

**DRAFT
BAY AREA
2010 CLEAN AIR PLAN**

VOLUME II

Section F

Further Study Measures

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**BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT**

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FSM 1 - Adhesives and Sealants

Brief Summary:

This further study measure would research the emission inventory for this source category and seek to reconcile discrepancies with the inventories of other districts in the State and to determine if VOC limits found in South Coast AQMD rules are feasible and effective in the Bay Area.

Purpose:

Reduce emissions of VOC from the use of some categories of adhesives and sealants.

Source Category:

Area Source.

Further Study Measure Description:

In 2003 and early 2004, the ARB, San Joaquin, Sacramento and Bay Area districts jointly undertook a rule comparison project for a number of source categories, including adhesives and sealants. The South Coast AQMD rule for adhesives appears to be the most stringent, particularly for architectural adhesives. Architectural adhesives encompass a wide variety of adhesives used in residential and commercial construction: carpet adhesives, flooring adhesives, subfloor adhesives, tile adhesives, drywall adhesives, and multipurpose construction adhesives. The South Coast VOC limits range from 50 to 150 grams per liter (g/l) for various categories of architectural adhesives.

In 1998, the ARB and California districts developed Reasonably Available Control Technology/Best Available Retrofit Control Technology (RACT/BARCT) VOC limits for adhesives and sealants. RACT/BARCT VOC limits range from 100 to 250 g/l for various categories of architectural adhesives. The Bay Area rule, Regulation 8, Rule 51: Adhesive and Sealant Products, meets the BARCT limits in the ARB document.

In the rule comparison discussions, significant differences in inventory between the districts emerged. Specifically, the San Joaquin District has almost no area source adhesive emissions, which includes the architectural adhesives, whereas the Bay Area inventory has over 9 tons organic emissions per day from area source adhesives. When Bay Area staff developed Regulation 8, Rule 51: Adhesives and Sealants, the area source inventory was derived from the Rauch Guide to the US Adhesives and Sealants Industry, by the Rauch Associates, Inc., originally the 1990 edition. This should be updated.

Since Reg. 8-51 was last amended, in 2002, the comparable South Coast rule, Rule 1168, has been amended twice. Consequently, the South Coast has a number of VOC limits for adhesives and sealants that are lower than the Bay Area's. Some VOC limits that are appropriate for southern California, such as subfloor adhesives, may not be feasible for the Bay Area. However, lower limits should be investigated for feasibility.

Sources:

1. California Air Resources Board. 1998. "Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Adhesives and Sealants."
2. South Coast AQMD, Rule 1168
3. South Coast AQMD. 2002. "Final Staff Report: Proposed Amended Rule 1168-Adhesives and Sealants"
4. South Coast AQMD. 2000. "Staff Report: Proposed Amended Rule 1168-Adhesives and Sealant Applications"
5. TIAX. 2003. Sacramento Regional Clean Air Plan Update: Control Measure D3.
6. Walnut, F., TACC International. 2003. Personal Communication.

FSM 2 - Reactivity in Coatings and Solvents

Brief Summary:

Consider photochemical reactivity for the architectural coatings or other coatings categories. This approach targets volatile organic compounds (VOCs) with the greatest ozone forming potential, rather than treating all VOCs equally. Reformulation options may be greater and potential ozone formation less with a reactivity-based strategy, because there is a wide range of reactivity between VOC species.

Purpose:

Reduce emissions of VOCs with the greatest ozone-forming potential from various coatings operations and solvents.

Source Category:

Area source.

Further Study Measure Description:

The District regulates coating operations and solvent use in over 20 district regulations through VOC limits and operational requirements. Because coatings and solvents are manufactured in a consistent manner, it is possible to regulate the amount of VOCs and other compounds that are used to formulate these products. This is the rationale behind developing mass-based VOC limits for coatings and solvents.

When coatings are applied they release organic compounds. Different organic compound species react in the atmosphere to produce different amounts of ozone. The ozone forming potential is called reactivity. A coating containing small amounts of a highly reactive compound could form more ozone than a coating with a greater amount of low-reactive compounds. The relative difference in ozone forming ability is called the “relative reactivity.”

EPA deems organic compounds that form no more ozone than ethane to be “negligibly reactive.” Since that original listing, EPA has designated about 50 compounds as negligibly reactive, many of which are chlorinated or fluorinated compounds, and has excluded these compounds from the federal regulatory definition of VOC. In fact, there is a scale of ozone reactivity among compounds, with some creating many times the amount of ozone as others for each gram of the compound that is emitted. Since the initiation of mass-based VOC limits in the 1970’s, considerable research has gone into characterizing the relative reactivity of organic compounds commonly used in paints and as solvents.

