THE SAN DIEGO AIR BASIN
2001 TRIENNIAL
REGIONAL AIR QUALITY STRATEGY REVISION

August 8, 2001

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO
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SAN DIEGO CA 92123

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INTRODUCTION

The California Clean Air Act (CCAA) requires areas that have not attained state ambient air quality standards for ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide to prepare plans to attain the standards by the earliest practicable date.[1] Each of these standards has been attained in San Diego County, with one exception. San Diego County has been designated by the California Air Resources Board (ARB) as nonattainment of the state ambient air quality standard for ozone.[2] Accordingly, the San Diego Regional Air Quality Strategy (RAQS) was developed pursuant to CCAA requirements and identifies emission control measures to provide expeditious progress toward attaining the state ozone standard. The pollutants addressed are volatile organic compounds (VOC) and oxides of nitrogen (NOx), precursors to the photochemical formation of ozone (the primary component of smog). At harmful levels, ozone impacts lung function by irritating and damaging the respiratory system. Ozone is also harmful to trees and other plants and can damage rubber, plastic, and other materials.

Air quality in the San Diego region has steadily improved because of effective emission controls on motor vehicles and industry. In 2000, air quality was the best on record, with no exceedances of the federal one-hour ozone standard for the second consecutive year.[3] Nevertheless, continued emission reductions are needed in order to attain the more restrictive state ozone standard. Further, continued expansion of motor vehicle usage and population and industrial growth in the region threaten to diminish hard-fought improvements in air quality.[4]

The CCAA requires an air quality strategy to achieve a 5% average annual ozone precursor reduction when implemented or, if that is not achievable, an expeditious schedule for adopting every feasible emission control measure must be included (California Health and Safety Code (H&SC) Section 40914).[5] The RAQS reflects expeditiously adopting every feasible control measure. No air district in the state has demonstrated sustained 5% average annual ozone precursor reductions.

State law also requires annual and triennial progress reports regarding implementation of control measures, and triennial plan revisions, as necessary, to reflect and respond to changing

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[1] California Health & Safety Code Section 40911(a). State law does not require attainment plans for the state particulate matter standard.

[2] The state ozone standard is nine parts per hundred million averaged over one hour, not to be exceeded.

[3] The federal ozone standard is 12 parts per hundred million averaged over one hour, not to be exceeded more than three times in a consecutive three-year period.

[4] Between 2000 and 2020, regionwide population is projected to increase 31% (from 2.9 million to 3.9 million) and civilian employment 27% (from 1.3 million to 1.6 million), according to SANDAG's "2020 Regionwide Forecast (July 1998).

[5] The term "feasible" is not defined in the CCAA. Consistent with ARB guidance, the District considers a measure "feasible" if it is capable of being accomplished in a successful manner within a reasonable period of time, taking into account emission reduction potential, cost-effectiveness, and other economic, environmental, legal, social, technological, and energy factors prevailing in the region.

circumstances (H&SC Sections 40924 and 40925). A district may revise an emission reduction strategy if the district demonstrates to ARB, and the ARB finds, that the modified strategy is at least as effective in improving air quality as the strategy being replaced (H&SC §40925(b)).

The RAQS was adopted by the San Diego Air Pollution Control Board on June 30, 1992, and amended on March 2, 1993, in response to ARB comments. The first and second triennial RAQS revisions were adopted by the Board on December 12, 1995, and June 17, 1998, respectively.

Statutory Requirements

This 2001 Triennial RAQS Revision was prepared pursuant to ARB guidance and complies with all applicable progress report and plan revision requirements of the CCAA, specifically:

- Assess ambient air quality improvement (H&SC §40924(b)(1));
- Compare estimated rates of regionwide emissions reductions over the preceding three-year period to the rates anticipated in the RAQS for that same period, and incorporate updated projections of population, industry, and vehicle-related emissions growth (H&SC §40925(a));
- Identify the proposed and actual dates for adopting and implementing each control measure (H&SC §40924(a)), and compare the expected emission reductions for each control measure to a newly revised estimate (H&SC §40924(b)(2));
- Include an updated schedule for expeditiously adopting every feasible control measure (H&SC §40914(b)(2)); and
- Determine whether or not a state-mandated no-net-increase permitting program is necessary to achieve and maintain state ambient air quality standards by the earliest practicable date (H&SC §40918.6).

OZONE AIR QUALITY IMPROVEMENTS

State law (Health and Safety Code Section 40924(b)(1)) requires a triennial assessment of progress towards attaining the state clean air standards. Accurate, real-time measurements of ambient air pollutant levels are collected throughout the region to identify the nature, extent, and trend of air quality in San Diego County. The number of days the state and federal ozone standards were exceeded between 1990 and 2000 are identified in Table 1. The state ozone standard was exceeded on 24 days in 2000, compared to 139 days just ten years earlier (1990). Over the same ten-year period, the population in the region grew 17% (from 2.5 million to 3 million) and daily motor vehicle mileage increased 20% (from 61 million to 73 million). The tremendous air quality improvement despite this growth clearly shows air pollution control measures are working.

Table 1
San Diego Air Basin
Days Exceeding Air Quality Standards for Ozone
1990-2000

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
State Standard (9 pphm)	139	106	97	90	79	96	51	43	54	27	24
Federal 1-Hour Standard (12 pphm)	39	27	19	14	9	12	2	1	9	0	0

Air Quality Indicators

In addition to monitored air quality data, three statistical indicators are used to assess progress toward attaining the state ozone standard; specifically, regionwide population-weighted and area-weighted annual exposures to ambient ozone concentrations exceeding the state standard, and the expected peak day concentration, which is the maximum daily ozone concentration expected to occur once per year at each monitoring site. Population-weighted exposure is a statistical estimate of outdoor exposure for the average person living in San Diego County. Area-weighted exposure is a statistical measure of exposure in an average square kilometer of the County. The expected peak day concentration indicator tracks progress at each monitoring site, indicating the locations where higher concentrations occur. Each indictor has been computed for San Diego County pursuant to ARB guidance, illustrating changes from a three-year base period (1986-88, because the state Act was enacted in 1988) to a three-year end period (1997-99, because the indicators were computed in 2000). The indicators are averaged over three-year periods to reduce the variable influence of year-to-year meteorology changes and thus to better represent trends.

Exposure Indicators

Population-weighted and area-weighted exposure indicators are presented in Table 2. The analysis indicates population exposure to unhealthy ozone levels has been reduced by 95% between 1986-88 and 1997-99, while area-weighted exposure has been reduced by 84%, indicating substantial improvement.

Table 2
Exposure Indicators

Type of Exposure	Base Period 1986-88	End Period 1997-99	Difference (Base-End)	Percent Reduction
Population-weighted (pphm-hour/person)	109.0	5.7	103.3	95%
Area-weighted (pphm-hour/km^2)	399.7	62.0	337.7	84%

The charted three-year rolling averages of the population-weighted and area-weighted exposure indicators are presented in Figures 1 and 2, respectively. After a brief period of increase in the late 1980s, indicating the need for additional emissions reductions, exposure was reduced rapidly in the early 1990s, with the implementation of many new District rules and state requirements for low-emission vehicles and cleaner-burning gasoline. Since 1996, as air quality has approached the standard, improvement has continued more gradually.

FIGURE 1.
Population-Weighted Ozone Exposure Reduction

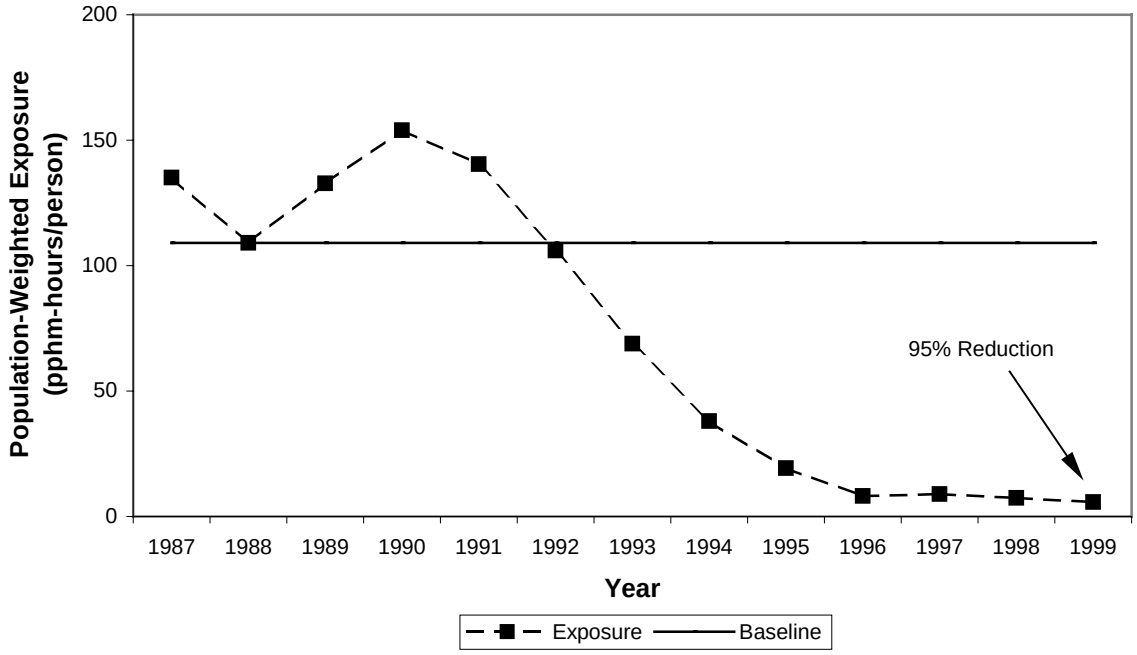
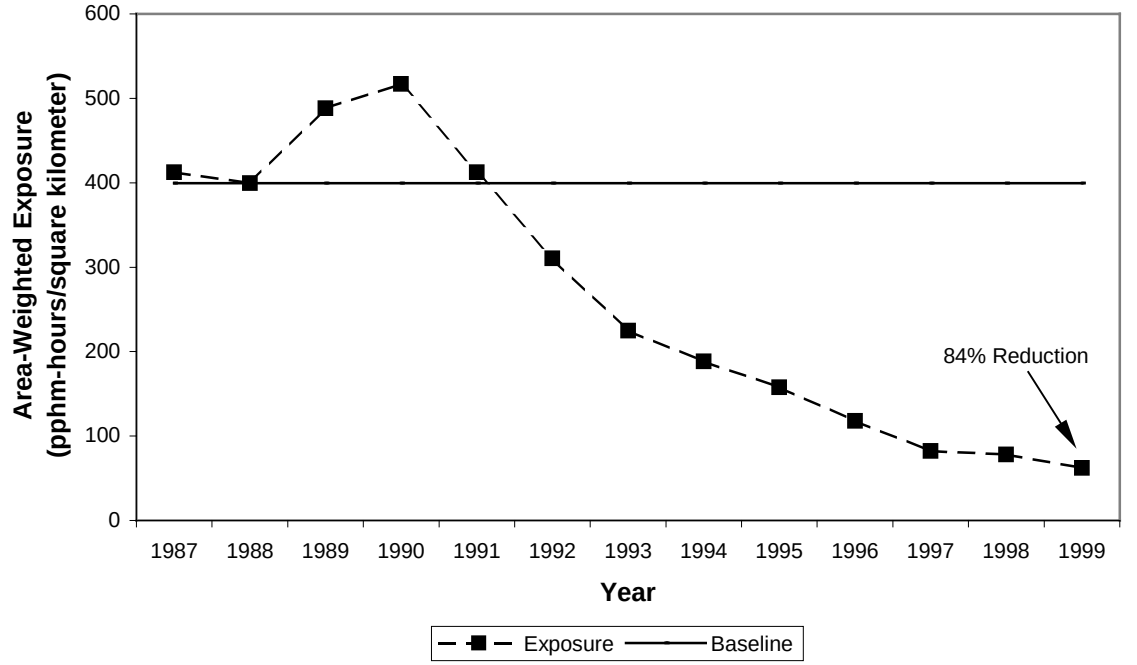


FIGURE 2.
Area-Weighted Ozone Exposure Reduction



Expected Peak Day Concentration (EPDC)

The expected peak day concentration (EPDC) assesses the potential for acute adverse health impacts by tracking progress in reducing peak ozone concentrations at each monitoring site. Progress in reducing the EPDC is displayed in Table 3 for the seven sites in the San Diego Air Basin that have been operating since the 1986-88 base period. Three other sites that began operation after the base period are not included in this long-term trend analysis.

