

## **CHAPTER 4**

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### **EMISSION CONTROL MEASURES**

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## **4. EMISSION CONTROL MEASURES**

### **4.1 INTRODUCTION**

This chapter addresses emission control measures adopted by the APCD and ARB. Each control measure contributes to reducing ROC or NO<sub>x</sub> emissions. Control measures that focus on reducing local transportation-related emissions are discussed in Chapter 5 – Transportation Control Measures

#### **4.1.1 APCD RULES**

Through a public process, the APCD Board of Directors formally adopts APCD control measures as rules. Once the APCD Board adopts a rule, the APCD is responsible to ensure that the affected parties comply with the rule. Some rules impose emission limits and other requirements on businesses and industry. Other rules require manufacturers and retailers to comply with requirements that limit emissions. This 2001 Plan discusses the APCD rules in Sections 4.3 and 4.4 and in Appendix B.

#### **4.1.2 STATEWIDE EMISSION CONTROL MEASURES**

The California Air Resources Board adopts emission control measures that apply throughout the state. These measures apply to a variety of sources including automobiles, consumer products, off-road equipment and others. Section 4.5 provides a summary of these measures.

#### **4.1.3 REQUIREMENT TO ADOPT EVERY FEASIBLE CONTROL MEASURE**

The California Clean Air Act requires the APCD to adopt every feasible control measure (Health and Safety Code, Section 40914(b)). Staff compared the APCD's rules to rules of other California air districts to ensure that the APCD has adopted or has proposed to adopt every feasible measure. The ARB summarizes other District measures in the document titled,

“Identification of Performance Standards” ([www.arb.ca.gov/ssps/ssps.htm](http://www.arb.ca.gov/ssps/ssps.htm)). Section 4.4, Proposed Control Measures, includes every feasible measure that the APCD anticipates will be included in the agency Rules and Regulations.

## **4.2 EMISSION CONTROL MEASURE MANDATES**

The comprehensive air pollution control strategy identified in this 2001 Plan addresses both state and federal Clean Air Act requirements. The status and applicability of each control measure varies with the specific requirements of the following state or federal mandates:

### **4.2.1. FEDERAL CLEAN AIR ACT REQUIREMENT – SECTION 175A(a)**

An area that requests redesignation as an ozone attainment area must submit a “maintenance plan” that contains control measures necessary to provide for the maintenance of the 1-hour ozone standard for at least 10 years after redesignation. This plan relies on measures adopted by the ARB to comply with this federal requirement. Section 4.5 summarizes the ARB control measures.

### **4.2.2 FEDERAL CLEAN AIR ACT REQUIREMENT – SECTION 175A(d)**

Any plan submitted under Section 175A must contain contingency measures to assure that the area will promptly correct any subsequent violation of the 1-hour ozone standard. Section 4.4 discusses how the federal contingency measures are the same as the state proposed measures and how the proposed measures will comply with this federal requirement. In addition, if Santa Barbara County violates the federal 1-hour ozone standard during the planning horizon of this 2001 Plan, we will evaluate and expedite the implementation of the “contingency” measures outlined in this plan.

#### 4.2.3. CALIFORNIA CLEAN AIR ACT ANNUAL EMISSIONS REDUCTION – SECTION 40914

Each district in the state that is nonattainment for the California 1-hour ozone standard must demonstrate a five percent reduction in emissions per year or adopt every feasible measure available to that district. Section 4.4 discusses the measures proposed to comply with this state requirement.

Table 4-1 summarizes all the local control measures evaluated by the APCD for this 2001 Plan. The combination of the measures listed in Table 4-1 with those presented in Section 4.5 (ARB measures), and the TCMs in Chapter 5 comprises Santa Barbara County's comprehensive air pollution control strategy. The APCD control measures are founded on previous plans adopted by the APCD and identified in Section 4.1.

This 2001 Plan classifies control measures as *adopted*, *proposed*, *further study*, or *deleted*.

- *Adopted* control measures are those that the APCD has formally adopted as APCD rules and included in the State Implementation Plan (SIP).
- *Proposed* control measures, as used in this 2001 CAP, have a dual meaning. When related to attainment of the **state** 1-hour ozone standard, *proposed* control measures are considered *proposed*. When related to attainment of the **federal** 1-hour ozone standard, *proposed* control measures are considered *contingency*.
- *Further study* measures are those that require additional investigation before a commitment is made to adopt them.
- *Deleted* measures are those that the APCD has found to be infeasible and has removed from consideration.

For this 2001 CAP, APCD staff also reviewed 16 *further study* measures identified in the 1998 CAP and listed below:

1. R-GN-2: Wineries and Breweries
2. R-GN-6: Wastewater Treatment Plants

3. R-PG-2: Process Turnaround
4. R-PM-5: Liquefied Natural and Petroleum Gas Truck Loading
5. R-PM-4: Pleasure Craft Fuel Transfers
6. R-SC-1: Architectural Coating Operations
7. R-SL-1: Petroleum Solvent Dry Cleaners
8. R-SL-2: Solvent Cleaning Operations (Use of Low-ROC or Aqueous Solvents)
9. R-SL-4: Electronic Industry - Semiconductor Manufacturing
10. N-IC-2: Gas Turbines
11. N-IC-7: Lawn and Garden Equipment
12. N-IC-8: Airport Ground Support Equipment
13. N-XC-12: Control of NO<sub>x</sub> Emissions from Direct-Fired External Combustion Equipment (Dryers and Kilns)
14. N-XC-2: Large Water Heaters and Small Boilers (75,000 Btu/hr or greater, but less than 2 MMBtu/hr)
15. N-XC-4: Boilers, Steam Generators, and Process Heaters (2 MMBtu/hr or greater, but less than 5 MMBtu/yr)
16. N-XC-7: Tail Gas Incinerators

With the exception's of R-GN-1, R-PM-4, R-SL-1, and N-XC-12, staff reclassified the above control measures as *proposed* or *deleted* as indicated in Table 4-1. Staff decided to place the N-XC-12 and N-IC-1 control measures in the *further study* category in order to obtain more information on the feasibility of the control measures. The Air Resources Board has requested that staff retain measures R-GN-2, R-PM-4, and R-SL-1 in the *further study* category in case emissions from these sources increase, or in response to control technology advancements.

### 4.3 ADOPTED CONTROL MEASURES

Table 4-2 summarizes all control measures adopted for the attainment of the federal 1-hour ozone standard. Appendix B, Stationary Source Control Measure Documentation, provides descriptions of the adopted APCD control measures.