The traditional mass-based approach has led to significant reductions in VOC emissions, and improvements in air quality. However, the ability to get further reductions on a mass basis may be limited, as technological limits inherent in coating and solvent formulation are approached. Consequently, a reactivity-based approach may be a better option and may allow coating formulators more flexibility to reduce ozone-forming impacts of their products and ultimately, progress towards attainment with state and federal ozone standards.

Sources:

1. Staff Report: BAAQMD Regulation 8, Rule 3: Architectural Coatings, May 2009.
2. Workshop Report: BAAQMD Regulation 8, Rule 45: Motor Vehicle and Mobile Equipment Coating Operations, June 2008.
3. Final Approved Suggested Control Measure for Architectural Coatings, ARB, February 2008.
4. Technical Support Document for the Proposed Suggested Control Measure for Architectural Coatings, ARB, September 2007.
5. 2005 Architectural Coatings Survey, Final Report, ARB, December 2007.

FSM 3 - Solvent Cleaning and Degreasing Operations

Brief Summary:

Reduce emissions of VOCs from solvent cleaning and degreasing operations by implementing control measures based on ARB's statewide study.

Purpose:

Reduce VOC emissions.

Source Category:

Area Source.

Further Study Measure Description:

Cold cleaning describes the use of a cleaning solution in a tank or container into which a part to be cleaned is immersed, or a remote reservoir cleaner that pumps some cleaning solution over a part to be cleaned that then drains back into the reservoir. Wipe cleaning involves wetting a rag, cloth or paper with a cleaning solution and wiping grease or soils from a part by hand. California Districts have either a 25 g/l or a 50 g/l VOC standard for solvent used in cold cleaners and for wipe cleaning. The BAAQMD standard in Regulation 8, Rule 16 is 50 g/l, and wipe cleaning standards in various surface coating rules (Reg. 8, Rules 4, 14, 19 and 31) have a 50 g/l standard. More recently amended rules (Reg. 8, Rules 20, 32 and 45) have incorporated a 25 g/l wipe cleaning standard. This further study measure would investigate whether a 25 g/l VOC standard in Reg. 8-16 and in 50 g/l limit surface coating rules would significantly reduce emissions.

Based on work conducted in 2002, when Reg. 8-16 was last amended, a 25 g/l VOC standard would only result in 0.022 tons/day emissions reductions, and only 0.023 tons/day for wipe cleaning. This is in part due to differences in how emissions are calculated between districts.

In 2007, ARB initiated a research project, conducted by Professor Bill Welch and researchers at the University of California at Riverside, to develop a statewide emissions inventory for solvent and wipe cleaning. The final report of that project, originally scheduled for completion in spring, 2009, has not yet been released.

Sources:

1. Staff report, Proposed Amendments to Regulation 8, Rules 4, 14, 19, 31, 43, BAAQMD, Oct. 2002
2. Staff Report, Proposed Amendments to Reg. 8, Rule 16: Solvent Cleaning Operations, BAAQMD, Sept. 2002
3. Welch, Bill, University of California at Riverside, College of Engineering – Center for Environmental Research and Technology, e-mails and survey drafts, Sept. 2007 through June, 2008.

FSM 4 - Emissions from Cooling Towers

Brief Summary:

Research ways to reduce VOC emissions from cooling towers in refineries.

Purpose:

Reduce VOC emissions.

Source Category:

Stationary source.

Further Study Measure Description:

The emission inventory for refinery cooling towers shows 0.45 tons/day organic emissions, based on cooling water throughput from cooling towers with District permits. AP-42 emission factors of 6 lbs organic emissions per million gallons water throughput were used in this calculation. This assumes organic compound leaks into the cooling water system are not minimized. However, if leaks are minimized, the AP-42 emission factor is 0.7 lb organic emissions per million gallons water. Further study is needed to determine whether leaks from cooling towers are currently minimized and whether there is any potential for emission reductions from regulations.

This further study measure has been initiated. The Texas Commission on Environmental Quality has adopted a regulation requiring monitoring of and limiting emissions from cooling towers at refineries and chemical plants in the Houston – Galveston area. This rule, including a test method, limits emissions of highly reactive VOC's (HRVOC). HRVOC is the basis for the SIP in the Houston – Galveston area. District staff developed a test method to replicate cooling tower emissions and has sought feedback on the method from the refinery representatives. The next step will be to establish a correlation between EPA test method 8015, which quantifies non-halogenated organic compounds in water. From there, the need for further action can be assessed.