Table 3
Ozone Expected Peak Day Concentration (pphm)

Site	Base Period 86-88	End Period 97-99	Difference (Base-End)	Percent Reduction	Annual Percentage Reduction
Alpine - Victoria Drive	16.7	13.3	3.4	20%	1.9%
El Cajon - Redwood Avenue	14.4	11.0	3.4	24%	2.1%
San Diego - Overland Avenue	15.5	10.9	4.6	30%	2.7%
Escondido - East Valley Parkway	14.5	10.8	3.7	26%	2.3%
Chula Vista - East J Street	13.8	10.8	3.0	22%	2.0%
Oceanside - Mission Avenue	17.1	10.2	6.9	40%	3.7%
Del Mar - Mira Costa College	17.9	9.7	8.2	46%	4.2%

The most dramatic air quality improvements occurred at the Del Mar and Oceanside monitoring sites, which had the two highest ozone concentrations in the 1986-88 base period. Peak ozone levels at these sites decreased by 46% and 40%, respectively, to become the two cleanest sites in the 1997-99 period. The improvement at the coastal sites primarily reflects reduced pollution transported over the ocean from the South Coast Air Basin. The two highest ozone concentrations for the 1997-99 period occurred at the inland monitoring sites in Alpine and El Cajon where there were less dramatic, but still significant, reductions in peak ozone levels (20% and 24% respectively).

Charted year-to-year changes in the EPDC at each of the seven long-term trends monitoring sites are presented in Figures 3 through 9, in Attachment I. The figures indicate ongoing improvement at all sites, despite brief deterioration between 1988 and 1990 that was more than offset by subsequent improvement between 1990 and 1999.

EMISSIONS REDUCTIONS

As indicated in Table 4, estimated emissions reductions over the last three years exceeded previous projections in the RAQS, based on updated emissions inventory data. Regionwide daily VOC emissions decreased 26 tons (285 to 259 tons) between 1997 and 2000, a 3.1% average annual reduction, far exceeding the projected 2.0% reduction. Regionwide daily NOx emissions decreased 20 tons (255 to 235 tons), a 2.7% average annual reduction, exceeding the projected 2.0% reduction. The additional reductions resulted primarily from greater than projected benefits of motor vehicle pollution controls.

TABLE 4
RATES OF REDUCTION 1997 – 2000
VOLATILE ORGANIC COMPOUNDS (VOC) & OXIDES OF NITROGEN (NOx)

Pollutant	Source	Emissions[1] (Tons/Day) 1997	1998[2]	1999[2]	2000[2]	Average Annual Rate of Change 1998 – 2000	Approved 1991 RAQS Rate of Reduction[3] 1998 – 2000
VOC	Stationary Sources	86.3	88.5 (2.5%)	90.6 (2.4%)	91.8 (1.4%)	2.1%	
	Mobile Sources	198.7	187.7 (–5.5%)	176.7 (–5.9%)	167.4 (–5.3%)	–5.6%	
	Total	285.0	276.2 (–3.1%)	267.3 (–3.2%)	259.2 (–3.0%)	**–3.1%**	–2.0%
NOx	Stationary Sources	21.2	20.8 (–1.9%)	20.4 (-1.9%)	20.8 (1.9%)	-0.6%	
	Mobile Sources	233.5	228.2 (–2.3%)	222.9 (–2.3%)	213.9 (–4.0%)	–2.9%	
	Total	254.7	249.0 (–2.2%)	243.3 (–2.3%)	234.7 (3.5%)	**–2.7%**	–2.0%

1998 RAQS IMPLEMENTATION PROGRESS FOR 1998 - 2000

The status of control measures scheduled for adoption during the 1998 - 2000 planning cycle are summarized in Table 5. Four control measures were scheduled for adoption in 1998, two in 1999, and two in 2000. In addition, two other measures were identified for further study regarding potential feasibility. Five of the eight scheduled measures and one study measure have been adopted. The second study measure is now proposed for adoption. The other three measures have been delayed due to unresolved issues regarding feasibility, emission reduction potential, or cost-effectiveness. A detailed discussion of each measure and its status follows Table 5.

[1] Emission inventory data provided by California Air Resources Board, February 28, 2001.
[2] Number in parentheses is percentage change from previous year.
[3] California Air Resources Board, Staff Report on 1991 Regional Air Quality Strategy, October 13, 1992.

TABLE 5
STATUS OF 1998-2000 SCHEDULED MEASURES

Control Measure	1998 RAQS Adoption Schedule	Actual Adoption Date	Year of Full Imple-mentation	Pollutant	1998 RAQS Expected Emission Reductions (tons/day)	2001 RAQS Revised Emission Reductions (tons/day)
MEASURES ADOPTED DURING 1998-2000						
Low-NO_X Furnaces	1998	6/17/98	2008	NO_X	0.30	0.30
Low-NO_X Water Heaters	1998	6/17/98	2008	NO_X	0.87	0.87
Adhesives Operations	1998	12/16/98	1998	VOC	0.22	0.76
Stationary Combustion Turbines BARCT	1998	12/16/98	2002	NO_X	0.38	0.07
Stationary Reciprocating Internal Combustion Engines BARCT	1999	11/15/00	2003	NO_X	0.68	1.32
Further Control of Transfer of VOC to Mobile Transport Tanks	Study	7/26/00	2000	VOC	—	0.00
STUDY MEASURE PROPOSED FOR ADOPTION						
Bulk Gasoline Storage Tank Degassing	Study	2001	2001	VOC	0.75	0-0.71
DELAYED MEASURES						
Further Control of Solvent Cleaning Operations	1999	Delayed	—	VOC	0 - 0.9	0 - 0.9
Further Control of Bakery Ovens	2000	Delayed	—	VOC	0 - 0.1	0 - 0.02
Plastic, Rubber, Composite, and Glass Coating	2000	Delayed	—	VOC	0.10	0 - 0.03

ADOPTED MEASURES

Low-NOx Water Heaters and Furnaces (Adopted New Rules 69.5 and 69.6)

Rule 69.5 (Natural Gas-Fired Water Heaters) and Rule 69.6 (Natural Gas-Fired Fan-Type Central Furnaces) were adopted on June 17, 1998, effective January 1, 1999. Because the rules were adopted on the same date as the 1998 RAQS, the analyses of these control measures as presented in the 1998 RAQS were final and do not need updating.

Adhesives (Adopted New Rule 67.21)

Rule 67.21 (Adhesive Material Application Operations) was adopted on December 16, 1998, effective June 16, 1999. It requires limiting the VOC content of adhesives and cleaning materials, using high-transfer efficiency application equipment where practicable, and limiting emissions from application equipment cleaning operations. The rule is consistent with the statewide Best Available Retrofit Control Technology (BARCT) determination for adhesive operations issued by ARB in December 1998.

Analyses conducted during Adhesives rule development (subsequent to the preliminary analyses conducted for the 1998 RAQS) indicated adhesives use caused approximately 1,578 tons of VOC emissions in 1998, twice the emissions estimated in the 1998 RAQS for this emissions source category. Most of these emissions are attributed to sources not subject to District permits, such as construction (flooring, carpeting, roofing, etc.). The 84 permitted adhesive coating operations in San Diego County emitted an estimated 71 tons per year of VOC.

The Adhesives rule is estimated to provide emission reductions of 276 tons per year (0.76 tons per day) at a cost-effectiveness ranging between a savings of $8.80 and a cost of $3.20 per pound of VOC reduced, depending on the type of adhesive and application operation. In the 1998 RAQS, the measure was anticipated to provide VOC reductions of only 0.22 tons per day, at a higher range of costs.

Further Control of Stationary Gas Turbine Engines (Adopted New Rule 69.3.1)

Rule 69.3.1 (Stationary Gas Turbine Engines – BARCT) was adopted on December 16, 1998. The rule applies to 31 turbines at 10 facilities that emitted 479 tons of NOx per year in 1997. However, most of the turbines already complied with the rule prior to its adoption. The only three turbines that required modification, replacement, or additional air pollution control equipment to comply with the rule, were at the end of their useful life and due for replacement. Because the replacement turbines were derated to avoid triggering the more stringent standards in the rule that would have required add-on control equipment, the estimated total annual reductions in NOx emissions resulting from full implementation of Rule 69.3.1 are only 24 tons per year (0.07 ton per day). The 0.38 ton per day NOx reduction anticipated in the 1998 RAQS assumed application of the more stringent standards.

Further Control of Stationary Reciprocating Internal Combustion Engines (Adopted New Rule 69.4.1)

Rule 69.4.1 (Stationary Reciprocating Internal Combustion Engines – BARCT) was adopted on November 15, 2000. The rule imposes more stringent NOx, carbon monoxide (CO), and VOC emission standards on stationary internal combustion engines rated at 50 brake horsepower or more, depending on the type of engine, mode of operation, type of fuel used, and annual hours of operation. Approximately 207 engines at 90 businesses are affected. Approximately 44% of these engines complied with the tighter emission standards prior to rule adoption. The rule also affects approximately 900 emergency standby engines by specifying annual maintenance requirements and requiring use of cleaner-burning California Diesel Fuel. Upon full implementation in 2003, NOx emissions from existing sources will be reduced by a maximum of 481 tons per year.

The cost-effectiveness of Rule 69.4.1 varies depending on engine size, hours of operation, and type of emission control technology. The cost-effectiveness for combustion modification and engine replacement ranges from $0.30 to $3.80 per pound of NOx controlled. The cost-effectiveness for typical add-on controls ranges from $2 to $7 per pound of NOx controlled. Rule 69.4.1 allows an engine owner or operator to choose the most cost-effective control option meeting the applicable emissions standards.

Further Control of Transfer of VOC into Mobile Transport Tanks (Amended Rule 61.2)

In the 1998 RAQS, there was a commitment to examine existing Rule 61.2 (Transfer of VOC into Mobile Transport Tanks) for potential rule amendment to lower the exemption threshold level from five million gallons throughput per year to 500,000, as recommended by ARB. The lower threshold was subsequently determined feasible, and associated rule amendments were adopted on July 26, 2000. However, no facilities were affected and, therefore, no emissions reductions were provided. The exemption threshold was lowered, even though it had no effect, because other necessary amendments to the rule were already being adopted, and the exemption threshold change was included as an additional amendment to address any future new or modified installations of the applicable size.

STUDY MEASURE PROPOSED FOR ADOPTION

Bulk Gasoline Storage Tank Degassing

This control measure, originally proposed in the 1991 RAQS, requires add-on control equipment for degassing of above-ground gasoline storage tanks at bulk plants and bulk terminals during cleaning, repairing, or decommissioning operations. In the 1998 RAQS, there was a commitment to evaluate the measure to determine if it can be implemented using existing New Source Review (NSR) permitting rules. In the past, District permits were not required for tank degassing operations.

Bulk gasoline storage tank degassing operations occur relatively infrequently, on average about five times per year, usually lasting two days per occurrence. Existing Rule 61.1 (Receiving and Storing VOC at Bulk Plants and Bulk Terminals) prohibits bulk storage tank degassing during the peak ozone season (May through October) and requires written District authorization for tanks to be degassed during November through April and compliance with any District-imposed conditions. Once or twice a year, tank degassing has been allowed during the peak ozone months of May through October under variances granted by the District Hearing Board, generally with conditions limiting operations to certain times and prohibiting a public nuisance. While emissions control was recommended, it was not required.

Because of the relatively few bulk storage tank degassing operations in San Diego, such jobs are handled by out-of-county companies, mostly from the South Coast AQMD area. South Coast AQMD Rule 1149 regulates emissions from storage tank cleaning and degassing, requiring VOC emissions be controlled by at least 90%. Many companies have been permitted in the South Coast AQMD to conduct degassing operations in compliance with Rule 1149. The operators of two of the largest bulk gasoline storage facilities in San Diego report they use companies permitted in the South Coast AQMD and that these companies use their emission control equipment and procedures when degassing tanks in San Diego.