#### 4.4 PROPOSED CONTROL MEASURES

Section 175A of the Federal Clean Air Act requires that a maintenance plan include contingency provisions, as necessary, to promptly correct any violation of the federal 1-hour ozone standard that occurs after an area is redesignated. The contingency plan is an enforceable part of the SIP and should ensure that the *contingency* measures are adopted expeditiously once they are triggered.

According to USEPA guidance, the plan should clearly identify the *contingency* measures to be adopted, a schedule and procedure for adoption and implementation, and a specific time limit for action. In addition, the plan should identify specific thresholds or triggers at which point the *contingency* measures need to be implemented.

The measures summarized in Table 4-3 as *proposed* for state purposes are also *contingency* measures for federal purposes. Appendix B.3, Proposed Emission Control Measures, specifies the schedule for adoption, implementation, and time limit for action for each of the *proposed* measures. This 2001 Plan goes beyond the contingency measure implementation threshold guidance because the APCD intends to adopt these measures as specified in Table 4-3 and in Appendix B.3 in order to meet the state 1-hour ozone standard. If Santa Barbara County experiences a violation of the federal 1-hour ozone standard prior to 2015, then the control measure adoption process will be evaluated and expedited in coordination with USEPA.

The APCD anticipates the adoption of the *proposed* control measures in the following time frames:

- Near-term: 2001 – 2003
- Mid-term: 2004 – 2006
- Long-term: 2007 – 2009

Table 4-3 also summarizes the schedule and reductions anticipated for the *proposed* measures. Appendix B, Stationary Source Control Measure Documentation, contains additional details on each of the *proposed* control measures.

## **4.5 CALIFORNIA AIR RESOURCES BOARD CONTROL MEASURES**

The ARB has adopted numerous regulations that reduce pollution from motor vehicles, off-road equipment, consumer products and fueling operations. The following sections summarize the ARB control measures. Emission reductions from these adopted control measures will help maintain attainment with the federal one-hour ozone standard, and make progress toward the federal eight-hour ozone standard and the state ozone standard. In addition, emission reductions from these measures will also reduce the precursors of secondary particulate, helping make progress toward attaining the state PM<sub>10</sub> standard. Some of the mobile source control measures (designated “M” measures) and consumer product (designated “CP” measures) were initially presented in California’s 1994 State Implementation Plan (SIP) for Ozone, adopted by the Air Resources Board (ARB or Board) on November 15, 1994. Since 1994, ARB has adopted many of the SIP measures, and also identified and adopted additional measures to further reduce emissions. Only measures that apply to Santa Barbara County are discussed.

### **4.5.1 Light-Duty Vehicles (1994 SIP Measure M-2)**

Source Characteristics: This category consists of passenger cars, pick-up trucks, minivans, and sport utility vehicles. Although current cars are now 99 percent cleaner than if they were uncontrolled, growth in both the number of vehicles and the miles traveled by car each year have significantly reduced the emission benefits of light-duty vehicle regulations.

Control Measure Description: ARB has regulated emissions from passenger cars and light-duty trucks for over 30 years. The 1994 SIP called for sizeable additional emission reductions from cars and light trucks. Because of the increased number of pick-up trucks, minivans, and sport utility vehicles on the road, ARB’s Low-Emission Vehicle II (LEV II) regulations focused on

reducing emissions from these previously under-regulated vehicles, as well as reducing evaporative emissions to near-zero levels. USEPA adopted parallel national regulations (known as “Tier II”) in 2000.

Schedule: ARB adopted LEV II, the latest phase of light-duty vehicle regulations, in November 1998. USEPA adopted parallel Tier II requirements in 2000. The LEV II and Tier II regulations will be phased in beginning in 2004. In 2000, ARB adopted a measure aligning our LEV II standards with the federal Tier II motor vehicle standards are being phased in faster. This action ensures that all vehicles sold in California meet the most stringent applicable emission standards.

#### 4.5.2 ARB R002 - California Reformulated Gasoline Regulations (Phase II -- 1994 CAP ARB-S5 and Phase III)

Source Characteristics: In addition to on-road vehicles such as passenger cars and pick-up trucks, gasoline is used in light-duty industrial equipment (e.g., forklifts) and recreational vehicles such as motorcycles and all terrain vehicles.

Control Measure Description: The Phase II reformulated gasoline regulations require modifications to physical properties and chemical composition of gasoline. Reduced vapor pressure has a direct effect, lowering evaporative ROC emissions. Reformulated fuel composition lowered exhaust and evaporative emissions. Of particular importance was the lowering of the aromatic and olefinic fractions of gasoline because these chemical species are the most photochemically reactive in the atmosphere after evaporation. The content of benzene, an aromatic hydrocarbon component of gasoline and a toxic compound, was also specifically reduced. A further air quality benefit was realized by requiring reductions in fuel sulfur content, which resulted in improved catalytic converter efficiency in reducing ROC, NO<sub>x</sub>, and CO emissions. When oil refiners began producing Phase II gasoline in 1996, they included deposit control additives to reduce combustion chamber deposits, resulting in an unanticipated decrease in NO<sub>x</sub> emissions. In June 1998, the Board adopted regulations to “lock-in” the benefits of reduced combustion chamber deposits.



At a December 9, 1999, hearing, the Board approved standards for Phase III reformulated gasoline, which gasoline producers and importers must produce starting December 31, 2002. The most prominent feature of the Phase III standards was the prohibition of gasoline containing methyl tertiary-butyl ether (MTBE), an oxygenate used in most California gasoline since 1996. Following an extensive study by University of California researchers, in March 1999, Governor Gray Davis found that there are significant risks and costs associated with water contamination from MTBE in the state's gasoline. The Phase III standards also modified several gasoline properties to maintain the emission and air quality benefits of the Phase II standards while increasing refinery flexibility in producing complying gasoline without the use of MTBE.

Schedule: The Phase II regulations (Title 13, California Code of Regulations, sections 2260-2272) were adopted by ARB in November 1991. Implementation of the Phase II Reformulated Gasoline regulations began in March 1996. The Phase III regulations were adopted in December 1999 and will become effective December 31, 2002.

4.5.3 On-Road Heavy-Duty Diesel Engines (1994 SIP Measures M-4, M-5, M-6, and M-17, transit bus regulations, and school bus program), and 2007 diesel truck standards

Source Characteristics: This category includes a range of vehicles with gross vehicle weight greater than 14,000 pounds, from highway trucks to buses. For these types of vehicles, ARB and USEPA regulate emissions from the engine rather than the vehicle.