Sources:

1. 30 TAC Chapter 115, Subchapter B and H, Cooling Towers, Texas Commission on Environmental Quality
2. BAAQMD 2005 Final Adopted Ozone Strategy, Vol. 2, January 2006
3. Compilation of Air Pollution Emission Factors (AP-42), US EPA, 1995

FSM 5 - Equipment Leaks

Brief Summary:

Research ways to reduce VOC emissions from equipment leaks through remote sensing technologies and other methods.

Purpose:

Reduce VOC emissions.

Source Category:

Stationary Source

Further Study Measure Description:

In 2003 and early 2004, ARB, San Joaquin, Sacramento and Bay Area districts jointly undertook a rule comparison project for a number of source categories, including valves and flanges. Valves and flanges are typically found at refineries and chemical plants, but are also found in other petroleum and gas production facilities. The review found that the Bay Area's existing Regulation 8, Rule 18: Equipment Leaks, is the most stringent regulation in the state. Reg. 8, Rule 18 was amended on January 21, 2004 to fulfill the provisions of control measure SS-16 from the 2001 Ozone Attainment Plan. During that rule development process, staff identified a number of different areas for potential future study to further reduce emissions from valves and flanges. One area recommended for further review was incorporating remote sensing technologies to identify the largest leaking components in the leak detection and repair (LDAR) program. Remote sensing could enhance the effectiveness of existing LDAR programs by identifying leaks sooner and in a manner that is less time consuming and labor intensive. Remote sensing could also expand the applicability of LDAR programs to areas currently not covered by existing rules, such as pipelines. Remote sensing technology is currently not able to detect the low levels required for compliance with Regulation 8, Rule 18, but it could supplement or enhance existing programs or allow more frequent compliance screening of remote valves.

Sources:

1. BAAQMD 2005 Final Adopted Ozone Strategy, Vol. 2, January 2006
2. Staff Report, Proposed Amendments to Regulation 8, Rule 18: Equipment Leaks, January, 2004, BAAQMD

FSM 6 - Wastewater from Coke Cutting

Brief Summary:

Review coke cutting operations to determine if emissions reductions can be achieved from the resulting wastewater.

Purpose:

Reduce VOC emissions.

Source Category:

Stationary source.

Further Study Measure Description:

Refineries operate high pressure water pumps to remove or “cut” coke from coking drums. During the investigation of Further Study Measure FS 9: Refinery Wastewater Systems in the 2001 Ozone Plan, it was noted that coke cutting operations at some facilities generated significant quantities of wastewater. This wastewater, at elevated temperatures, is often recycled. The wastewater from coke cutting is not part of the refinery wastewater collection and treatment system. One possible method of control would be to include coke cutting wastewater in the existing collection and treatment system. Additional research needs to be conducted to determine whether coke cutting wastewater contains significant quantities of VOC and whether there is any potential for emissions reductions from these operations. Because of these uncertainties, it is recommended that coke cutting operations be studied.

This further study measure is currently under way. In addition to the two refineries that have traditionally used this coke cutting operation, Tesoro has added a delayed coker and is now also using this process.

Sources:

1. BAAQMD 2005 Final Adopted Ozone Strategy, Vol. 2, January 2006
2. Draft Technical Assessment Document: Potential Control Strategies to Reduce Emissions from Refinery Wastewater Collection and Treatment Systems, CARB and BAAQMD, Jan., 2003

FSM 7- SO2 from Refinery Processes

Brief Summary:

Review refinery processes to identify opportunities to reduce SO2 emissions.

Purpose:

Reduce SO2 emissions.

Source Category:

Stationary source.

Further Study Measure Description:

The District's emissions inventory indicates that significant quantities of SO2 are emitted from refinery processes. In 2007, Basic Refining Processes (Category 10) emitted 23.8 tons SO2 per day. Other refinery combustion processes (categories 298, 299 and 301) emitted an additional 9.4 tons per day. This is roughly half of the SO2 emissions in the District, and by far the majority of those from stationary sources.

SO2 is a precursor to secondary fine particulate matter formation, and the District is not in attainment for the federal and state PM2.5 standards. Consequently, a reduction in SO2 emissions would help the District toward attainment of PM2.5 standards.

The basic process used in refineries to remove sulfur from oil has not changed in many years. Hydrogen is added to oil (hydrotreating) which converts the sulfur to hydrogen sulfide (H2S), which is then absorbed from the oil with diethanolamine or monoethanolamine. It is then stripped out of the DEA or MEA and combusted to produce elemental sulfur. Regulation 9, Rule 1: Sulfur Dioxide, limits SO2 emissions from fluid catalytic cracking units and fluid cokers to 1000 ppm, limits SO2 emissions from sulfur recovery plants to 250 ppm, and requires 95% removal of H2S from refinery fuel gas. Reg. 9-1 and the various refinery units could be examined to see if additional reductions are feasible.