If all five degassing operations that typically occur in a year were uncontrolled, combined annual VOC emissions would be approximately 7.9 tons per year, averaging 0.79 ton per day during the approximately ten days per year when these operations occur. In the cases where control equipment is being used, emissions are 0.08 ton per day.

Following Board adoption of the 2001 Triennial RAQS Revision, VOC control equipment (providing at least 90% control) will be required for bulk storage tank degassing operations. Additionally, the equipment must be permitted, either by the District under existing Rule 10 (Permits Required) or by another air district. If portable equipment used for tank degassing in San Diego is already permitted by another air district (such as South Coast AQMD) and is already equipped with VOC emission controls providing at least 90% control, a new permit would not be required. Rather, the use of such equipment will be allowed provided that: (1) the degassing operations comply with the permitting air district's emission control requirements; (2) the District is notified in advance of such operations and approves the operations in writing (in lieu of a District permit); and (3) the District is provided access to the facility to observe and/or test the operations. Conversely, if the equipment is not already permitted, the District would require an Authority to Construct and Permit to Operate, and evaluate the equipment for compliance, including NSR requirements for Best Available Control Technology.

It is also proposed to revise Rule 12.1 (Portable Equipment Registration) to ensure that such equipment used in San Diego County is operated properly and is registered or permitted with an air district. This measure will be implemented by policy until Rule 12.1 is appropriately amended in the 2001-2003 planning cycle.

Maximum potential emissions reductions anticipated from implementing the measure would be 0.71 ton per day for as many as ten days per year. However, to the extent that such operations are already controlled, reductions are less. Since a significant fraction of the sources are already

using controls, the controls are considered cost-effective, and thus an updated cost-effectiveness value has not been calculated for the measure.

DELAYED MEASURES

The following measures have been delayed due to unresolved issues regarding feasibility, emission reduction potential or cost-effectiveness.

Further Control of Solvent Cleaning Operations (Amend Rule 67.6)

In the 1998 RAQS, amending Rule 67.6 (Solvent Cleaning Operations) to further control VOC emissions was scheduled for adoption in 1999, to the extent determined feasible during subsequent rulemaking. Rule amendments were intended to reflect the control requirements in South Coast AQMD Rules 1122 and 1171, which are more stringent than those previously identified as BARCT in the statewide BARCT determination. The amendments were not adopted due to questionable cost-effectiveness, concerns regarding the feasibility of aqueous cleaning technology as a replacement for all existing cold solvent cleaners, and concern about the actual effectiveness of the South Coast AQMD rules.

According to ARB, the South Coast AQMD rules contain the following requirements that are not in District Rule 67.6:

- Solvent VOC limit of 50 grams per liter for cold cleaners, including remote reservoirs and open-top dip tanks; or airless or air-tight cleaning systems for cold cleaners using high-VOC solvents;
- freeboard ratio of 0.75 for all open-top dip tanks;
- requirement for a superheated vapor system or secondary freeboard chiller for open top vapor degreasers;
- freeboard ratio of 1.0 for all open-top vapor degreasers; and
- automated parts handler.

These and other potential control requirements were evaluated to determine their technical feasibility, potential VOC reductions, and cost-effectiveness for San Diego County sources. Attachment II contains a copy of the 1999 analysis, which was submitted to ARB with the 1999 Annual Report on RAQS implementation.

The small size of most open-top dip tanks in San Diego County limits the feasibility of increasing their freeboard ratios. Approximately 72% of these units would need to be replaced to increase the freeboard ratio from 0.5 to 0.75. The requirement would result in relatively small emission reductions of only 3.6 tons per year and would cost $5.24 per pound of VOC reduced.

The small number of vapor degreasers in San Diego County already emit so little VOC that freeboard improvements on those units would provide less than a quarter of a ton per year additional emission reductions.

The cost-effectiveness of water-based or low-VOC cleaning systems is primarily affected by the VOC emission rate of the unit being replaced and the increased electricity needed to heat and pump aqueous solvents in the new replacement unit. Over 86% of the approximately 5,100 degreasing units in San Diego are small remote reservoirs with VOC emissions of less than 0.324 pounds per day, or 118 pounds per year, each. While equipment replacement costs were not significant when annualized over a five-year period, the increased operating costs due to electricity, hazardous waste disposal, and potential increases in labor requirements were fairly high compared to the small emission reduction per unit. The lowest and average cost-effectiveness values calculated in 1999 for these units were $4.36 and $5.26, respectively, per pound of VOC reduced, which is substantially higher than the District's 1999 rule development cost-effectiveness rate of $2.50[1] for VOC control measures. Thus, the measure was not adopted in 1999, due to questionable cost-effectiveness and concerns regarding the feasibility of this technology as a replacement for all existing cold solvent cleaners. However, there was a commitment to periodically reevaluate the feasibility of the measure.

Since then, electricity rates have risen rapidly and become quite unstable. For this RAQS Revision, the cost-effectiveness of water-based cleaning systems was recalculated, reflecting increased electricity costs for heating and pumping aqueous solvents. (See Attachment III.) The previous (1999) conclusions have not changed. Due to rising electricity rates, the costs of the measure increased from the 1999 range of $3.99-$18.89 to $6.67-$31.38 per pound of VOC controlled.

Further, there is concern about the actual effectiveness of South Coast AQMD's Rules 1122 and 1171, on which this RAQS control measure is based. Discussions with cleaning-unit retailers and consultants working in South Coast have revealed that many South Coast businesses remain dependent on petroleum-based cleaning solvents, thereby reducing the emission reduction benefits of the regulation. Therefore, ARB has been requested to conduct a rule-effectiveness study of the South Coast measures to determine compliance rates, actual emission reductions, and actual compliance costs. A rule-effectiveness study would also identify industrial sectors or applications where implementing the requirements has proved infeasible, so District rulemaking can focus on feasible elements of the control measure. Upon completion of the rule-effectiveness study, timely consideration of appropriate Rule 67.6 amendments will proceed, incorporating any necessary modifications in light of the study results.

Additionally, the option of using airless or airtight solvent cleaning systems will be included as an alternative in a future amendment of Rule 67.6. However, it is not being considered a control measure nor credited with any emissions reduction because it will only be an alternative compliance option.

Further Control of Bakery Ovens (Amended Rule 67.24)

In the 1998 RAQS, amending Rule 67.24 was scheduled for 2000 to meet BARCT requirements by lowering the exemption threshold from 50 to 25 tons per year and increasing the VOC control requirement from 90% to 95%. Adoption of the measure has been delayed because there are

[1] The District's cost-effectiveness reference level for VOC control measures is currently being reevaluated.

currently no bakeries in San Diego County with VOC emissions between 25 and 50 tons per year, and thus the lower threshold will not result in any emission reductions. Additionally, the District has discovered data that casts doubt on whether the 95% control requirement can feasibly be achieved.

Based on a preliminary evaluation, it appears the source tests of several of the districts with bakery rules have been measuring ethanol rather than VOC reductions, though their rules require control of VOC. In addition, technical issues with the source tests performed in districts with the 95% control requirement have been identified. District and ARB staff are working together to investigate this issue further. Since ethanol is transformed into other VOC species in the control device, attaining a given level of control is more challenging when accounting for all VOC emissions rather than just ethanol. Therefore, reducing VOC emissions by 95% may not be feasible. Accordingly, adopting the proposed control measure will be delayed until these technical issues are resolved. The lower 25 tons per year exemption threshold will also be delayed. Amending the rule at this time, solely to add a provision which has no current emission reduction effect, would not be a prudent resource allocation.

If determined feasible, the increased control effectiveness for the single affected bakery would result in a VOC emissions reduction of only five tons per year (0.02 ton per day). In the 1998 RAQS, potential emission reductions were estimated at up to 0.1 ton per day, assuming a second bakery would be controlled due to the lowered threshold. The incremental cost-effectiveness for the increased control is estimated to be about $3 per pound of VOC reduced, if the proposed control technology is capable of providing the required level of control.

Plastic Parts, Rubber, Composite, and Glass Coating Operations (Adopt a New Rule)

In the 1998 RAQS, the Plastic Parts, Rubber, Composite, and Glass Coating control measure was scheduled for adoption in 2000, to the extent determined feasible during subsequent rulemaking. The control measure would require using low-VOC coatings and cleaning materials and high-transfer efficiency application equipment, or alternatively, add-on control equipment, to reduce VOC emissions. In 1998, the estimated VOC emission reduction potential was 24 tons per year, based on a 1997 inventory indicating 36 facilities emitting approximately 110 tons per year.

However, further investigation during rule development in 2000 revealed reductions of only about seven tons per year could be achieved. Changes in the industry are largely responsible for the decreased potential emission reduction. Since 1998, five facilities have closed, reducing emissions by 42.8 tons per year. Additionally, several facilities have switched cleaning solvents to acetone, further reducing emissions by an additional 5.6 tons per year. Finally, two new facilities were required to install controls to meet Best Available Control Technology requirements and, therefore, represent an emission increase of only 0.3 ton per year. Thus, emissions available for control by the new rule have been reduced by more than 48.1 tons per year (a 44% decrease from the 1997 baseline) and, therefore, the emission reduction potential has decreased to only seven tons per year (0.03 ton per day). Therefore, the measure is being delayed, to be reconsidered for adoption during the next triennial planning cycle after higher-reduction control measures are developed.

ADDITIONAL MEASURES FOR 2001 TRIENNIAL RAQS REVISION

To ensure continued compliance with the requirement to implement every feasible control measure requirement, recent rulemaking activities at other districts were reviewed to identify additional measures that have been implemented elsewhere that may be feasible for San Diego County sources. ARB's Identification of Performance Standards for Existing Stationary Sources: A Resource Document was also reviewed.

As a result, Table 6 reflects three additional feasible control measures to be adopted during the 2001-2003 planning cycle, as well as one potential measure to be further evaluated to determine feasibility. (A description of each measure follows the table.) Based on preliminary evaluation, the scheduled control measures shown in Table 6 appear cost-effective and are anticipated to reduce VOC emissions by approximately 3.5 tons per day and NOx emissions by approximately one ton per day. The indicated adoption schedule is as expeditious as practicable, considering the staffing resources available and time necessary to develop rules, conduct the public review process, and present the rules to the District Board for adoption.

TABLE 6
ADOPTION SCHEDULE FOR ADDITIONAL FEASIBLE MEASURES

Control Measure	Adoption Schedule	Year of Full Implementation	Pollutant	Estimated Emission Reductions (tons/day)
ADDITIONAL SCHEDULED MEASURES				
Further Control of Architectural Coatings	2001	2004	VOC	1.5
Enhanced Vapor Recovery	2002	2008	VOC	2
Further Control of Water Heaters	2003	2014	NO_X	1
STUDY MEASURE				
Small Boilers and Large Water Heaters	—	—	NO_X	—

SCHEDULED MEASURES

Further Control of Architectural Coatings (Amend Rule 67.0)

Further Control of Architectural Coatings was listed as an unscheduled measure in the 1991 RAQS, due to pending litigation on a similar measure in the South Coast district, which has since been resolved. Subsequently, the ARB and districts coordinated on development of a suggested control measure (SCM) for architectural coatings. The ARB approved the SCM on June 22, 2000. The District intends to amend Rule 67.0 (Architectural Coatings) in late 2001 as necessary and appropriate to reflect the SCM. ARB staff estimate that implementing the SCM would

reduce VOC emissions in San Diego County by 1.5 tons per day, with an average cost-effectiveness of about $3.20 per pound of VOC reduced.

Enhanced Vapor Recovery Program (Amend Rules 61.3 and 61.4)

On March 23, 2000, the ARB approved the enhanced vapor recovery program. The program is intended to correct deficiencies in current vapor recovery systems at gasoline stations and require improved systems that will provide additional emissions reductions. The technologies required to implement certain elements of the state program are not yet fully developed and, therefore, implementation is being phased-in to allow development and commercialization of the necessary technologies. The District is continuing to work with stakeholders to ensure phase-in of various portions of the new standards is feasible. Additionally, ARB has indicated program elements that are technology-forcing will be reevaluated in 2002, and could be modified, depending on the results.