Control Program Description: ARB has controlled emissions from on-road heavy-duty trucks since the 1980's. In the 1994 SIP, the ARB relied on a number of strategies to further reduce emissions from this category, including more stringent national emission standards, incentives to purchase cleaner engines, and a truck-scraping program. In 1995, ARB, USEPA and engine manufacturers signed a Statement of Principles committing to new national emission standards. ARB and USEPA both adopted national standards that reduced emissions by an additional 50 percent. In addition, since fiscal year 1998-1999, ARB's Carl Moyer program has provided funds to local districts to encourage the purchase of cleaner heavy-duty vehicles and equipment. After further study, ARB staff concluded that a truck-scraping program would not be cost-

effective. ARB has since replaced the truck scrapping measure with a commitment to pursue ways to reduce in-use emissions from heavy-duty trucks. Under the commitment, ARB must achieve these emission reductions by 2005.

In February 2000, ARB adopted lower emission standards for transit buses that will significantly reduce emissions of NO<sub>x</sub> and toxic diesel particulate. The regulation allows transit agencies to choose between a diesel or an alternative fuel path to lower emissions. In addition, the fiscal year 2000-2001 budget allocated \$50 million to clean up school buses. Under guidance adopted by the ARB in December 2000, the funding is split between purchases of new alternative fuel buses and installation of filters to reduce PM emissions from existing buses.

In early 2001, USEPA finalized national standards for new diesel truck engines to be phased in between 2007 and 2009. These limits are 90 percent lower than the current PM limit and 95 percent lower than the current NO<sub>x</sub> limit. In October 2001, ARB will consider adopting these standards, which will provide for direct, state enforcement.

Schedule: ARB and USEPA adopted new emission standards for on-road heavy-duty diesel engines in 1998. These regulations take effect in 2004, however in settling enforcement actions for the use of “defeat devices” to over-ride emission control equipment, engine manufacturers agreed to accelerate the introduction of engines meeting the 2004 standards to October 2002. In 2000, ARB also adopted “not to exceed” emission test procedures for 2005 and later heavy-duty diesel engines to ensure that exhaust emissions are controlled under all driving conditions and to prevent a repeat of the use of “defeat devices.”

#### 4.5.4 ARB R005 – Heavy-Duty Off-Road Diesel Engines (1994 CAP ARB-S8 and 1994 SIP Measures M-9 and M-10)

Source Characteristics: Heavy-duty off-road diesel engines are used in construction, farming, mining, forestry and industrial equipment. These engines generate significant quantities of NO<sub>x</sub> and appreciable ROC and PM emissions. This category does not include locomotives, marine vessels or stationary engines. California is preempted by the Federal Clean Air Act

Amendments from adopting regulations for new engines less than 175 horsepower (hp) that power farm or construction equipment. Under this provision, about 60 percent of the emissions from this category are pre-empted from State control.

Control Measure Description: In 1992, ARB adopted regulations to reduce emissions from new, non-farm engines 175 hp or greater. The regulations consist of exhaust emission standards and testing procedures for new 1996 or later diesel cycle engines regardless of fuel used. Exhaust standards for new engines were implemented in 1996, with a second more stringent set of standards taking effect in 2001.

In the 1994 SIP, ARB committed to further reduce emissions from off-road diesel engines by over 60 percent by transferring on-road diesel control technology to new off-road diesel engines. USEPA agreed to work with ARB to adopt parallel regulations so that uniform emission standards would apply nationwide. In 1996, ARB, USEPA and engine manufacturers signed a Statement of Principles committing to introduce clean engine technology in advance of the SIP commitment. Based on this agreement, USEPA adopted emission control regulations for heavy-duty off-road diesel engines in October 1998. ARB adopted parallel regulations for California in January 2000.

Schedule: Regulations were first adopted by ARB in January 1992 (Title 13 California Code of Regulations, sections 2420-2427). The first tier of exhaust standards was implemented in 1996 with a second tier of implementation due in 2001.

USEPA adopted national regulations to further reduce emissions from this category in 1998. ARB adopted parallel regulations in January 2000. The regulations are being phased in, beginning in 2000.

#### 4.5.5 ARB R001 - California Diesel Fuel Regulations (1994 CAP ARB-S4), and low sulfur diesel fuel rule

Source Characteristics: There are an extensive variety of diesel/distillate oil fuel-powered engines in Santa Barbara County. This regulation sets specifications for the fuel combusted in these engines. Stationary sources include asphalt heating and other in-process fuel use, such as dryers, furnaces and kilns. Mobile sources include heavy-duty trucks, as well as off-road sources such as railroad locomotives, and heavy-duty construction and farm equipment.

Control Measure Description: The ARB diesel fuel regulations apply to sulfur and aromatic content of fuel and result in both ROC and NO<sub>x</sub> emission reductions.

Earlier this year, USEPA finalized national standards for diesel fuel, which will reduce the allowable sulfur level to 15 ppm starting in 2006. (The current sulfur limit in California is 500 ppm.) Low sulfur diesel fuel is a critical element of the overall strategy to reduce emissions from diesel engines because it enables after-treatment technologies to be applied in both new and existing engines. Because of the long life span of diesel engines, retrofits on existing engines help accelerate emission reductions. While the national rule applies only to on-road engines, ARB plans to consider a proposal next year to require 15 ppm sulfur diesel fuel for both on-road and off-road engines.

Schedule: The current diesel fuel regulations (Title 13, California Code of Regulations, sections 2281-2282) were adopted by ARB in November 1988. Implementation of the diesel fuel regulations began in October 1993. New low sulfur diesel fuel will be required starting in 2006.

#### 4.5.6 ARB R006 - Off-Highway Recreational Vehicles And Engines (1994 CAP ARB-S9)

Source Characteristics: Off-highway recreational vehicles include off-road motorcycles, all-terrain vehicles (ATVs), golf carts and "specialty" carriers such as personnel carriers and transport vehicles. Engines include two and four stroke configurations and range from 8 horsepower (hp) to 30 hp. Most of the smaller engines are gasoline powered and are relatively

simple, however some of the larger engines utilize more advanced designs including fuel injection and alternate fuels. Some of these vehicles are designed for competition purposes. ROC and CO are the primary pollutants of concern from these engines.

Control Measure Description: The regulation contains two major provisions: exhaust emission standards for non-competition vehicles and limitations on use of competition-designed vehicles for recreational purposes. Exhaust standards are required for new 1997 or later non-competition vehicles (ATVs and off-road motorcycles). In 1998, ARB determined that there was far less California-certified product available than anticipated when the Board approved the regulations in 1994. The Board amended the regulation allowing limited usage of non-emission compliant vehicles (i.e. vehicles that do not meet the applicable emission standards) during certain seasons in certain off-highway vehicle riding areas. The amendments do not change existing emissions standards, but do provide more flexibility and opportunities for the use of non-emission compliant vehicles.