Sources:

1. BAAQMD Emissions Inventory

FSM 8 - Reduce Emission from LPG, Propane, Butane, and other Pressurized Gases

Brief Summary:

Reduce emissions of LPG, propane, butane and other pressurized organic gases by requiring tanks and relief valves to be gas tight, prohibiting venting during tank filling, and establishing a leakage allowance for hoses.

Purpose:

Reduce VOC emissions.

Source Category:

Area source.

Further Study Measure Description:

The Air District already enforces gas tight requirements at stationary sources for a variety of operations, including refineries and bulk terminals. This control measure would apply similar standards to LPG, propane and butane tanks, prohibit venting from filling of such tanks, and would set a leakage allowance for hoses used in these operations.

Typically, liquid pressurized gases should occupy no more than 80 to 85 percent of the volume of a tank to allow for liquid expansion if a tank gets heated (such as by sunlight). These containers have a bleed valve, which is sometimes used to indicate to the person filling the container when the level of liquid in the tank is at the “full” level (80 to 85 percent full by volume). Containers can be safely refilled without venting by filling to a final weight or by filling to a final liquid volume using a tank gage.

California propane demand is estimated to be about 120,000 barrels per day. If Bay Area demand is 20% of that (although it may be less due to the availability of natural gas) and losses average 1%, losses equal 240 barrels per day. This is equivalent to 21.4 tons per day of propane losses. In addition, it has been estimated that up to 10 tons per day of LPG may be vented in the Bay Area.

A report on a research project at CARB in March, 2009 indicated that technological solutions were available and cost effective.

A further study measure would consider a gas tight standard for propane and other tanks; a prohibition on the filling of a container where the pressure differential for refilling is generated by venting the receiving container; a prohibition on venting to determine if the container is adequately filled; and a leakage allowance for new hoses sold in conjunction with pressurized gas containers.

Such a measure could impact:

- standard containers, such as 20# cylinders and forklift fuel tanks, refilled at high volume central locations

- fleet refueling at large facilities (i.e., forklift tank refueling)
- large stationary pressurized gas containers

Sources:

1. Maximus™ SFI – Measurement and Reduction of Gas Outage Gauge Emissions, the ADEPT Group, Inc. California Air Resources Board, Chair’s Air Pollution Seminar, March 19, 2009

FSM 9 - Greenhouse Gas Mitigation in BACT and BACT Determinations

Brief Summary:

Consider flexibility in BACT/TBACT determinations in order to reduce secondary green house gas (GHG) emissions from abatement devices.

Purpose:

Reduce GHG emissions.

Source Category:

Stationary source.

Further Study Measure Description:

New source review regulations, including BAAQMD Regulation 2, Rule 2, mitigate increases from new and modified permitted sources of air pollution for criteria pollutants by making applicants install Best Available Control Technology (BACT) and/or obtain offsets for the emissions increases. In addition, the District's toxic new source review rule, Regulation 2, Rule 5, requires installation of toxic best available control technology (TBACT) for new and modified sources of toxic air contaminants (TACs) where the source risk exceeds a certain health risk level, and denies a permit where the source risk exceeds a greater health risk level.

Currently, District Regulations do not consider GHG emissions. Under existing federal, state and District guidelines, a source required to abate organic emissions can be required to install a highly efficient incinerator to abate those emissions to the maximum extent feasible, even if a relatively large amount of supplemental fuel is required to achieve a high organic destruction efficiency.

The District could advocate for flexibility in BACT/TBACT determinations when a permit application triggered BACT/TBACT and was not ministerial. In these determinations, discretion is allowed on implementation of control equipment, but implementation must be consistent with a maximum reduction in criteria pollutants. With the agreement of EPA and ARB, a lower level of emissions control could be considered if the alternative would emit large amounts of GHGs. Flexibility in BACT/TBACT determinations would require agreement of EPA and ARB, and potentially changes in regulations.

Sources:

1. BAAQMD Permit Handbook:
http://www.baaqmd.gov/pmt/handbook/rev02/permit_handbook.htm
2. BAAQMD Regulations 2-2, and 2-5:
<http://www.baaqmd.gov/dst/regulations/index.htm>

FSM 10 - Further Reductions from Commercial Cooking Equipment

Brief Summary:

Consider reducing emissions from commercial wok cooking, and solid fueled cooking devices such as wood fired pizza ovens.

Purpose:

Reduce PM emissions.

Source Category:

Area source.

Further Study Measure Description:

In 2007, the District adopted a rule to limit emissions from commercial conveyerized and under-fired charbroilers, Regulation 6, Rule 2: Commercial Cooking Equipment. The rule requires the use of control equipment on these cooking devices if certain amounts of beef are cooked. In 2008, the Association of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) tested and developed emissions factors for a number of appliances. The greatest amount of particulate matter came from a solid fueled broiler cooking hamburger and a Chinese wok cooking chicken breast in peanut oil.