Upon completion of ARB's technology review in 2002, the District intends to amend Rule 61.3 (Transfer of VOC into Stationary Storage Tanks) and Rule 61.4 (Transfer of VOC into Vehicle Fuel Tanks) as necessary and appropriate to implement feasible or mandatory elements of the enhanced vapor recovery program. When program implementation is complete in 2008, ARB estimates the maximum potential reduction in VOC emissions in San Diego County is approximately two tons per day, with a cost-effectiveness of $1.80 per pound of VOC reduced. Actual emission reductions could be less, depending on future commercial availability and actual in-use performance of these technologies.

Further Control of Residential Water Heaters (Amend Rule 69.5)

Rule 69.5 (Natural Gas-Fired Water Heaters) is proposed for amendment to reduce the NOx emissions limit from 40 nanograms of NOx per joule of heat output to 20 nanograms per joule, consistent with South Coast AQMD Rule 1121, amended December 10, 1999. Rule 1121 requires all new and replacement water heaters, sold starting July 1, 2002, to meet the tightened NOx limit. The rule is technology forcing because it relies on the assumption that development, testing, and commercialization of a low-NOx burner similar to the existing burner, with minimal changes to the manufacturing line, will be completed by that time. In late 2002, the availability of complying units will be assessed. If adequate complying units are available and cost-effective, Rule 69.5 will be amended in 2003, effective for units installed starting in 2004. Assuming a ten-year useful life for water heaters, it will then take ten years for all the water heaters in the County to be replaced with complying units. Emissions reductions are estimated to be approximately one ton of NOx per day upon full implementation in 2014. South Coast AQMD estimated a cost-effectiveness ranging from $1.00 to $2.70 per pound of NOx reduced.

South Coast AQMD Rule 1121 also contains a further technology-forcing limit of 10 nanograms per joule, applicable in 2005. Because that emission limit has not yet been determined to be feasible, and because the implementation date is outside the planning cycle addressed by this triennial RAQS revision (2001-2003), adopting that emission limit is not being proposed at this time.

STUDY MEASURE

Large Water Heaters and Small Boilers, Steam Generators, and Process Heaters Between 75,000 Btu/hour and 5 MMBtu/hour

Existing Rule 69.2 (Industrial and Commercial Boilers, Steam Generators, and Process Heaters) applies to units rated five million Btu/hour and larger. Existing Rule 69.5 (Natural Gas-Fired Water Heaters) applies to water heaters smaller than 75,000 Btu/hour. The feasibility, emissions reduction potential, and cost-effectiveness of potential control measures for units sized between 75,000 and five million Btu/hour will be evaluated. This control measure is not scheduled for adoption, but may be scheduled in a future plan update if it is determined feasible.

NO-NET-INCREASE DEMONSTRATION

On November 4, 1998, amendments to New Source Review (NSR) Rules 20.1-20.4 were adopted, repealing state emission offset requirements for new or modified sources with the potential to emit 15 tons per year or more of NOx or VOC, as authorized by state law (H&SC Section 40918.5). (State emission offset requirements are also referred to as the state no-net-increase program.) Offsets are emission reduction credits created by using more stringent emission controls than required on existing emission sources, or resulting from stationary sources that permanently cease emitting activities (shutdowns). Other provisions of NSR rules remain in effect, including state requirements for Best Available Control Technology on equipment emitting ten pounds per day or more, and federal requirements for Lowest Achievable Emission Rate control technology and emission offsets for specified projects at major sources (new or modified facilities with the potential to emit 50 tons per year or more of VOC or NOx).

On December 17, 1998, the ARB issued an Executive Order conditionally approving the repeal. The approval was conditioned on tracking of emission increases associated with permitting actions that would otherwise have triggered state offset requirements. Secondly, pursuant to state law, the impact of program repeal must be reviewed triennially to determine whether the program remains unnecessary to maintain progress toward attaining and maintaining state ambient air quality standards by the earliest practicable date. ARB guidance indicates the critical test is ensuring program elimination would not halt or reverse an existing trend of decreasing total regionwide emissions.

Pursuant to state law and ARB guidance, the air quality impact of repealing state emission offset requirements has been reevaluated (Attachment IV). The analysis indicates the repeal has not resulted in any net increase in regional emissions and therefore the requirements remain unnecessary to maintain progress toward attaining and maintaining state ambient air quality standards by the earliest practicable date in San Diego County.

CONCLUSION

Pursuant to state law, a revised control strategy must be at least as effective in improving air quality as the strategy which is being replaced (H&SC Section 40925(b)). While three measures scheduled in the 1998 RAQS have been delayed due to issues regarding technical feasibility, emission reduction potential, or cost-effectiveness, the measures have been retained in this 2001 Triennial RAQS Revision and rule adoption will be pursued, if appropriate, after the issues are resolved. Therefore, the overall emission reduction benefits of the previous strategy have been retained. Moreover, three new measures have been scheduled for adoption during the 2001-2003 planning cycle, providing an additional 3.5 tons per day and one ton per day reduction in VOC and NOx emissions, respectively. Consequently, the 2001 Triennial RAQS Revision will result in more reductions of ozone precursors than the previous strategy and is more effective in improving air quality.

ATTACHMENT I
SAN DIEGO REGIONAL AIR QUALITY IMPROVEMENT

Charted year-to-year changes in the expected peak day concentration at each long-term trends monitoring site are presented in Figures 3 through 9.

FIGURE 3.
Expected Peak Day Concentration
(EPDC) Reductions at Alpine-Victoria Drive Site

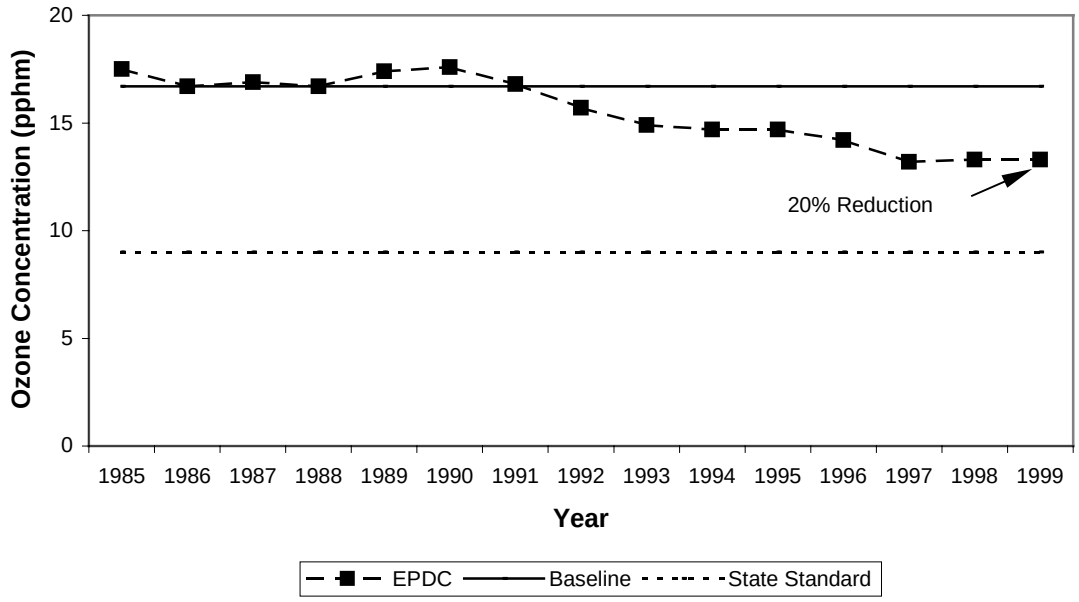


FIGURE 4.
Expected Peak Day Concentration
(EPDC) Reductions at El Cajon-Redwood Avenue Site

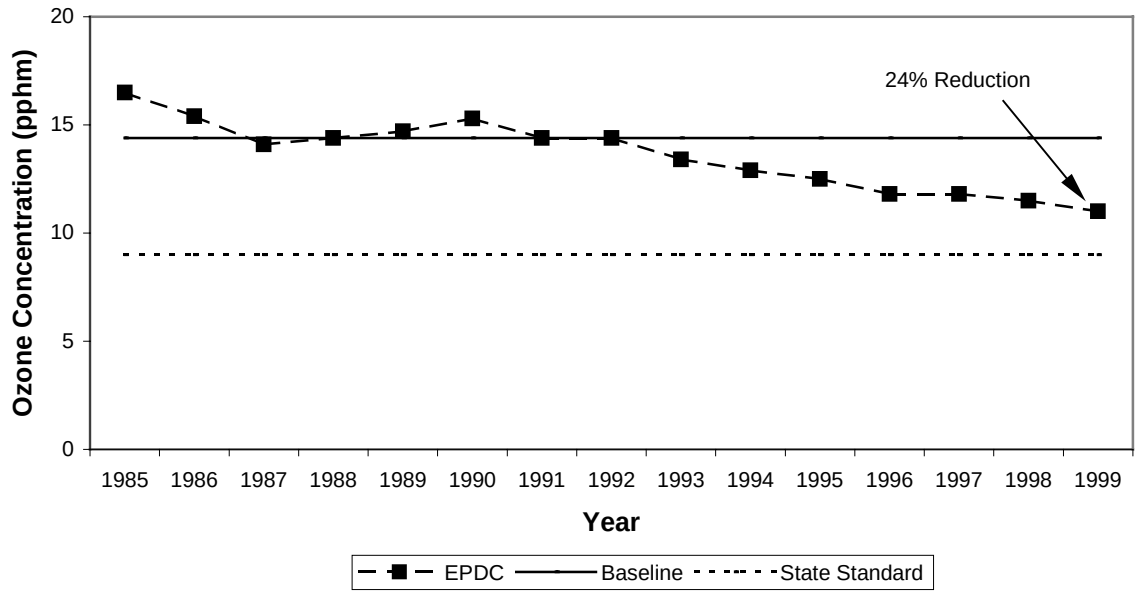


FIGURE 5.
Expected Peak Day Concentration
(EPDC) Reductions at San Diego-Overland Avenue

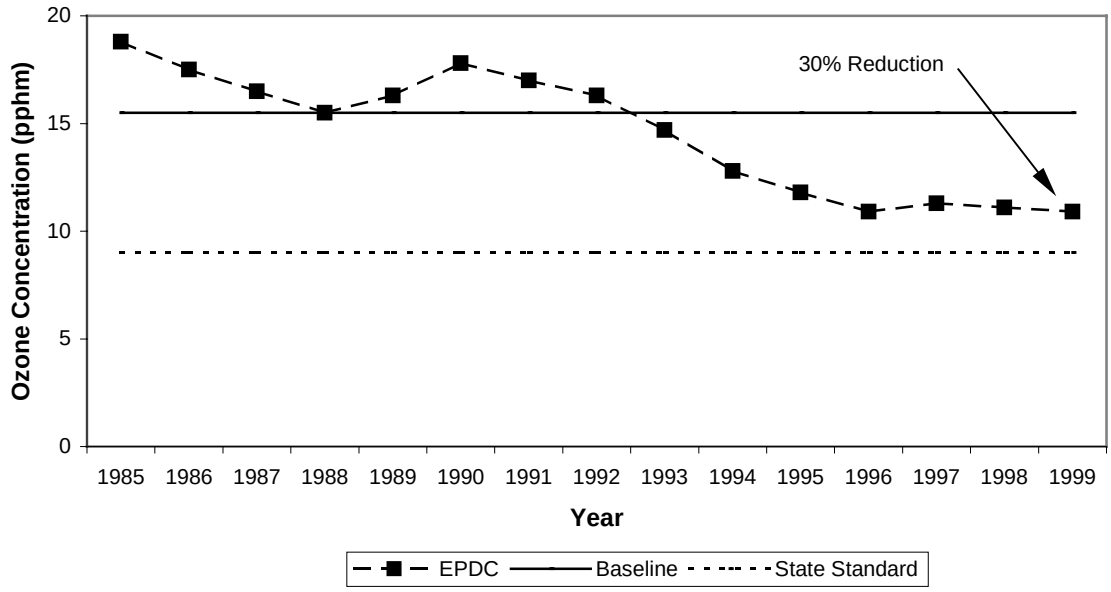


FIGURE 6.
Expected Peak Day Concentration
(EPDC) Reductions at Escondido-East Valley Parkway Site