All new 1997 and later golf carts meet zero-emission standards. All new 1995 and later specialty vehicles less than 25 hp (go-karts) conform with utility engine emission regulations (see control measure ARB- S3) while those 25 hp or greater comply with the second tier 1999 utility engine standards beginning in 1997.

Schedule: The regulation was initially adopted by ARB in January 1994 (Title 13, California Code of Regulations, sections 2111-2140). The regulation was amended in 1998.

#### 4.5.7 Gas and LPG Equipment 25 - 175 horsepower (1994 SIP Measures M-11 and M-12)

Source Characteristics: The category consists of off-road gasoline and liquefied petroleum gas (LPG) equipment greater than 25 horsepower and less than 175 horsepower, including forklifts, pumps, compressors, farm equipment, and construction equipment. The USEPA has the sole authority to control new farm and construction equipment less than 175 horsepower, whose emissions account for approximately 10 percent of ROC and NO<sub>x</sub> from this category.

Control Measure Description: The 1994 SIP called for a 75 percent reduction in ROC and a 50 percent reduction in NO<sub>x</sub> from this category. Because some of the emissions from this category are from engines under exclusive USEPA control, ARB and USEPA agreed to work together to develop uniform national emission standards. Because many of the engines used in these applications are based on automobile engines, control strategies developed for automobiles may be transferable to this category.

Schedule: ARB adopted regulations in 1998. USEPA adopted regulations based on, but not as stringent as, the California requirements in 2000. Both the national and statewide regulations are being phased in beginning in 2000.

#### 4.5.8 ARB R004 - Utility Equipment Emission Limits (1994 CAP ARB-S3)

Source Characteristics: Utility engines include a large and diverse range of portable equipment powered by gasoline, diesel or alternate fuel two and four stroke air or liquid cooled engines. Utility engines are defined as engines designed for powering residential and commercial lawn and garden equipment and implements, and also include small horsepower electric generators, pumps, compressors and welding machines. ARB has classified utility equipment in two ways: (1) hand-held equipment; and (2) non-hand-held equipment. Examples of hand-held equipment include chain saws, leaf blowers, and string trimmers. Walk-behind and riding mowers, garden tractors and generators are examples of non-hand-held utility equipment.

Control Measure Description: The utility engine regulations consist of exhaust emission limits, test procedures, standardized emission control system labeling requirements, emission-related component defect warranty provisions and quality-audit and compliance procedures for manufacturers. Exhaust emission standards will be implemented in two tiers for both ARB engine classifications. Tier I hydrocarbon NO<sub>x</sub>, CO and PM emission standards apply to new utility engines produced on or after January 1, 1995, and achieve emission reductions through simple engine modifications such as calibrations and component tolerances. More stringent Tier II emission standards were to apply to new utility engines produced on or after January 1, 1999, and would incorporate advanced control technology such as catalytic converters

to achieve emission reductions. In 1998, ARB re-examined the technological feasibility of the standards scheduled to take effect in 1999. Based on new information which indicated that emissions from utility engines increased drastically as the engines aged, the Board modified the regulations to delay the implementation of the standards for one year while adding new requirements to reduce deterioration emissions. Farm and construction equipment less than 175 horsepower preempted from state or local emission regulations by the federal Clean Air Act Amendments of 1990 are not subject to this ARB regulation.

Schedule: ARB adopted regulations applicable to new utility engines less than 25 hp in December 1990 (California Code of Regulations sections 2400 - 2407). These regulations took effect January 1, 1995. The regulations were modified in 1998.

#### 4.5.9 Marine Vessels National and International Emission Standards (1994 SIP Measure M-13)

Source Characteristics: Ocean-going marine vessels, and harbor vessels exclusive of those used in recreational activities, are included in this category. Included are all naval and commercial marine vessels like tugs, crew/supply boats, fishing boats, as well as cruise ships, roll-ons/roll-offs (RO-ROs), container ships, and tankers. The marine vessel fleet ranges in power from approximately 500 horsepower to 67,000 horsepower, and is propelled by diesel engines, steam turbines, or gas turbines. Many ocean-going vessels are registered in foreign countries, and most use engines produced outside the United States. Establishing international emission standards can most effectively reduce emissions from new engines used in these vessels, and the USEPA and the International Maritime Organization have begun to address appropriate requirements.

Control Measure Description: In the 1994 SIP, this measure was structured in three parts. First, ARB envisioned emission standards for new diesel engines used in ocean-going vessels. Second, commercial ship traffic control measures, such as moving shipping lanes and other operational controls, could further reduce ocean-going ship emissions. And third, USEPA would establish emission standards for engines used in captive fleets, such as tugboats.

The International Maritime Organization (IMO) is charged with the responsibility for the safety of shipping and the protection of the marine environment. It has the authority to adopt measures to reduce emissions from ships that operate anywhere in the world. In 1997, the IMO adopted NO<sub>x</sub> requirements that will apply to any new diesel engine, propulsion or auxiliary, greater than 130 kW installed on a vessel constructed on or after January 1, 2000.

As part of a commitment to participate in a federal consultative process for federal controls, ARB convened a technical working group, which included the Santa Barbara APCD, in the summer of 1998. The goal of this working group was to ensure the analysis of the scientific data results in a clear understanding of the air quality benefits of two alternatives under consideration - relocation of the existing shipping lanes and voluntary speed reduction. Based on a comparative technical analysis of the air quality impacts between two potential operational control strategies, the working group reached the following conclusions:

- Reducing the speed at which ships travel reduces NO<sub>x</sub> emissions that reach onshore. The magnitude of the reductions is dependent upon the degree of speed reduction and the distance traveled at the reduced speed, with the reductions proportional to the distance traveled and the reduced speed.
- The NO<sub>x</sub> emissions associated with moving the shipping lane further offshore are sensitive to meteorological conditions. On some days, there is an emission reduction benefit, and on others days there is a dis-benefit, depending on the specific weather and wind conditions.

Work is now underway to craft a voluntary Memorandum of Agreement that would be used to implement a speed reduction program. The implementation timeframe depends on whether regulatory action is needed and on the level of coordination and involvement of other organizations, such as the U.S. Navy, U.S. Coast Guard, and the IMO.

In 1999, USEPA adopted emission standards for the captive fleet of diesel marine engines taking effect in 2004. The limits are more restrictive than those adopted by the IMO and also apply to larger engines used in the captive fleet.



Schedule: New international emission standards for propulsion and auxiliary diesel engines on marine vessels are being implemented as of January 2000. In addition, new emission standards for captive diesel marine engines take effect in 2004.