The ASHRAE study indicated that the wok cooking emitted the greatest amount of particulate matter, as measured below the ventilation hood, but a breakdown of particle sizes indicated that most of the particulate weight was PM greater than 10 microns in diameter, it is likely that much of this large particulate matter is deposited on the grease filter, in the exhaust stack on the roof. For wok cooking, however, particles in the smaller size ranges (PM10 to PM2.5, PM2.5 and condensable vapors) were still significant. They total 51.7 lbs particulate matter per 1000 lbs food cooked, the second highest of the cooking appliances tested.

In addition, concern has been expressed about the use of wood fired pizza ovens and other cooking devices that are not underfired broilers. Typically, pizza in a wood-fueled oven is placed on a floor or platform, the pizza does not generate particulate matter or organic emissions from contact with the flame. The particulate matter of concern is generated directly by burning wood.

The number of commercial wok cooking appliances in the District has not been determined. Control equipment similar to those used for underfired charbroilers could control the emissions, but the cost effectiveness for wok cooking has not been investigated. For pizza ovens, and other solid-fueled cooking devices, an inventory needs to be established. A broader range of control equipment may be available, but cost effectiveness needs to be determined.

Sources:

1. ASHRAE Study 745-RP, 2008
2. BAAQMD Regulation 6, Rule 2: Commercial Cooking Equipment

FSM 11 - Magnet Source Rule

Brief Summary:

The District will explore as a further study measure the viability of developing a magnet source rule to reduce mobile source emissions from some or all of the types of facilities described below. Emphasis would be given to facilities in impacted communities as identified through the District's CARE program.

Purpose:

The purpose of this measure would be to reduce emissions and population exposure associated with magnet sources.

Source Category:

Transportation emissions.

Further Study Measure Description:

The term "magnet sources" refers to new and existing facilities that attract or generate a high volume of activity or usage of mobile sources of emissions, such as cars, trucks, off-road equipment, etc. Magnet sources can include airports, seaports, warehouses, distribution centers, shopping centers, and other facilities that generate mobile source emissions of criteria air pollutants, toxic air contaminants and greenhouse gases.

District staff are currently developing an indirect source review (ISR) regulation to mitigate the impacts of growth and new development in the Bay Area – see control measure LUM-2. A magnet source rule would be designed so as to complement the ISR regulation.

The District will evaluate the feasibility of developing a magnet source rule. Potential requirements could include calculating and reporting of emissions, estimating health risks and local impacts, developing plans to comply with ARB mobile source regulations, and development of additional emission reduction strategies. Issues to be considered include how to define a "magnet source," which types of sources and pollutants to focus on, specific emission reduction and other requirements, how a magnet source rule would be implemented and enforced, how to quantify emissions produced by magnet sources, potential mechanisms to reduce emissions and population exposure, and how a magnet source rule could supplement the emission reductions expected from ARB's diesel air toxics control measures over the next 5 to 10 years.

FSM 12 - Wood Smoke

Brief Summary:

The Air District will continue to study the impacts of its existing rules regarding wood burning and open burning, in order to develop more effective methods to implement, promote, enforce, and possibly expand, existing rules.

Purpose:

Reduce particulate matter emissions from wood smoke.

Source Category:

Area source.

Further Study Measure Description:

Fine particulate matter (PM) is a serious health concern; these particles can pass through the nose and throat, lodge deep within the lungs, and enter the bloodstream. Residential wood-burning represents the largest source of fine PM in the Bay Area, accounting for up to 30-40% of fine PM during peak pollution days. The Bay Area is home to 1.4 million fireplaces and woodstoves.

In order to protect Bay Area residents from the public health impacts of wood smoke pollution, on July 9, 2008 the Air District adopted a wood-burning rule (Regulation 6, Rule 3) that prohibits the use of wood-burning devices such as fireplaces, woodstoves, or pellet stoves, when air quality is forecast to be unhealthy and a *Winter Spare the Air Alert* is in effect. As defined in the rule, the *Winter Spare the Air* season runs from November 1 through the end of February.

The primary focus during the first year of rule implementation was to educate the public about the new rule, how to comply and the rule's relevance to public health. The *Winter Spare the Air Alert* advertising and outreach campaign utilized TV, print, billboard, radio, direct mail, public events, door-to-door canvassing and the Air District website. The District's No Burn phone line received over 500,000 calls. Enforcement focused on providing information to residents on how to comply with the rule, issuing warning letters to first-time violators who did not comply, and developing enforcement action for repeat violators.