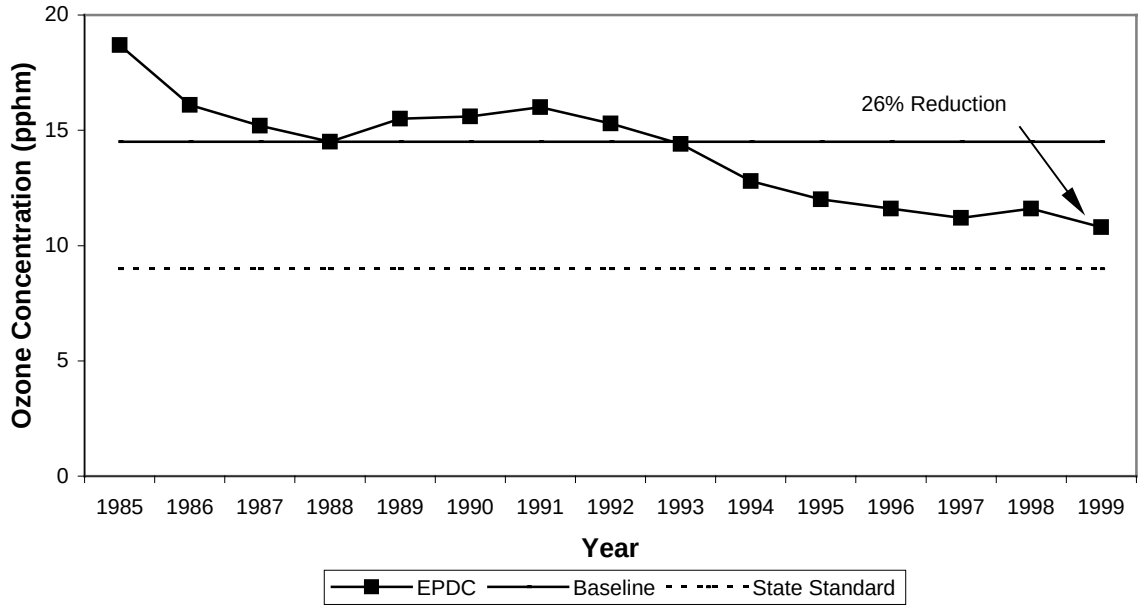


FIGURE 7.
Expected Peak Day Concentration
(EPDC) Reductions at Chula Vista Site

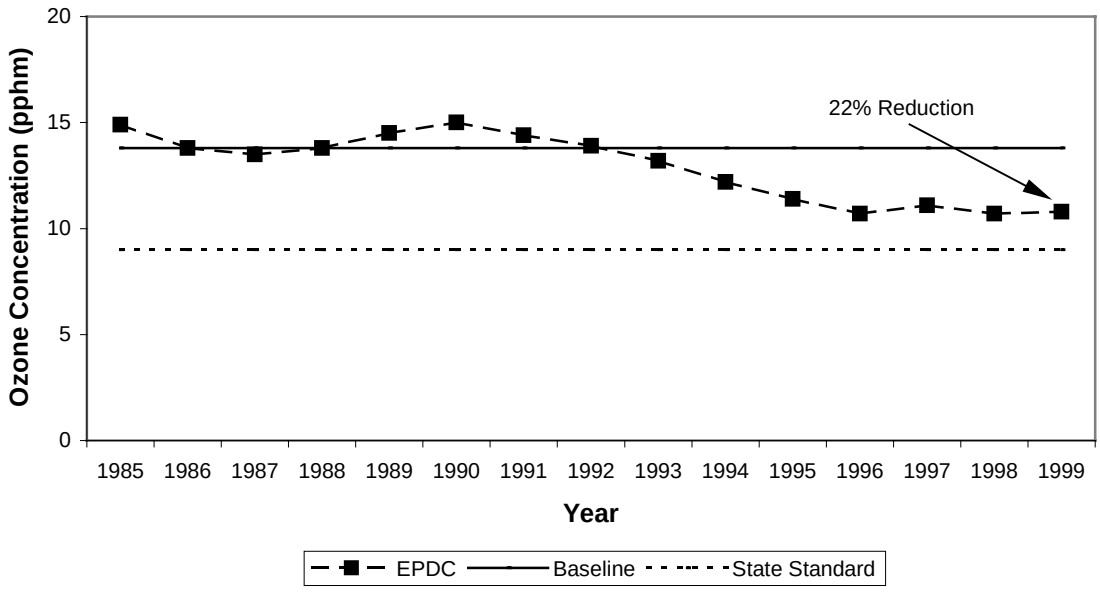


FIGURE 8.
Expected Peak Day Concentration
(EPDC) Reductions at Oceanside-Mission Avenue Site

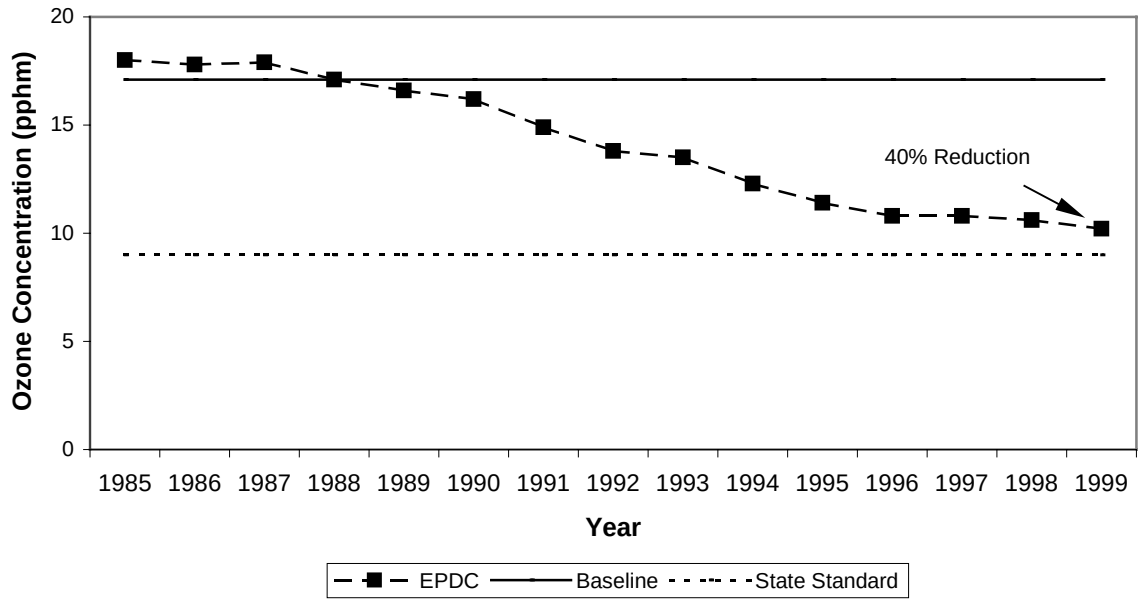
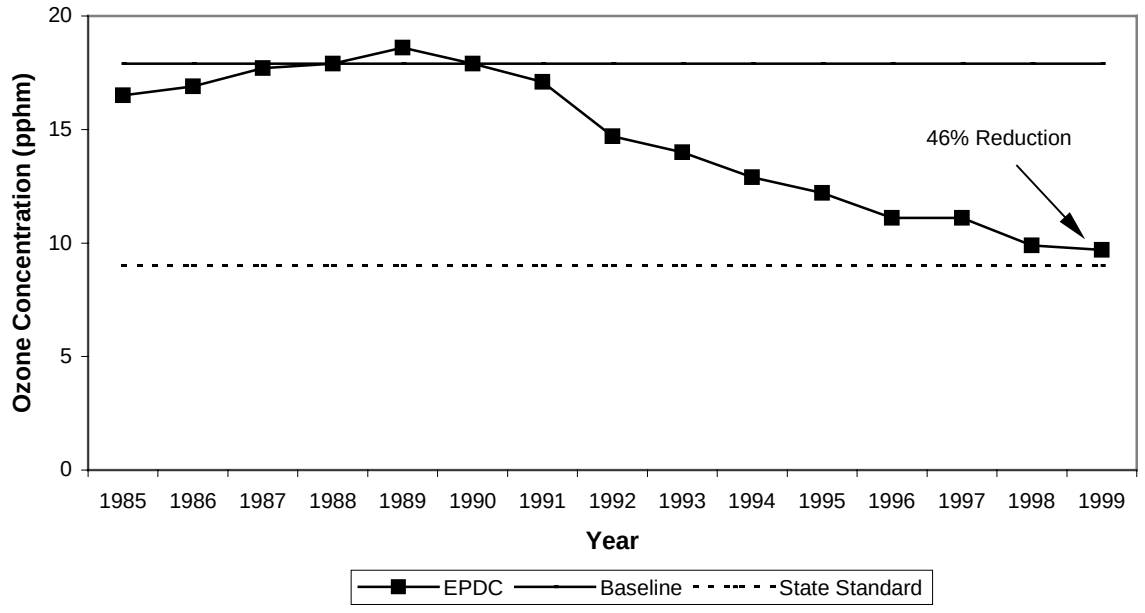


FIGURE 9.
Expected Peak Day Concentration
(EPDC) Reductions at Del Mar-Mira Costa College Site



ATTACHMENT II

**TECHNICAL FEASIBILITY ASSESSMENT
AND COST-EFFECTIVENESS ANALYSIS OF
POTENTIALLY FEASIBLE CONTROL MEASURES FOR RULE 67.6**

Executive Summary

This report assesses the technical feasibility and cost-effectiveness of adopting and implementing additional VOC emission control measures identified in the 1998 RAQS. Specifically, based on additional control measures adopted in the South Coast AQMD, the Air Resources Board recommended that the District evaluate the same measures, and propose amendments to Rule 67.6 - Solvent Cleaning Operations. Rule 67.6 regulates several types of solvent cleaning devices, such as remote reservoir cleaners, cold solvent dip tanks, and open-top solvent vapor cleaners.

The District considers a VOC emission control strategy to be cost-effective at or below $2.50 per pound of VOC reduced. This is based on the cost-effectiveness of VOC control rules adopted over the last five years.

The first control measure, which consists of increasing the freeboard height for cold solvent dip tanks, was determined to be technically feasible, but not cost-effective. Approximately 72% of existing dip tanks would need to be replaced to comply with this control measure. While the remaining 28 percent of dip tanks would not require replacement, there is no clear criteria (such as surface area size) which would allow this control measure to be applied only to these units. The cost-effectiveness of bringing all units into compliance would be $5.24 per pound of VOC reduced.

The second control measure would limit the VOC content of cleaning materials to less than 50 grams per liter by utilizing exempt solvents or aqueous cleaning solutions. This was determined to be technologically feasible for some, but not all applications. This control measure is not considered cost-effective. Cost-effectiveness ranged from $3.99 to $18.89 per pound of VOC reduced, depending on the type and size of the current and replacement equipment.

The third control measure would require the use of airless or airtight cleaning systems when using greater than 50 grams per liter VOC content cleaning solvents. A few airless and airtight cleaning systems have been permitted in the District to replace vapor degreasers using halogenated solvents subject to the federal NESHAP. For the vast majority of solvent-based cleaning operations, remote reservoir cleaners and low-vapor pressure cold solvent dip tanks, the equipment costs alone of this control measure would be prohibitive and the measure would not be cost-effective. For certain high-vapor pressure cold solvent dip tanks and vapor degreaser operations, the use of airless or airtight cleaning systems may be technically feasible. However, the cost-effectiveness of this control measure for those few sources, based only on equipment purchase costs and solvent savings, would be at least $10.00 per pound of VOC reduced. This does not include the annual operating and maintenance costs for this equipment. The control measure is not considered cost-effective as a VOC emission reduction strategy.