#### 4.5.10 Locomotives National Emission Standards (1994 SIP Measure M-14)

Source Characteristics: This category includes new and in-use locomotives used in line-haul, local, and switch yard service. Federal law preempts California from setting standards for new locomotives and new engines used in locomotives.

Control Measure Description: In the 1994 SIP, the ARB assigned USEPA the task of reducing emissions from locomotives by almost 70 percent by 2010. In 1998, USEPA promulgated three sets of standards (Tier 0, Tier 1 and Tier 2). Tier 0 applies to locomotives built between 1973 and 2001 at the time they are rebuilt. Locomotives built between 2002 and 2004 must meet Tier 1 standards. To provide increased flexibility in complying with Tier 0 and Tier 1 standards, locomotive manufacturers will have many options from which to choose. The options allow engine manufactures to offer various combinations of retrofit kits and new engine specifications. More stringent Tier 2 standards for new locomotives will take effect beginning in 2005.

The national emission standards for new locomotives and new engines used in locomotives will lead to significant emission reductions throughout the state as newer and lower emitting locomotive engines are purchased and as in-use locomotives are remanufactured. The ARB is also considering how to obtain further reductions from locomotives, for example requiring the use of California diesel fuel.

Schedule: USEPA promulgated national regulations in 1998. New standards for new and rebuilt locomotives are being phased in beginning in 2000.

4.5.11 Pleasure Craft Nationwide Emission Standards (1994 SIP Measure M-16); additional emission reductions for marine pleasure craft, and inboard marine engine standards

Source Characteristics: Pleasure craft are recreational boats and personal watercraft used in inland waterways and coastal areas. Gasoline engines, including 2-stroke and 4-stroke, are most often used in this application, but diesel engines are also used.

Control Program Description: In 1996, the USEPA has promulgated nationwide regulations that reduced ROC emissions of new outboard and personal watercraft gasoline equipment in this category by 75 percent, with an emission cap for all other watercraft to be phased-in beginning in 1998.

Based on new information, which indicated that the emissions from marine pleasure craft, such as outboard motor boats and JetSkis, were significantly underestimated in the 1994 SIP, in 1998, the ARB adopted California regulations to reduce emissions beyond the federal requirements. The California regulations phase in more quickly than the national standards and ultimately require marine pleasure craft to meet more stringent emission standards. California emission standards for the 2008 model year are 65 percent lower than USEPA's 2006 emission standards.

In July 2001, ARB adopted an emission rule for boats powered by inboard and stern-drive engines that were not addressed in the 1998 regulation. The regulation includes two tiers of standards. The first standards go into effect for the 2003 model year. The second, more stringent standards, which are based on the use of exhaust catalysts, will be phased-in between 2007 and 2009.

Schedule: Increasingly strict emission standards are being phased in beginning in 1998.

4.5.12 ARB R003 - Consumer Products and Aerosol Coatings (1994 CAP ARB-S1 and 1994 SIP Measures CP-2, CP-3 and CP-4)

Source Characteristics: Many consumer products contain ROC, which either evaporate or are propelled into the air. ARB has regulated many of these products, including antiperspirants and

deodorants, air fresheners, automotive windshield wiper fluids, bathroom and tile cleaners, charcoal lighter fluid, engine degreasers, floor polishes, furniture maintenance products, general purpose cleaners, glass cleaners, hair mousse, hair spray, hair styling gels, aerosol insect repellents, laundry pre-wash products, nail polish removers, oven cleaners, and shaving creams.

ARB also regulates numerous categories of aerosol coatings including paint, varnish and related products dispensed from disposable aerosol containers. Emissions from aerosol paints come from the solvents and propellants used in these products, which are primarily ROC.

Control Measure Description: The consumer product regulations limit, and in some cases phase out, the use of ROC in regulated products such as the ones listed above. ARB adopted the first phase of consumer product regulations in 1989 and has continued to pursue emission reductions from this source category since then. The 1994 SIP called upon ARB to achieve reductions from previously unregulated consumer product categories, as well as pursue long-term measures to significantly reduce future emissions. In 1997 and 1999, ARB adopted additional controls to further reduce emissions from consumer products. To provide industry with additional flexibility in meeting regulations, the Alternative Control Plan regulation was adopted in September 1994 and the Hairspray Credit Program regulation was adopted in November 1997. The Board recently approved two regulatory changes to the consumer products regulations because the limits were not technologically or commercially feasible. The modifications to the aerosol adhesive and antiperspirant and deodorant regulations result in a minor loss in ROC emission reductions.

The 1994 SIP also called for ARB to secure emission reductions from aerosol coatings. There are two tiers of standards. The first tier of standards was put in place for January 1, 1996, and the second tier was delayed until January 2002. In order to achieve additional ozone reductions from aerosol coatings while maintaining technologically and commercially feasible limits, ARB in June 2000 adopted reactivity based VOC standards to replace the mass based standards for aerosol coatings starting in 2002.

Schedule: ARB adopted Consumer Products regulations (Title 17, California Code of Regulations, sections 94500 - 94517) in 1989, 1990, and 1992 with full implementation in 1999. Additional regulations were adopted in 1997 and 1999, with implementing beginning in 2000.

The aerosol coating regulations were adopted in 1995 and are being phased in beginning in 1996.

#### 4.5.13 Pesticides (1994 CAP ARB-S2 and 1994 SIP Measure)

Source Characteristics: Pesticides are chemicals used to control plant or animal pests and for the regulation of plant growth and plant defoliation. There are various formulations of pesticides, including aerosols, dusts, flowables, granulars, solutions, and wettable powders applied by means of aircraft spraying, ground-rig spraying and soil injection. ROC emissions result from evaporation of reactive organic compounds in both active and inactive ingredients, including carriers, diluents, emulsifiers, inhibitors, fillers, and propellants.

Control Measure Description: In the 1994 SIP, the ARB committed to work with the state Department of Pesticide Regulation (DPR) to reduce ROC emissions from commercial and agricultural pesticide use. (Home-use pesticides are subject to ARB's Consumer Product Regulation – see ARB control measure ARB-S1.) DPR has established a 1990 baseline pesticide emission inventory and target reduction goals in three-year milestone increments beginning with 1996. The reductions are voluntary and occur as a result of ongoing activities such as integrated pest management programs, low ROC reformulated products, and introduction of products designed for very low usage rates. If the anticipated ROC emission reductions are not achieved through voluntary controls, DPR is required to adopt regulations to achieve the needed emission reductions. The goal of the program is to reduce subject pesticide ROC emissions by 20 percent statewide by 2005 with interim milestones of 12 percent reduction in 1999 and 16 percent in 2002. Based on the most recent (1998) inventory data, pesticide emissions meet the 12 percent reduction SIP commitment for 1999. Because the program was designed in 1994 specifically for areas designated as serious ozone non-attainment areas preparing their 1994 SIP, Santa Barbara has not taken credit for any emission reductions from

this measure. However, any emission reductions that do occur within Santa Barbara County will benefit air quality in the area.