For the 2008/2009 season, eleven *Winter Spare the Air Alerts* were issued. Data indicates that household wood burning was reduced by approximately 50% throughout the entire season¹. Nevertheless, the national 24-hour ambient air quality standard (35 ug/m³) was exceeded at one or more air monitoring site on 13 days during the winter of 2008/09. Seven of the alert days still exceeded the standard. It should also be noted that although the District's wood burning rule and the *Winter Spare the Air* program are focused on reducing exceedances of the 35 ug/m³, some individuals may suffer health effects even when PM concentrations are below PM air quality standards.

¹ *Winter Spare the Air Study: 2008-2009 Winter Wood Smoke Season*, Bay Area Air Quality Management District, March 2009, p. 30.

In addition to residential wood burning, the District has limited agricultural burning in order to control emissions of fine particulate matter. The District will continue to study its current rules regarding wood and agricultural burning to develop rules and strategies to better protect public health. The District's PM emission inventory also indicates that PM emissions from commercial cooking are a significant source of PM emissions (see FSM #10 re: cooking).

Potential actions that the District will evaluate and may implement in future years include:

- Continue to work with local governments to adopt the District's model wood smoke ordinance (40 local governments in the Bay Area have adopted an ordinance as of February 2010);
- Evaluate the trigger level for declaring a *Winter Spare the Air Alert* (the threshold is currently 35 ug/m³);
- Expand the *Winter Spare the Air Alert* education and outreach campaign;
- Continue to analyze monitoring data and refine models on PM_{2.5};
- Evaluate and modify enforcement response with increasing penalties for repeat violators for enhanced effectiveness;
- Evaluate and potentially revise current exemptions in Regulation 5: Open Burning, and Regulation 6: Particulate Matter;
- Consider revising Regulation 6, Rule 3 to incorporate any new changes to the federal New Source Performance Standard, Subpart AAA for new residential wood heaters;
- Evaluate the feasibility of requiring an upgrade or replacement of existing fireplaces and/or wood stoves when an existing home is sold or changes ownership;
- Evaluate the impact of modified definitions and exemptions in Regulation 6, Rule 3;
- Consider amending Regulation 6, Rule 3 to reduce unnecessary solid-fuel burning; and
- Consider amending Regulation 6, Rule 3 to apply to outdoor as well as indoor wood-burning devices.

FSM 13 - Energy Efficiency and Renewable Energy

Brief Summary:

Many agencies are already involved in issuing building standards and promoting energy efficiency and renewable energy. It is important to determine the proper role and added value that the District could bring to energy use in the buildings sector in light of constraints related to legal authority, potential enforcement mechanisms, in-house experience and expertise, available resources, and existing regulatory structures.

Purpose:

The purpose of this Further Study Measure is to determine whether and how the Air District can play a constructive role in energy efficiency and renewable energy.

Source Category:

Area source.

Further Study Measure Description:

It will be increasingly important to curb fossil fuel use in order to stem the threat of climate change. The Air District has not traditionally addressed energy use in buildings via regional air quality plans or its rule-making authority. However, given the growing threat of local impacts from climate change, including the threat that higher temperatures will degrade our air quality, the District is now exploring how it can use its existing authority to help reduce fossil fuel use by the buildings sector. In many cases the use of fossil fuels is indirect; for example, through the use of electricity produced by burning fossil fuels. Fossil fuel combustion is a major source of criteria air pollutant emissions as well as greenhouse gases.

Potential actions that the District will evaluate and may implement in future years include:

- Research the existing regulatory structure to determine the extent of District authority over building energy use, such as requiring energy audits of commercial and/or industrial buildings;
- Research the interface between Air District authority and implementation measures in the AB32 Scoping Plan;
- Adopt a rule to require installation of solar hot water heating systems in all new residential construction;
- Adopt a rule to require new commercial and residential swimming pools to be heated with solar power;
- Consider additional actions, such as discouraging the sale or use of “vampire appliances” that consume energy even when not in use.

Sources:

1. <http://www.cpuc.ca.gov/PUC/energy/DistGen/solarhotwater.htm>

FSM 14 – Winery Fermentation

Brief Summary:

Review emissions generated by fermentation at wineries to determine if reductions can be achieved.

Purpose:

Reduce VOC emissions.

Source Category:

Stationary source.

