent Measure |
| 97. | Provides incentives for certain new on-road original equipment manufacturer (OEM) alternative fuel vehicles with a Gross Vehicle Weight Rating (GVWR) up to 14,000 pounds, including passenger cars, pick-up trucks, small buses, and vans. With the exception of hybrid electric vehicles, no vehicles with the ability to operate on gasoline or diesel fuel are funded. | <u>SJVAPCD</u> Program | BAAQMD Vehicle Incentive Program and Transportation Fund for Clean Air | Equivalent Measure |

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| 98. | Encourages trading of gasoline-powered lawn mowers, by providing funds to offset the purchase cost of electric mowers | <u>BAAQMD</u> <u>SJVAPCD</u> <u>SMAQMD</u> <u>SCAQMD</u> Programs | BAAQMD Lawn Mower Replacement Program | Equivalent Measure |
| 99. | <u>On-Road Motor Vehicle Mitigation Options</u> Requires employers who employ 250 or more employees to implement a program to reduce mobile source emissions generated from employee commutes and meet an annual emission reduction target (ERT) for their worksite. | <u>SCAQMD</u> Rule 2202 | BAAQMD Transportation Fund for Clean Air funds Regional Rideshare Program, county-level and school and university ridesharing programs. Spare the Air and BayCAP Programs include employer outreach. | Additional measures not included in existing BAAQMD programs are proposed as Further Study Measures in 2005 Ozone Strategy |
| 100. | <u>Transportation Outreach Program</u> Requires employers with 100 or more employees to register with the air district annually and collect survey data on their employee's commute distances and ridesharing participation every two years. This rule allows the air district to devote resources and efforts in assisting employers with their voluntary trip reduction efforts. | <u>VCAPCD</u> Rule 211 | BAAQMD Transportation Fund for Clean Air funds Regional Rideshare Program, county-level and school and university ridesharing programs. Spare the Air and BayCAP Programs employer outreach | Equivalent Measure |
| 101. | <u>Spare the Air Program</u> Spare the Air is a voluntary, summertime effort aimed at reducing air pollution (specifically, ground-level ozone) through public outreach programs to encourage the general public and employers to take actions to reduce transportation related emissions. | SMAQMD, SJVAPCD, BAAQMD Programs | BAAQMD Spare the Air Program | Equivalent Measure |
| 102. | <u>Public Awareness Programs</u> Some air districts have implemented public awareness programs that: 1) support voluntary employer based trip reduction programs, 2) encourage alternative modes of transportation, 3) encourage cities | <u>BAAQMD</u> <u>SCAQMD</u> <u>SMAQMD</u> <u>SJVAPCD</u> | BAAQMD Spare the Air Program, CEQA Commenting, Smart Growth Program, | Equivalent Measure |

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| | and counties to incorporate air quality beneficial policies into local planning and development activities, 4) promote demonstrations of low emission vehicles and refueling infrastructure, and/or 5) continue public education by informing residents about air quality status, air pollutant health effects, sources of pollution, and actions individuals and communities can take to help improve air quality. | Programs | and 2005 Ozone Strategy Transportation Control Measures | |
| 103. | <u>Leveraging Other Sources for Transportation Funding</u> Some air districts apply for and receive money for transportation-related projects from federal, state, and local funding sources, the most notable being the federal Congestion Mitigation and Air Quality Improvement (CMAQ) program. The projects funded are usually small scale and include incentives, facilities, support services, and public awareness for carpools, vanpools, telecommuting, public transit, biking and walking. | <u>BAAQMD</u> <u>SCAQMD</u> | BAAQMD Spare the Air Program and Grant Programs | Equivalent Measure |

More in-depth information about *District rules and regulations* can be obtained at <http://www.arb.ca.gov/drdb/drdb.htm>