Schedule: ARB and DPR continue to monitor emissions from commercial and agricultural pesticide use to ensure the 1994 SIP commitment is met.

#### 4.5.14 Portable Fuel Container Regulations

Source Characteristics: Portable gas cans are used to fuel lawn and garden equipment, as well as vehicles that have run out of gas. While the air emissions from a single portable gas can appear to be small, the large number of such containers means they contribute significantly to ROC emissions in California. Gas cans contribute to smog-forming emissions in several ways including, permeation of vapors through walls in containers made from polyethylene plastic, escaping fumes while fuel is being dispensed, spillage and /or over-filling as fuel is being poured into equipment, spillage and evaporation through secondary vent holes, and evaporation through inadequately capped spouts.

Control Measure Description: At its September 23, 1999 meeting, ARB adopted new emission and spill-control regulations for portable fuel containers, commonly known as “gas cans” and gas can spouts. These regulations will reduce ROC emissions from gas cans by over 70 percent by 2010. Under the new regulations, all new containers and spouts will have an automatic shut-off feature preventing overfilling of power equipment fuel tanks. The spouts will also have an automatic closing feature so the can will be sealed when it is not being used. Secondary venting holes will be eliminated and the new standards require the manufacturers to reduce vapor permeation through container walls to no more than 0.4 grams per gallon per day.

Schedule: Adopted by ARB on September 23, 1999. The regulations apply to new gas cans and spouts sold in California starting January 1, 2001

#### 4.5.15 Enhanced Vapor Recovery Regulations

Source Characteristics: The storage and transfer of gasoline for vehicle refueling is one of the most significant sources of hydrocarbon emissions in California. Vapor recovery systems are used to capture gasoline vapors both during the refueling of underground tanks by tanker trucks and refueling of vehicles at gasoline pumps. When working properly, the emission reduction benefits of these systems are significant. Unfortunately, in many cases, systems in the field do not control emissions to the certified level. As a result, emission reductions are being forgone. The performance and reliability of these systems needs to be improved to ensure that we achieve the expected reductions.

Control Measure Description: To address deficiencies in the vapor recovery program, in March 2000 ARB adopted new regulations as part of our enhanced vapor recovery program to improve emission controls at gasoline service stations. Vapor recovery systems will be compatible with newer vehicles and will require new computerized equipment to self-diagnose and alert operators when repairs are needed. In addition to these changes, ARB has committed to work with the local districts to improve our equipment certification procedures and the enforcement of vapor recovery regulations. ARB believes these improvements to the vapor recovery program will put the program back on track by 2005, and provide additional emission reductions.

Schedule: Adopted by ARB in March 2000. All new equipment is subject to the regulation, which is phased in through 2001. Existing equipment must be modified to meet the new standards by 2005.

## 4.6 CONCLUSIONS

The APCD, SBCAG, county, cities, and ARB have developed a comprehensive air pollution control strategy for Santa Barbara County. The strategy is contained in this 2001 CAP and it identifies every feasible measure available to bring the county into attainment with the state ozone standard. In addition, this 2001 CAP identifies control measures that the APCD will use

to maintain the federal ozone standard and go beyond the federal contingency measure requirements by proposing these measures for adoption.

The 2001 CAP control measures include controls on all inventory categories contributing VOC and NO<sub>x</sub> emissions: industrial processes, combustion sources, petroleum handling, solvent use, consumer products, waste burning, automobiles and other mobile sources. This strategy, combined with emission reductions to be realized from transportation control measures described in Chapter 5, will bring Santa Barbara County into compliance with the state 1-hour ozone standard and provide for the maintenance of the federal 1-hour ozone standard in Santa Barbara County.

**TABLE 4-1**

**APCD CONTROL MEASURES EVALUATED FOR THE 2001 CAP**

<b>Rule #</b>	<b>CAP Control Measure ID#</b>	<b>Control Measure</b>	<b>Federal Requirements</b>	<b>State Requirements</b>
<b>GENERAL ROC EMISSION CONTROL MEASURES</b>				
341/901	R-GN-1	Landfill Gas Emissions	Adopted	Adopted
N/A	R-GN-2	Wineries and Breweries	Further Study	Further Study
N/A	R-GN-3	Vegetable Oil Processing	Deleted	Deleted
N/A	R-GN-4	Bakeries	Deleted	Deleted
N/A	R-GN-5	Barbecue Lighter Fluid	Deleted	Deleted
N/A	R-GN-6	Wastewater Treatment Facilities	Deleted	Deleted
N/A	R-GN-7	Vacuum Producing Systems	Deleted	Deleted
<b>GENERAL PETROLEUM RELATED ROC EMISSION CONTROL MEASURES</b>				
331	R-PG-1	Fugitive Emissions I & M	Adopted	Adopted
N/A	R-PG-2	Process Turnarounds	Deleted	Deleted
N/A	R-PG-3	Pipeline Pigging	Deleted	Deleted
N/A	R-PG-4	Pneumatic Instruments	Deleted	Deleted
N/A	R-PG-5	Glycol Regeneration Vents	Deleted	Deleted
<b>PETROLEUM MARKETING ROC EMISSION CONTROL MEASURES</b>				
316	R-PM-1	Gasoline Bulk Plants	Adopted	Adopted
316	R-PM-2	Gasoline Dispensing Phase I Vapor Recovery	Adopted	Adopted
316	R-PM-3	Gasoline Dispensing Phase II Vapor Recovery	Adopted	Adopted
N/A	R-PM-4	Pleasure Craft Fuel Transfer	Further Study	Further Study
N/A	R-PM-5	Liquefied Natural and Petroleum Gas Truck Loading	Deleted	Deleted