Further Study Measure Description:

In 2005, the San Joaquin district adopted a rule to control emissions from wineries. The rule applies to wineries that emit over 10 tons/year of organic emissions (primarily ethanol) based on formulae in the rule. The rule requires a reduction of fermentation emissions of 35%, which may include payment of an emission mitigation fee. The rule also requires that storage tanks of 5000 gallon size or greater be equipped with a pressure/vacuum valve and kept at a temperature of no greater than 75° F. San Joaquin staff estimated that 18 wineries would be subject to the rule, 14 of which were major stationary sources subject to federal Title V permits. The rule is anticipated to reduce emissions from wineries by 0.6 to 0.7 tons per day from a total inventory of 2.1 tons per day ROG.

The BAAQMD inventory for winery emissions is 0.78 tons ROG per day. The San Joaquin estimates 109 wineries in the San Joaquin district. In the Bay Area, there are over 300 wineries in Napa County alone that collectively account for about 60% of the Bay Area winery emissions. Further research will have to be done to determine whether any of the Bay Area wineries meet the San Joaquin threshold of 10 tons ROG emissions per year, or whether cost-effective controls could be applied to Bay Area facilities.

Sources:

3. Rule 4694: Wine Fermentation and Storage Tanks, San Joaquin Valley Unified Air Pollution Control District, December 15, 2005.
4. Memorandum to Governing Board re: Rule 4694, Crow, David L., San Joaquin Unified Air Pollution Control District, December 15, 2005.

FSM 15 - Composting Operations

Summary:

This measure would consider reductions in organic emissions from Composting Operations.

Purpose:

Reduce emissions of organic compounds from composting operations.

Source Category:

Area source.

Further Study Measure Description:

This measure will consider whether it is feasible to reduce emissions, both ROG and GHG, from composting operations, in cooperation with the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), South Coast Air Quality Management District (SCAQMD) and Mojave Desert Air Quality Management District. In addition, feasible reductions in ammonia and particulate matter will be explored. In 2003, the SCAQMD adopted Rule 1133.2: Emission Reductions from Co-composting Operations, to limit emissions of both ROG and ammonia. As part of its 2005 Extreme Ozone Attainment Demonstration Plan, SJVUAPCD identified composting and biosolids operations as a source category for emission reductions (Control Measure J). SJVUAPCD adopted Rule 4565, Biosolids, Animal Manure, and Poultry Litter Operations on March 15, 2007 to limit ROG emissions from operations involving the management of biosolids, animal manure, or poultry litter, similar to SCAQMD's Co-composting Rule 1133.2. In 2008, SJVUAPCD initiated a field study to determine emissions factors from a variety of composting methodologies. A final report is due to be issued in the spring of 2010.

Emission mitigation measures may be proposed based on SJVUAPCD Rule 4566 and SCAQMD Rule 1133. These measures, combined with the results of the San Joaquin field study will determine if it is feasible to control composting emissions. In addition, objectives of the Regional Water Quality Control Board and the Integrated Waste Management Board will be integrated into the study measure.

Sources:

1. Mojave Desert Air Quality Management District Technical Report, Feasibility Analysis for Composting and Related Operations, dated 10/22/2007
2. San Joaquin Valley Unified Air Pollution Control District, Preliminary Draft Staff Report for Rule 4566, Composting Green Waste, dated 1/10/2008
3. SJVUAPCD, Final Draft Staff Report for Rule 4566, Organic Waste Operations, dated 12/18/2008
4. The Policy Committee for the Central California Ozone Study, and SJVUAPCD, Request for Proposal for the Organic Waste Composting Study, dated 12/16/2008
5. South Coast Air Quality Management District, Final 2007 Air Quality Management Plan, Control Measure CM # 2007MCS-04, dated 6/1/2007
6. SCAQMD Technology Assessment for Proposed Rule 1133.

FSM 16 - Vanishing oils and rust inhibitors

Brief Summary:

Research VOC reductions from vanishing oils and rust inhibitors.

Purpose:

Reduce VOC emissions.

Source Category:

Stationary Source

Further Study Measure Description:

The South Coast AQMD adopted a rule in 2009 to reduce emissions from vanishing oils and rust inhibitors. Vanishing oils are lubricants metal working fluid (such as cutting oil) or other oil used manufacturing. Rust inhibitors are fluids used to inhibit, protect or prevent corrosion on metal surfaces. The South Coast rule, 1144, does not apply to oils and inhibitors that have a flash point of less than 200°F. It sets an interim VOC limit for rust inhibitor at 300 grams VOC per liter of material, and a final limit for both inhibitor and oil at 50 grams VOC per liter of material. The staff report projects emissions reductions of 2.7 tons per day from a 3.2 ton per day inventory. The businesses likely to be affected include machine shops (job shops), aerospace facilities, steel mills, auto part rebuilders, screw machine shops, steel tube (pipe) manufacturers, steel spring manufacturers and captive machine shops located inside of others type of businesses.