The maximum potential VOC emission reductions from the first and second control measures are 3.6 tons per year and 335 tons per year, respectively. However, since the above three measures may not be technologically feasible for all applications and are not considered cost-effective compared to other District stationary source VOC control measures, the District is not recommending that Rule 67.6 be amended to include these as feasible control measures. The District will continue its analysis of these control measures and will periodically review the status of the others. If any are determined to be technically feasible and cost-effective, and the District can adequately address adverse socio-economic or environmental impacts, the District will propose appropriate amendments to Rule 67.6.

Background

In the 1998 RAQS for San Diego County, the District agreed to review the feasibility of adopting control measures similar to those adopted by South Coast AQMD for solvent cleaning operations. The following potentially feasible control measures were identified: increasing the minimum freeboard ratio from 0.5 to 0.75 for cold cleaners and from 0.75 to 1.0 for vapor cleaners; setting a maximum VOC content limit of 50 grams per liter; or, requiring the use of airless or airtight cleaning systems when using greater than 50 grams per liter VOC content solvents. This document assesses the technical feasibility and cost-effectiveness of adopting these control measures for Rule 67.6 - Solvent Cleaning Operations.

Solvent Cleaning Operations

A solvent cleaning operation is one which uses solvents to remove unwanted materials, such as dirt and oils, from a surface. The use of a tank or reservoir to hold the solvent and some method of applying the solvent are common to all units. Traditional units include remote reservoirs, cold solvent dip tanks (batch), open-top (batch) vapor cleaners, (commonly referred to as vapor degreasers), and conveyorized cold and vapor cleaning units. New types of cleaning units include spray cabinets, airless, and airtight cleaners. The type of solvent cleaning unit to be used for a particular operation depends on several factors, such as the type and amount of contamination, desired level of cleanliness, and cleaning frequency. Appendix A contains specific descriptions of the solvent cleaning units listed above.

Rule 67.6 Summary

History

Rule 67.6 - Solvent Cleaning Operations, was first adopted by the District on July 25, 1979. The rule was based on presumptive RACT requirements provided in EPA's CTG guidance entitled "Control of Volatile Organic Emissions from Solvent Metal Cleaning." The rule was revised on September 17, 1985, to incorporate changes required by EPA's "Blue Book" guidance, and again on October 16, 1990, to implement California Best Available Retrofit Control Technology (BARCT) requirements. The 1990 version of Rule 67.6 was approved into the State Implementation Plan on December 14, 1994.

Applicability

Rule 67.6 regulates emissions of organic solvents from various types of solvent cleaning operations, including remote reservoir cleaners, cold solvent dip tanks, vapor degreasers, corrosion control carts, and conveyorized cold and vapor solvent cleaners. Spray gun cleaning operations are regulated under specific coating operation rules (e.g. Rule 67.3 - Metal Parts and Products Coating Operations, Subsection (d)(5)) and not Rule 67.6. Rule 67.6 also regulates non-VOC halogenated solvents except for a few specific grandfathered units.

Exemptions and Permit Requirements

Exemptions are provided in Rule 67.6 for the following solvent cleaning operations:

- Operations using aqueous materials containing less than 10% organic compounds by weight
- Hand-wiping operations
- Operations performed in containers with a capacity of less than one gallon
- Operations performed in containers with a liquid-air surface area less than one square foot

Certain units and operations exempt from Rule 67.6 requirements require a permit to operate. These include large hand-wiping operations, spray gun cleaning operations subject to individual coating rules, and stripping operations subject to Rules 67.9 or 67.11 (Aerospace and Wood Parts and Products Coating Operations, respectively).

Equipment and Operating Standards

Rule 67.6 contains specific equipment and operating standards for remote reservoir cleaners, cold solvent dip tanks, vapor degreasers, corrosion control carts, and conveyorized cold and vapor solvent cleaners using organic solvents. The equipment standards are designed to minimize emissions from evaporation and the operating standards ensure good housekeeping practices to minimize unnecessary solvent losses. Additional controls are required when high-vapor pressure materials or heated solvents are used. The rule does not contain any specific VOC content limits.

Emission Inventory for Sources Subject to Rule 67.6

The District has spent a significant amount of time determining the solvent losses and corresponding VOC emissions for various types of solvent cleaning operations in San Diego County. In October 1998, the District performed an emission inventory for sources subject to Rule 67.6. The emission inventory was based on 1997 solvent cleaning material usage data. Regional mass balance data provided by Safety-Kleen (SK) was used to determine emissions from permitted SK remote reservoirs. An average emission factor of 0.29 pounds of VOC/day/unit was derived for the SK remote reservoir units. Actual 1997 emission inventory data was used for the solvent cleaning operations (non-SK) which submitted 1997 usage data. Where specific emission data were not available, emission factors based on the SK data or District inventory data were used to estimate emissions.

On November 10, 1998, the District submitted a copy of a report titled "Estimation of VOC Emissions from Solvent Cleaning Operations in the San Diego Air Basin" to the ARB for review. The report was based on 1997 material usage data obtained from SK and the District permit inventory. The report contains detailed information on the inventory procedures and results. The report was reviewed by ARB's Emission Inventory Branch. Overall, the District estimated annual VOC emissions from operations subject to Rule 67.6 at 330 tons per year. This is approximately one-seventh the emissions estimated by ARB for these same units.

In discussions with ARB regarding the 1997 inventory data, ARB raised a concern regarding the accuracy of SK's mass balance solvent usage data. To address this issue, the District reviewed SK's 1998 solvent usage data to determine the accuracy of the 1997 emission factor derived for SK remote reservoir units (0.29 lb of VOC/day/unit). The details of that analysis are provided in Appendix C. Using SK's 1998 solvent usage data, an emission factor of 0.324 lb of VOC/day/unit was derived for SK remote reservoirs. This value is within 10% of the 1997 SK emission factor. For this assessment, the higher 1998 emission factor has been applied to the 1997 inventory, increasing emissions from sources subject to Rule 67.6 to about 357 tons per year.

Feasibility Evaluation Factors

The overall feasibility of adopting a proposed control measure is determined by the technical feasibility and cost-effectiveness of the control measure. Cost-effectiveness in turn depends on the emission reduction potential and the cost of implementing the control measure. The emission inventory for sources affected by the control measure is a key parameter in determining potential emission reductions. The 1997 San Diego emission inventory for all sources subject to Rule 67.6 is 357 tons per year (tpy) of VOC. Table 1 summarizes the distribution of units and emissions for 1997.

Because remote reservoir cleaners and cold solvent dip tanks using low-vapor pressure solvents represent almost 95 percent of VOC emissions from the solvent cleaning operations regulated by Rule 67.6, they were the focus of this evaluation.

Table 1: Distribution of Units and Annual VOC Emissions by Type of Unit and Solvent

Type of Unit and Solvent Utilized	Number of Units	Percentage of Total Units	Annual Emissions (tpy)	Percentage of Total Emissions
Vapor Degreaser - All	16	.31	7.4	2.07
Cold Dip - High VP†	12	.24	8.6	2.41
Cold Dip - Low VP†	372	7.2	72.9	20.42
Remote Reservoir - Low VP	4,436	86.3	261.6	73.3
Carburetor Cleaner - Low VP	300	5.8	6.6	1.85
Totals	5,136		357	

† Refers to high- or low-vapor pressure solvents, defined by whether the VOC vapor pressure is > 33 mm Hg @ 100°F.

The information provided in Table 1 was used to determine the emission reduction potential and cost-effectiveness of the proposed control measures. The primary issues as they relate to VOC control strategies for solvent cleaning operations were:

Technical Feasibility
A process is generally considered technically feasible when the process has been achieved in practice for the same or similar type of operation. There are often several variables to consider when determining if a similar operation has implemented the control measure in practice. Solvent cleaning operations have a multitude of variables, such as the size of the unit, type of substrates cleaned, types of contaminants removed, frequency of use, and frequency of solvent change-outs that make it difficult to determine if every possible variation has been achieved in practice.

Emission Reduction Potential
Solvent losses from cleaning operations are typically determined on a mass balance basis, correcting for accumulated waste in the solvent tank. The majority of solvent losses occur from solvent "carry-out" as the part is removed or solvent splashed as the part is cleaned. Solvent losses also occur from evaporation, spills as the solvent tank is filled or emptied, and solvent disposed of with sludge. Carry-out and splashing losses occur while the unit is in active use. Evaporative emission losses occur during both inactive and active use.

Cost-Effectiveness
The cost-effectiveness of any new emission control technology depends on two factors: the cost of implementation and the quantity of emission reductions achieved. The term emission reductions achieved means the reductions resulting from the proposed control measure, and not emission reductions which have already been achieved through other mechanisms. Implementation costs will vary depending on the cleaning system selected. For this analysis, numerous phone calls and site visits were made to obtain actual capital and operating cost data for a variety of scenarios. From the data collected, actual and/or average cost values were used to calculate annualized costs for each scenario.

Potentially Feasible Control Measures

Increased Freeboard Ratio - Cold Solvent Cleaning
Rule 67.6 currently requires a minimum freeboard ratio of 0.5 for cold-solvent dip tanks. The freeboard ratio is calculated by dividing the freeboard height (measured from the top edge of the solvent tank to the solvent-air interface), by the smaller width of the solvent-air interface. Freeboard ratio can be increased by increasing the freeboard height or decreasing the solvent-air interface width. Increasing the freeboard ratio from 0.5 to 0.75 for solvent dip tanks has been proposed as a potentially feasible control measure to reduce VOC emissions.

Technical Feasibility
Increasing the freeboard ratio would require lowering the solvent level in the tank, increasing the height of the tank walls or reducing the solvent-air interface area by decreasing the tank width. Lowering the solvent level is a technically feasible option, except in cases where the remaining

solvent level in the tank becomes so low that effective cleaning operations cannot be conducted. The height of the tank walls could be increased by welding additional panels to each side of the tank. However, this may raise a safety issue concerning how far into the tank a worker must reach to clean a part, which represents a technical limitation for this option. Reducing the solvent-air interface area is also technically feasible, but is limited by the size of the largest part which must be cleaned. Each of these limiting factors could be overcome by purchasing a new unit. The additional costs of purchasing a new unit are evaluated in the cost-effectiveness analysis.

Emission Reduction Potential

The District estimates the additional VOC emission reductions from this control measure to be approximately 3.6 tons per year (tpy). The District's 1997 inventory data indicates that 372 cold solvent dip tanks (SK operates 200 of these units) were using low-vapor pressure solvents. The District estimates annual emissions from these units at 73 tpy. The primary affect of increasing the freeboard ratio will be to reduce emissions due to evaporation. Solvent losses due solely to evaporation are estimated to represent less than 15% of total emissions from these types of units. Thus the total emissions due to evaporation can be estimated at 11 tpy. Increasing the freeboard ratio to 0.75 could reduce evaporative solvent losses due to diffusion by a maximum of 33%. While convection and conduction also contribute to solvent evaporation rates, increasing the freeboard ratio is not expected to significantly reduce emissions through these mechanisms. Therefore, the maximum 33% reduction rate due to diffusion was used to evaluate the maximum emission reductions possible. The 33% decrease in evaporative losses equates to a maximum VOC emission reduction of 3.6 tpy.

Cost-Effectiveness

For the 200 SK cold solvent dip tanks, implementing the 0.75 freeboard ratio requirement would allow only five inches of solvent in the tank. A solvent level of five inches is insufficient to carry out effective cleaning operations. Workers would also need to reach 18 inches into the tank to reach the solvent surface area. This analysis assumes all 200 SK units would need to be replaced to meet the 0.75 freeboard ratio requirement. Based on a survey of the remaining 172 non-SK units, the District estimates 69 of these units, or 40%, will also need to be replaced for similar reasons. If a conservative replacement cost of $1,000 per unit is assumed, (actual costs vary from $1,000 for small units to $5,000 for large units), the total minimum replacement cost would be $269,000. If an interest rate of 10% is assumed for 10 years, the annualized equipment cost would be $44,116. A $6,372 per year savings would be realized from reduced solvent usage. The total annualized cost would be $37,744. The cost of increasing the freeboard ratio from 0.5 to 0.75 would be $5.24 per pound of VOC emissions reduced. This value is significantly higher than the District's cost-effective value of $2.50 per pound of VOC emission reductions, and is not considered cost-effective. If this control measure is considered again in the future, a specific detailed analysis of the 372 units should be performed to determine the exact number of units affected and the specific replacement costs for each affected unit.