**TABLE 4-1**

**APCD CONTROL MEASURES EVALUATED FOR THE 2001 CAP**

<b>Rule #</b>	<b>CAP Control Measure ID#</b>	<b>Control Measure</b>	<b>Federal Requirements</b>	<b>State Requirements</b>
<b>PETROLEUM PRODUCTION ROC EMISSION CONTROL MEASURES</b>				
344	R-PP-1	Petroleum Sumps, Pits, and Well Cellars	Adopted	Adopted
N/A	R-PP-3	Abandoned Well Vents	Deleted	Deleted
N/A	R-PP-4	Petroleum Vacuum Trucks	Deleted	Deleted
N/A	R-PP-5	Cyclic Steam Injection Oil Well Vents	Deleted	Deleted
N/A	R-PP-6	Pseudocyclic Oil Well Vents	Deleted	Deleted
N/A	R-PP-7	Heavy Oil Test Stations	Deleted	Deleted
N/A	R-PP-8	Wet Gas Combustion	Deleted	Deleted
346	R-PP-9	Loading of Organic Liquid Cargo Vessels	Adopted	Adopted
<b>PETROLEUM STORAGE TANKS ROC EMISSION CONTROL MEASURES</b>				
343	R-PT-1	Petroleum Storage Tank Degassing	Adopted	Adopted
325	R-PT-2	Crude Oil Production and Separation	Adopted	Adopted
326	R-PT-2	Storage of Reactive Organic Compound Liquids	Adopted	Adopted
<b>SURFACE COATING ROC EMISSION CONTROL MEASURES</b>				
323	R-SC-1	Architectural Coatings Architectural Coatings (revision)	Adopted Contingency	Adopted Proposed
330 337	R-SC-2	Surface Coating of Metal Parts and Products & Surface Coating of Aircraft or Aerospace Vehicle Parts or Products	Adopted	Adopted
N/A	R-SC-3	Surface Coatings – Industrial Maintenance	Deleted	Deleted
339	R-SC-4	Motor Vehicle & Mobile Equipment Coating Operations	Adopted	Adopted
351	R-SC-5	Surface Coating of Wood Products	Adopted	Adopted
N/A	R-SC-6	Plastics	Deleted	Deleted

**TABLE 4-1**

**APCD CONTROL MEASURES EVALUATED FOR THE 2001 CAP**

<b>Rule #</b>	<b>CAP Control Measure ID#</b>	<b>Control Measure</b>	<b>Federal Requirements</b>	<b>State Requirements</b>
<b>SOLVENT ROC EMISSION CONTROL MEASURES</b>				
320	R-SL-1	Petroleum Solvent Dry Cleaners	Adopted	Adopted
320	R-SL-1	Petroleum Solvent Dry Cleaners (Revision)	Further Study	Further Study
321	R-SL-2	Solvent Cleaning (Degreasers)	Adopted	Adopted
321	R-SL-2	Solvent Degreasers (Revision, to be coordinated with the adoption of Rule 362)	Contingency	Proposed
362	R-SL-2	Solvent Cleaning Operations (Use of Low-ROC or Aqueous Solvents) (New, to be coordinated with a Rule 321 revision)	Contingency	Proposed
329	R-SL-3	Cutback and Emulsified Asphalt	Adopted	Adopted
358	R-SL-4	Electronics Industry – Semiconductor Manufacturing (New)	Contingency	Proposed
349	R-SL-5	Polyester Resin Operations	Adopted	Adopted
N/A	R-SL-6	Solvent Using Industrial and Commercial Processes	Deleted	Deleted
354	R-SL-7	Graphic Arts – Letter/Offset Printing	Adopted	Adopted
N/A	R-SL-8	Asphalt Roofing	Deleted	Deleted
353	R-SL-9	Adhesives and Sealants	Adopted	Adopted
<b>INTERNAL COMBUSTION NO<sub>x</sub> EMISSION CONTROL MEASURES</b>				
333	N-IC-1	I/C Engines (Gas-Fired)	Adopted	Adopted
333	N-IC-1	I/C Engines (Revisions to Rules 333 and 202 – change from 100 to < 50 bhp exemption – to address USEPA concerns)	Contingency	Proposed
333	N-IC-1	I/C Engines (Revisions to Rules 333 and 202 to obtain emission reductions from 40 to < 50 bhp engines, including derated ICEs)	Further Study	Further Study
363	N-IC-2	Gas Fired Turbines (New)	Contingency	Proposed

**TABLE 4-1****APCD CONTROL MEASURES EVALUATED FOR THE 2001 CAP**

<b>Rule #</b>	<b>CAP Control Measure ID#</b>	<b>Control Measure</b>	<b>Federal Requirements</b>	<b>State Requirements</b>
<b>INTERNAL COMBUSTION NO<sub>x</sub> EMISSION CONTROL MEASURES (Continued)</b>				
333	N-IC-3	I/C Engines (Diesel-Fired)	Adopted	Adopted
333	N-IC-3	I/C Engines (Revisions to Rules 333 and 202 – change from 100 to < 50 bhp exemption)	Contingency	Proposed
N/A	N-IC-4	Fuel Burning Platform Equipment	Deleted	Deleted
N/A	N-IC-5	Exploratory Drilling Vessels	Deleted	Deleted
N/A	N-IC-6	Marine Tankers	Deleted	Deleted
N/A	N-IC-7	Lawn and Garden Equipment	Deleted	Deleted
N/A	N-IC-8	Airport Ground Support Equipment	Deleted	Deleted
<b>EXTERNAL COMBUSTION NO<sub>x</sub> EMISSION CONTROL MEASURES</b>				
352	N-XC-1	Residential Water Heaters	Adopted	Adopted
360	N-XC-2	Large Water Heaters and Small Boilers, Steam Generators, and Process Heaters (New)	Contingency	Proposed
352	N-XC-3	Natural-Gas Fired Fan-Type Central Furnaces	Adopted	Adopted
361	N-XC-4	Small Industrial and Commercial Boilers, Steam Generators, and Process Heaters (New)	Contingency	Proposed
342	N-XC-5	Large Industrial and Commercial Boilers	Adopted	Adopted
342	N-XC-6	Process Heaters	Adopted	Adopted
N/A	N-XC-7	Tail Gas Incinerators	Deleted	Deleted
359	N-XC-8	Petroleum Flares & Relief Gas Oxidizers	Adopted	Adopted
N/A	N-XC-9	Solar Water Heaters	Deleted	Deleted
342	N-XC-10	Tank Heaters	Adopted	Adopted
342	N-XC-11	Steam Generators	Adopted	Adopted
345	N-XC-12	Direct Fired External Combustion Units	Further Study	Further Study