Sources:

South Coast AQMD Rule 1144, Staff Report, SCAQMD, March 6, 2009

FSM 17 - Ferry System Expansion

Brief Summary:

MTC, the Air District, and the Water Emergency Transportation Authority (WETA) will collaborate to ensure that expansion of the regional ferry network will provide the greatest possible air quality benefit.

Purpose:

To reduce emissions of criteria pollutants and greenhouse gases.

Travel Market Affected:

This measure would affect all intraregional travel, including commute travel; shopping, personal business, social and recreational travel, including tourism. In particular, expansion of ferry service will affect peak period commute travel, when congestion on bridges is greatest.

Further Study Measure Description:

Because expansion of the ferry system does not show a clear-cut benefit for air quality based on current analytical methodologies, as explained below, TCM 7 (Improve Ferry Service) in the 2005 Ozone Strategy has been reclassified as a Further Study Measure for purposes of the 2009 Clean Air Plan.

Ferry service in the Bay Area is provided by the Golden Gate Bridge, Highway, and Transportation District (GGBHTD) and the Water Emergency Transportation Authority (WETA). GGBHTD provides ferry service from Larkspur and Sausalito to San Francisco. WETA was created by Senate Bill 976, resulting in the consolidation of Alameda, Oakland, and Vallejo ferry services under one authority. WETA issued a final transition plan for consolidation of services in June 2009. This plan also includes expansion projects envisioned over the next five years including new ferry routes from South San Francisco, Berkeley, Treasure Island, and Alameda Point, as well as pre-construction planning for longer term expansion of ferry service to Hercules, Redwood City, Richmond, Martinez, and Antioch. MTC's Resolution 3434 Regional Transit Expansion Program includes new or expanded ferry service to: Berkeley, Alameda/Oakland/Harbor Bay, Hercules, Richmond, and South San Francisco.

All ferry vessels purchased after January 1, 2009 must meet the emission limits set forth in Section 93118.5(e)(5), Title 17, California Code of Regulations, and WETA expansion vessels must comply with the mitigation measures adopted by the Water Transit Authority (now WETA) as part of the Implementation and Operations Plan (IOP) adopted by the California State Legislature in 2003. These measures effectively require that all new ferry vessels reduce emissions of NO_x and PM by 85% below EPA Tier 2 emissions standards.

The use of engines that meet the emission standards described above will reduce overall emissions produced by ferry vessels, even as service is expanded. However, analysis of the ferry expansion plan indicates that emissions produced by the ferry vessels will likely outweigh the benefit of reduced emissions from decreased motor vehicle trips by new ferry riders. This is

because, on average, ferry vessels require more horsepower per passenger-mile than bus, rail, or private vehicles and motor vehicle emission technology advances for these other transportation modes will continue to reduce emission rates for on-road vehicles in future years.

Ferry service provides a variety of benefits to the region including increased transbay transportation capacity, enhanced mobility, improved connectivity, tourism and recreation, back-up to the regional transportation system in the event of natural or man-made disruptions to the region's transit systems and road and bridge infrastructure, and emergency evacuation.

MTC, the Air District, and WETA will work together to maximize potential air quality benefits of ferry system expansion. Potential measures to improve the air quality outcome include maximizing ridership, promoting non-motorized modes of access to and from ferry terminals, prioritizing routes that would provide the greatest air quality benefit, and exploring how to further reduce emissions from ferry engines by means of operational efficiencies and/or advanced technologies such as hybrid designs. In particular, WETA will evaluate the option of consolidating future projected ridership onto fewer routes. Service consolidation will likely increase ridership demand for individual routes, resulting in a greater number of passengers per vessel trip and an improvement in net emissions reductions.

The three agencies will also work together to thoroughly analyze all assumptions regarding the new routes that will be created, the schedule as to when new routes will be brought into service, ridership projections, assumptions regarding prior mode of ferry riders and transportation mode that ferry patrons will use to access the ferry terminals, and actual emission rates for new ferry vessels. Additionally, WETA will evaluate scenarios on new routes where ridership can be maximized at reduced levels of service during peak and/or off-peak periods. Such scenarios would require fewer ferry operating hours and trips, resulting in a reduction of gross ferry emissions.

Expansion of the ferry network may be included as a transportation control measure in future air quality plans if MTC, the Air District, and WETA agree that expansion of the network would provide a clear air quality benefit.

Sources:

1. MTC's Transportation 2035 Plan: http://www.mtc.ca.gov/planning/2035_plan/
2. Water Emergency Transportation Authority: <http://www.watertransit.org>
3. Water Transit Authority (now WETA) Ridership Model Sensitivity Analysis: http://www.watertransit.org/files/pubs/techPubPresentations/CS_Sensitivity_analysis.pdf