Aqueous Cleaning - VOC Content Less Than 50 Grams per Liter

Rule 67.6 does not specify VOC content limits for materials used in solvent cleaning operations. However, sources using aqueous-based cleaning materials containing less than 10% organic compounds by weight are exempt from both rule and permit requirements. Imposing a maximum VOC content of 50 grams per liter for cleaning materials used in operations subject to Rule 67.6 has been proposed as a potentially feasible control measure to reduce solvent emissions.

Solvent cleaning operations are used in a wide variety of applications including automotive repair shops, graphic art operations, manufacturing production lines, and various types of maintenance operations. Each application involves unique cleaning scenarios, including the type of substrate cleaned, level of cleanliness required, and properties of the solvents used.

The District has collected a significant amount of source-specific data by visiting end-users and working with vendors of several different types of aqueous-based cleaning systems. Vendors were often hard pressed to provide precise data, stating that the answers varied depending on the specific application requirements. In an attempt to address this issue, information was collected and reviewed for 10 different hypothetical conversions from solvent-based to aqueous-based cleaning systems. The collected data, along with information presented in earlier studies performed by the Institute for Research and Technical Assistance (IRTA), Putnam, Hayes & Barlett (PHB), and SCAQMD was used to evaluate the technical feasibility and cost-effectiveness of implementing the proposed control measure. The basis of data and assumptions used are noted within the cost-effectiveness tables provided in Appendix B.

Technical Feasibility

Compliance with a VOC content limit of 50 grams per liter can be achieved by using either exempt solvents (i.e. non-VOC) or aqueous-based cleaning systems. Using exempt solvents to comply with the proposed VOC standard may be a technically feasible control option in some cases, but can raise issues regarding public health and fire/safety. A small number of solvent cleaning units in the District currently use exempt solvents. These same solvents could be used to replace other VOC containing solvents.

However, many exempt solvents are classified as ozone depletors and/or hazardous air pollutants which require an additional health-risk evaluation prior to use. If the evaluation determines unacceptable health risks, the use of exempt solvents would not be feasible. Another exempt solvent, acetone, presents special fire/safety issues. The additional costs, controls, and record-keeping requirements associated with the use of exempt solvents tends to limit the practical use of these materials for small users. A case-by-case analysis by the operator is required to make a final determination whether any individual source can switch to an exempt solvent.

Solvent-based cleaning operations rely on the solvent to solubilize the oil and grease to remove them. When the solvent becomes too contaminated for further use, it is changed out and replaced with fresh solvent. The contaminated solvent is typically recycled through distillation and returned later as fresh solvent.

The cleaning ability of aqueous solutions relies on surfactants or builders (alkalinity) in the cleaning formulation, high water temperature, and mechanical agitation (high-pressure sprays). A heated water-bath and high pressure spray are critical to ensure adequate cleaning. There are thousands of aqueous-based cleaning formulations, each designed to meet specific cleaning applications. Most cleaning formulations are sold as a concentrate, which is diluted with water. The concentrated cleaning solution can vary from 3 to 50% of the final water-bath solution. Remote reservoirs typically use a 25% to 30% concentrate mixture and spray cabinets a 5% to 15% concentrate mixture.

Some aqueous cleaning formulations use organic solvents such as terpenes and glycol ethers as solvent additives, which contribute to the VOC content. Some are designed to reject oil, which allows the oil to separate from the cleaner and float to the top. The oil can then be removed using an oil skimmer. Removing the oil is preferable in that it allows the life of the water-bath solution to be extended. A filter can also be used to remove heavier oils and large particulates.

Aqueous cleaning systems are typically heated above ambient temperatures. In cases where the operator comes in contact with the cleaning solution, the solutions are typically heated between 110°F and 120°F. Spray cabinet cleaning solutions are typically heated to 180°F since the operator does not come in contact with the cleaning solution. Because the aqueous cleaning solutions are heated, the water evaporates fairly rapidly and must be checked and replenished on a regular basis. Heating elements may be damaged if the water level drops too low.

The disposal of spent aqueous baths must also be addressed when considering the technical feasibility of switching to an aqueous-based cleaning system. While the cleaning concentrates themselves are not typically hazardous, the contaminants deposited from the parts being cleaned are. There are several state and local requirements which must be met to treat such wastewater onsite prior to discharge to the sewer system. Facilities will likely dispose of the wastewater as hazardous waste to ensure they are not violating any water discharge regulations.

Several sources interviewed in San Diego County stated that aqueous cleaners currently in use worked well for some, but not all, of their current solvent cleaning applications. Industry representatives continue to express significant concerns about the ability of aqueous-based systems to replace all their solvent-based cleaning operations.

Emission Reduction Potential

Based on the District's 1997 emission inventory, remote reservoir cleaners account for 262 tpy of VOC emissions. Cold solvent dip tanks (low-vapor pressure) account for 73 tpy. Therefore, 335 tpy is the maximum potential VOC emission reduction to be considered for this control measure. These represent a total of 4,808 permitted units.

The average annual emissions are 118 lbs/yr/unit for remote reservoirs and 402 lbs/yr/unit for cold solvent dip tanks. These are based on the District's emission factors of 0.324 lbs/day/unit for remote reservoirs and 1.1 lbs/day/unit for cold solvent dip tanks. If these units were replaced by an aqueous-based cleaning system, emissions would range from 0 to 126 lb/year/unit (based on a maximum VOC content of 50 grams per liter for 300 gallons of mixed solution used in the largest unit considered). This range does not take into account any pre-cleaning which may be

performed with solvent-based aerosol cleaners. The 126 lb/year/unit emission rate assumes 100% evaporation of the organic material in the largest unit and represents the smallest emission reduction case. The 0 lb/year/unit emission rate assumes no VOC evaporation losses and represents the largest emission reduction case. The cost-effectiveness calculations utilize this largest emission reduction case by assuming there are no VOC emissions from aqueous systems.

Cost-Effectiveness

There are a significant number of variables to be considered when calculating the cost-effectiveness of switching from a solvent-based to an aqueous-based cleaning system. There are dozens of different aqueous-based cleaning systems available. The costs of supplies, such as filters, cleaning solution, and water, varies depending on the type of system used, types of parts cleaned, and frequency of use. These same factors affect how often a system must be changed out and replaced with new materials, which in turn affects annual waste disposal costs. Other factors include costs due to increased electrical usage and increased labor hours needed to perform the same tasks. Because of these variables, cost-effectiveness was examined for 10 different scenarios. The assumptions concerning labor and operating hours are discussed below.

The number of hours any particular cleaning unit operates will have a significant effect on the cost-effectiveness analysis. Hours of operation will directly affect electrical use and labor costs. The equipment size, type of cleaning work performed, and the size of the facility each affect the number of operating hours. Therefore, average values were derived based on the size and type of equipment. The 1997 IRTA study stated that approximately 0.5 hours per day were actually spent cleaning parts. For this analysis, labor was estimated at 0.5 hours per day and pump operation at two hours per day for remote reservoirs and small cleaning units. For dip tanks and larger units, labor was estimated at 1.0 hour per day and pump operation at four hours per day. The number of pump operating hours is higher than the operator labor hours because a significant number of operators run the solvent over dirty parts while performing other activities. Pumps on aqueous-based systems were assumed to operate the same number of hours as solvent-based systems.

The heating units used in aqueous-based systems cycle on and off during the day to maintain a consistent temperature. Based on information provided by various vendors, the heaters were assumed to be operational for six hours out of an eight-hour day. All units were assumed to operate 6 days per week and 52 weeks per year.

The 1998 SCAQMD and California Truckers Association (CTA) joint study stated that labor expended operating an aqueous-based system is 10% higher than a solvent-based system. Upon review of the raw data presented in the study, 43% appears to be a more representative value. However, for the purposes of this analysis, the 10% value was used to calculate increased labor costs.

Hours of electrical use are based on the equipment component operating hours specified above. Energy use is based on pump and heater sizes associated with the various sizes and types of equipment considered. Aqueous systems tend to use larger water pumps to provide the high pressure spray needed to ensure good mechanical agitation. An electrical cost of $0.10 kw/hr, typical for San Diego County, was used to determine annualized electrical costs. Some facilities

switching to spray cabinets may need to upgrade their electric capacity to handle the higher voltage requirements typical for these units. The costs of such upgrades were not considered.

Several recent cost-effectiveness analyses cite the April 1997 IRTA study monthly cost of $20 for solvent units and $60 for aqueous units as the basis of estimated annual electrical costs. When electrical costs were estimated by the District using the assumptions provided above, the costs were much lower for both solvent and aqueous-based remote reservoir units, but were much higher for spray cabinet units. The IRTA study provided no apparent basis for the values cited.

The cost-effectiveness of switching from solvent-based to aqueous-based cleaning systems was determined for 10 different conversion scenarios. The scenarios include switching from small, medium, and large remote reservoir units to similarly sized aqueous units; switching from medium and large remote reservoirs to small and medium spray cabinets; and switching from various sized solvent dip tanks to similar sized spray cabinets. The tables in Appendix B contain the cost-effectiveness analyses for the 10 different conversion scenarios. The assumptions and data used are provided with each table. Table 2 provides a summary of the cost-effectiveness values determined for each conversion scenario.

Table 2: Cost-Effectiveness of Switching to Aqueous-Based Cleaning Systems

Scenario Number	Existing Equipment (Leased)	Replacement Equipment (Owned, except as noted)	Unit Size Exist/Replace (gals)	Cost-effectiveness ($/lb VOC)
1	Solvent Remote Reservoir (RR)	Aqueous RR (Leased)	17/20	5.31
2	Solvent RR	Aqueous RR (Enzyme)	17/20	6.13
3	Solvent RR	Aqueous RR	12/20	4.36
4	Solvent RR	Aqueous RR	17/20	4.91
5	Solvent RR	Aqueous RR	26.5/30	5.61
Average:				**5.26**
6	Solvent RR	Aqueous Spray Cabinet	17/16	17.06
7	Solvent RR	Aqueous Spray Cabinet	26.5/25	13.62
8	Solvent RR	Aqueous Spray Cabinet	26.5/35	18.89
Average:				**16.52**
9	Cold Solvent Dip Tank	Aqueous Spray Cabinet	34/35	3.99
10	Cold Solvent Dip Tank	Aqueous Spray Cabinet	34/50	7.10
Average:				**5.55**
Average:				**16.52**

The District considers a VOC emission control strategy to be cost-effective at or below $2.50 per pound of VOC reduced. This is based on the cost-effectiveness of VOC control rules adopted over the last five years. The cost-effectiveness of the most recently adopted VOC BARCT regulation (Rule 67.21 - Adhesive Application Operations) ranged from a savings of $8 per pound to a cost of $3.20 per pound. None of the solvent-based to aqueous-based conversion scenarios are considered cost-effective using District criteria.

Scenarios 1-5 represent switching from a small, medium, or large solvent remote reservoir unit to a similar sized aqueous remote reservoir unit. The cost-effectiveness for these scenarios ranged from $4.36 to $6.13, with an average of $5.26 per pound of VOC controlled. The value is relatively high due to the small annual emissions from remote reservoir units and increased electrical usage and labor costs associated with aqueous-based systems.

Scenarios 6-8 represent switching from a medium or large solvent remote reservoir unit to a similar sized aqueous spray cabinet. The cost-effectiveness for these scenarios averaged $16.52 per pound of VOC controlled. The value is very high due to the small annual emissions from remote reservoir units and the significant increased operational costs of spray cabinets.

Scenarios 9 and 10 represent switching from a medium cold solvent dip tank to a similar sized aqueous spray cabinet. The cost-effectiveness for these scenarios ranged from $3.99 to $7.10, with an average of $5.55 per pound of VOC controlled. While the emissions decrease is larger than for remote reservoirs, the increased electrical usage and labor hours raised annual costs significantly. There is a small cost saving of $1.00 per pound of VOC reduced associated with owning and servicing the aqueous-based unit, but this is outweighed by the increased electrical costs.