**TABLE 4-2**  
**ADOPTED APCD EMISSION CONTROL MEASURES**

Rule #	CAP Control Measure ID	Description	ROC and NO <sub>x</sub> Emission Reductions (tons per day) for Planning Years 2005, 2010, and 2015						Rule Adoption Date	Full Implementation Date
			2005 ROC	2005 NO <sub>x</sub>	2010 ROC	2010 NO <sub>x</sub>	2015 ROC	2015 NO <sub>x</sub>		
341/901	R-GN-1	Landfill Gas Emissions	0.1984		0.2233		0.2506		September 1997	2001
331	R-PG-1	Fugitive Emissions Inspection and Maintenance	1.9758		1.8296		1.6971		December 1991	1992 (1995 OCS)
316	R-PM-1	Gasoline Bulk Plants	0.0022		0.0024		0.0027		November 1990	1992
316	R-PM-2	Gasoline Dispensing Phase I Vapor Recovery	0.0995		0.1045		0.1096		November 1990	1992
316	R-PM-3	Gasoline Dispensing Phase II Vapor Recovery	0.2023		0.2124		0.2225		November 1990	1992
344	R-PP-1	Petroleum Sumps, Pits, and Well Cellars	0.1712		0.1498		0.1299		November 1994	1998
346	R-PP-9	Loading of Organic Liquid Cargo Vessels	0.0018		0.0012		0.0007		October 1992	1995
343	R-PT-1	Petroleum Storage Tank Degassing	0.0000		0.0000		0.0000		December 1993	1994
325	R-PT-2	Crude Oil Production and Separation	0.0728		0.0636		0.0571		January 1994	1996
326	R-PT-2	Storage of Reactive Organic Compound Liquids	Included with Rule 326		Included with Rule 326		Included with Rule 326		December 1993	1995
323	R-SC-1	Architectural Coatings	0.0614		0.0646		0.0672		February 1990	1994
330	R-SC-2	Surface Coating of Metal Parts and Products	0.0885		0.0992		0.1099		November 1990	1992
337	R-SC-2	Surface Coating of Aircraft or Aerospace Vehicle Parts and Products	0.0000		0.0000		0.0000		July 1990	1992

**TABLE 4-2**  
**ADOPTED APCD EMISSION CONTROL MEASURES**

Rule #	CAP Control Measure ID	Description	ROC and NO <sub>x</sub> Emission Reductions (tons per day) for Planning Years 2005, 2010, and 2015						Rule Adoption Date	Full Implementation Date
			2005 ROC	2005 NO <sub>x</sub>	2010 ROC	2010 NO <sub>x</sub>	2015 ROC	2015 NO <sub>x</sub>		
339	R-SC-4	Motor Vehicle and Mobile Equipment Coating Operations	0.0432		0.0462		0.0491		May 1994	1994
351	R-SC-5	Surface Coating of Wood Products	0.0125		0.0140		0.0156		August 1998	2005
320	R-SL-1	Petroleum Solvent Dry Cleaners	0.0001		0.0001		0.0001		June 1979	1985
321	R-SL-2	Solvent Cleaning Operations	0.0949		0.1068		0.1188		July 1997	1998
329	R-SL-3	Cutback and Emulsified Asphalt Paving Materials	0.2018		0.2273		0.2529		February 1992	1992
349	R-SL-5	Polyester Resin Operations	0.0009		0.0011		0.0012		April 1993	1994
354	R-SL-7	Graphic Arts – Letter/Offset Printing	0.0043		0.0046		0.0048		June 1994	1995
353	R-SL-9	Adhesives and Sealants	0.1430		0.1611		0.1792		August 1999	2000
333	N-IC-1 N-IC-3	Stationary Internal Combustion Engines	-0.4472	0.5065	-0.3210	0.3387	-0.2352	0.2234	December 1991	1994 (1995 OCS)
352	N-XC-1 N-XC-2 N-XC-3	Residential and Commercial Space Heaters and Water Heaters		0.0224		0.0280		0.0338	September 1999	2000
342	N-XC-4 N-XC-5 N-XC-6	Boilers, Steam Generators and Process Heaters		0.1042		0.1052		0.1074	March 1992	1996
359	N-XC-8	Petroleum Flares and Relief Gas Oxidizers	*	*	*	*	*	*	June 1994	1999
<b>Total for the APCD Control Measures</b>			<b>2.9274</b>	<b>0.6331</b>	<b>2.9908</b>	<b>0.4718</b>	<b>3.0338</b>	<b>0.3646</b>		

\* This rule is primarily a SO<sub>x</sub> emission control rule. While we expect ROC and NO<sub>x</sub> emission reductions, they are difficult to quantify.

**TABLE 4-3**  
**PROPOSED APCD CONTROL MEASURES<sup>1</sup>**

Rule #	CAP Control Measure ID	Description	Adoption Schedule	Emission Reductions (tons per day) (with full implementation)	
				ROC	NO <sub>x</sub>
323	R-SC-1	Architectural Coatings (Revision)	Near-Term: 2001 – 2003	0.0998	
333	N-IC-1 N-IC-3	Stationary Internal Combustion Engines (Revisions to Rules 333 and 202 – change from 100 to < 50 bhp exemption – to address USEPA concerns)	Near-Term: 2001 – 2003	0.0008	0.0128
360	N-XC-2	Large Water Heaters and Small Boilers, Steam Generators, and Process Heaters (75,000 Btu/hr to < 2 MMBtu/hr) (New)	Near-Term: 2001 – 2003		0.0133 <sup>2</sup>
321	R-SL-1	Solvent Degreasers (Revision)	Mid-Term: 2004 – 2006	0.0562	
362	R-SL-2	Solvent Cleaning Operations (Use of Low-ROC or Aqueous Solvents) (New)	Mid-Term: 2004 – 2006	1.0103	
363	N-IC-2	Gas Turbines (New)	Mid-Term: 2004 – 2006		0.0000
358	R-SL-4	Electronic Industry - Semiconductor Manufacturing (New)	Long-Term: 2007 – 2009	0.0026 <sup>3</sup>	
361	N-XC-4	Small Industrial and Commercial Boilers, Steam Generators, and Process Heaters (2 MMBtu/hr to < 5 MMBtu/hr) (New)	Long-Term: 2007 – 2009		0.0028 <sup>4</sup>
<b>Total for the APCD Control Measures</b>				<b>1.1698</b>	<b>0.0290</b>

<sup>1</sup> Proposed emission control measures are control measures to be adopted for the purpose of attaining the state 1-hour ozone standard and to be identified as *contingency* control measures for the purpose of maintaining the federal 1-hour ozone standard.

<sup>2</sup> This is with 15% implementation, the highest implementation figure available from the District's analysis.

<sup>3</sup> The data shown in this table is for source classification code (SCC) number 3-13-065-06 only. The emission data for the other SCC numbers and the category of emission source (CES) numbers subject to Rule 358 are included in the Rule 321 or Rule 361 emission reduction summaries.

<sup>4</sup> The emission reductions shown are based on Rule 361 being a point-of-sale type rule.