Scenario 9 provides the most cost-effective option for switching to an aqueous-based cleaning system. Scenarios 9 and 10 apply to approximately 372 cold solvent dip tanks, which emit 73 tpy of VOC from this source category. Overall emission reductions from this category could be 51 to 73 tons per year. The District will periodically review the emissions and costs associated with these two scenarios, and similar scenarios, to determine if the proposed 50 gram per liter control measure becomes technically feasible and cost-effective for cold solvent dip tanks.

The two most important cost-effectiveness factors are the small VOC emission reductions and the increased electrical costs associated with switching to an aqueous-based cleaning system. As documented earlier, the District believes the emission factors used are accurate. Emissions data from inventoried sources has consistently indicated lower (sometimes 50% lower) emission factors than the emission factors used in this analysis for SK units, which represent the majority of emissions used to calculate cost-effectiveness. The increased electrical costs are based on the actual size of pumps and heaters for the various aqueous units. The hours of operation were assumed to be the same for both the solvent and aqueous units to minimize the impacts of the additional electrical requirements of aqueous units.

The increased labor hours also play a role in the cost-effectiveness. The District believes the 10% increase in labor when switching to aqueous-based cleaning is conservative, since labor data

from the California Trucking Association (CTA) report indicates an average of 43% longer to clean heavy-duty parts in aqueous-based systems.

The District is confident the estimated cost-effectiveness results provided above are conservative and actual cost-effectiveness values could be higher.

Airless and Airtight Cleaning Systems

A few airless and airtight cleaning systems have been permitted in the District to replace vapor degreasers using halogenated solvents subject to the federal NESHAP. For the vast majority of solvent-based cleaning operations, remote reservoir cleaners, and low-vapor pressure cold-solvent dip tanks, the equipment costs alone are prohibitive and would not be cost-effective. For certain high-vapor pressure cold-solvent dip tanks and vapor degreaser operations, the use of airless or airtight cleaning systems may be technically feasible. There are only 28 existing cleaning units in the high-vapor pressure cold solvent dip tanks and (VOC-emitting) vapor degreaser categories. The cost of airless and airtight cleaning systems typically ranges from $80,000 to $200,000 and up to $500,000. If the low-end cost of $80,000 is assumed, along with an interest rate of 10% for 10 years, the annualized equipment cost alone would be $365,120 for all 28 units. A savings of $45,600 could be realized from reduced solvent usage. Total annual VOC emissions from these units are estimated at 16 tons. Therefore, the cost-effectiveness of this control measure based only on equipment purchase costs and solvent savings, would be $10.00 per pound of VOC reduced. This does not include the annual operating and maintenance costs for this equipment. The control measure is not considered cost-effective as a VOC emission reduction strategy.

Solvent Cleaning Operations Not Evaluated

After an initial review of the estimated existing emissions from each category of solvent cleaning equipment (see Table 1) and how each proposed control measure might apply to each category, the District decided to complete only a qualitative analysis for three types of units: carburetor cleaners, vapor degreasers, and cold solvent dip tanks using high-vapor pressure solvents. Combined VOC emissions from vapor degreasers, cold solvent dip tanks using high-vapor pressure solvents, and carburetor cleaners account for only 22.6 tpy or 6.3% of the total VOC emissions from units subject to Rule 67.6. A discussion of why each type of unit was not further evaluated is provided below.

The solvent-air interface area for standard carburetor cleaners is 1.07 square feet. Units with a solvent-air interface area of less than one square foot are exempt from Rule 67.6 and permit requirements. Most current units above one square foot would likely be replaced with smaller exempt units, rather than comply with any of the proposed control measures. Therefore, only insignificant emission reductions are expected and carburetor cleaners were not included in this analysis.

The 12 cold-solvent dip tanks using high-vapor pressure solvents (> 33 mm Hg @ 38°C) currently comply with a 0.75 freeboard ratio requirement and must use internal drainage devices.

Accordingly, no further emission reductions are expected from the 0.75 freeboard ratio strategy for these devices.

The use of high-vapor pressure solvents in cold solvent dip tanks and vapor degreasers is typically limited to specific cleaning applications which require a high degree of cleanliness, or to parts which are sensitive to solvent exposure. Of the 16 VOC emitting vapor cleaners in operation, 15 units have a surface area less than five square feet and the one larger unit utilizes add-on controls. The South Coast AQMD regulations from which the potentially feasible control measures were derived, provide VOC content limits much higher than 50 grams per liter for specific types of cleaning tasks, such as electronic components and medical devices. While Rule 67.6 does not limit their use to these specific activities, they are typically used for similar application-specific types of activities. Therefore, the 50 grams per liter VOC standard was not evaluated for vapor degreasers or cold solvent dip tanks using high-vapor pressure solvents since it was not likely to be technically feasible. In addition, since the 15 uncontrolled vapor degreasers have small surface areas (less than five square feet) and are already subject to Rule 67.6 VOC emission control equipment and operating requirements, the proposed control measure of increasing the freeboard ratio from 0.75 to 1.0 would have a negligible effect on emission reductions (less than 500 pounds per year for all 15 units) and therefore was not evaluated for this analysis.

Appendix A

Description of Solvent Cleaning Units

Remote Reservoir Cleaners

A remote reservoir cleaner is one of the simplest types of solvent cleaning units. It consists of three major parts; a drum to hold the solvent, a sink-like work area to place the part being cleaned, and a solvent application system which consists of a pump and solvent application brush through which the solvent flows. Solvent is pumped from the drum into the work area and over the part to be cleaned. A brush is often used to scrub the part as the solvent flows over the part. The solvent quickly drains out of the work area and returns to the solvent drum. Only solvents with a vapor pressure of less than 33 mm Hg @ 68°F are allowed to be used in remote reservoir units.

Cold Solvent Dip Tanks (Batch)

A dip tank is an open tank containing solvent in which parts are submerged. The solvent application system usually consists of a pump and a solvent application brush or nozzle, providing a steady low-pressure solvent stream. Dip tanks are often equipped with an internal rack to place parts on while cleaning or to allow solvent drainage from the part. Occasionally, the solvent in a dip tank is heated to a maximum temperature of 50°C to assist in the cleaning process. Units may also be equipped with an external drain board, which allows the solvent to drain from parts and return to the dip tank.

Vapor Cleaners (Batch)

There are several types of vapor cleaners. The solvent in a vapor degreaser is heated to its boiling point, creating a solvent-vapor zone in which parts are placed to be cleaned. A cooling device is wrapped around the solvent tank walls to create a layer of cold air (often called a blanket) above the vapor zone. The blanket of cold air causes the solvent vapor to recondense into a liquid, which collects along the tank walls. Parts are dipped into the solvent vapor zone until they are clean, then slowly pulled through the layer of cold air which recondenses any solvent remaining on the parts. Some units are also equipped with spray devices. Vapor cleaners are typically the most expensive type of solvent cleaning device to operate. This is due to the cost of the specific solvents used and the energy required to heat and cool the solvent.

Conveyorized, Cold, and Vapor Cleaners

Conveyorized cleaners are a variation of the typical cold and vapor cleaners in that parts enter and leave the degreaser through some type of mechanical means, rather than being cleaned in a batch process.

Corrosion Control Carts

Corrosion control carts are used to clean internal components of jet engines. The device itself consists of a cart with one or two closed tanks containing the cleaning solution. The cart is wheeled out to the engine and connected using a specific cleaning port. When the engine is temporarily engaged, cleaning solution is pulled through the jet engine and exhausted to the atmosphere.

Carburetor Cleaners

A carburetor cleaner is a specialized type of cold solvent dip tank. It consists of a drum containing solvent, a basket to hold parts, and a lid with a built-in agitation device. The lid allows the basket to be suspended and mechanically agitated in the solvent. The lid also provides an enclosed environment while the solvent is agitated.

Airless Cleaners

An airless cleaner is an enclosed solvent cleaner that is automatically operated. Parts are placed in the cleaner which seals at a differential pressure of 26 torr or less. Solvent vapor is then introduced into the cleaning chamber. When the part is cleaned, the solvent vapor is removed from the cleaning chamber prior to removal of parts. A vacuum differential pressure is maintained during all cleaning and drying cycles.

Airtight Cleaners

An air-tight cleaner is an enclosed solvent cleaner that is automatically operated and sealed at a differential pressure no greater than 0.5 per square inch during all cleaning and drying cycles.

Spray Cabinets

A spray cabinet is a device in which all spraying and most vapor generating activity is fully contained inside the machine and isolated from the outside environment. The parts are placed into a chamber which is sealed shut. The heated aqueous solution is then sprayed on the parts using high-pressure spray nozzles. If the chamber is opened soon after the wash cycle has finished, there may be a significant amount of water vapor and organic compounds lost to the atmosphere. A specialized type of solvent spray washer is used in the paint manufacturing industry. These units are called tub washers and are sealed systems utilized to clean paint mixing tubs. Tub washers are not regulated under Rule 67.6.

Hand Wiping

This is an operation where a material such as a rag is wetted with solvent and coupled with a rubbing process to remove contaminants from surfaces.

APPENDIX B - Cost-Effectiveness of Switching From Solvent-based to Aqueous-based Remote Reservoir (RR)

Scenario Number	1			2			3			4			5		
Replacement Scenario	**Switch from leased solvent RR to leased aqueous RR**			**Switch from leased solvent RR to owned aqueous (enzyme) RR**			**Switch from leased solvent RR to owned small aqueous RR**			**Switch from leased solvent RR to owned medium aqueous RR**			**Switch from leased solvent RR to owned large aqueous RR**		
Annual Operating Costs	Solvent	Aqueous	Ref.	Solvent	Enzyme	Ref.	Solvent	Aqueous	Ref.	Solvent	Aqueous	Ref.	Solvent	Aqueous	Ref.
Owned unit (Full cost)	-	-		-	$1,100	D,V	-	$600	D,V	-	$1,000	D,V	-	$1,500	D,V
Owned unit (Annualized)	-	-		-	$180	C	-	$98	C	-	$164	C	-	$246	C
Serviced unit (Package)	-	-		-	$780	D,V	-	$652	D,V	-	$652	D,V	-	$652	D,V
Electrical	$23	$234	D	$23	$234	D	$23	$234	D	$23	$234	D	$23	$234	D
Leased unit (Package)	$785	$863	S	$785	-	S	$785	-	P,S	$785	-	P,S	$785	-	P,S
Labor	$3,391	$3,731	P,D	$3,391	$3,731	P,D	$3,391	$3,731	P,I	$3,391	$3,731	P,I	$3,391	$3,731	P,I
Total Annual Costs:	$4,200	$4,827	C	$4,200	$4,925	C	$4,200	$4,715	C	$4,200	$4,781	C	$4,200	$4,863	C
Emissions (lb/yr)	118	0	D	118	0	D	118	0	D	118	0	D	118	0	D
Cost Effectiveness ($/#)		$5.31			$6.13			$4.36			$4.91			$5.61	

Reference: D=District, P=PHB study, I=IRTA study, S=SK, V=Vendor, C= Calculated Value

Assumptions: (Based on District information unless noted.)

1. Emission Factors: Solvent RR = 0.324 #/day. Aqueous = 0 #/day. Emission factors assume emissions occur 365 days per year.
2. Labor costs assume a labor rate of $21.74/hr. (PHB)
3. Labor is estimated at 0.5 hr/day for solvent RR, and 10% higher for aqueous RR.
4. Leased unit includes cost of equipment, permit fees, solvent, maintenance, and disposal.
5. Solvent change-outs average 5.2 times per year for RR. (Once every 10 weeks)
6. Annualized costs assume a 10-year life-cycle and a 10% interest rate. (capital recovery factor = 0.164)
7. Serviced unit includes the cost of cleaning material, maintenance, and disposal only. (No equipment or permit fee.)
8. Change-outs for aqueous-based RR's are 4 times per year. (SJV)
9. Filters on enzymes/aqueous systems must be replaced (1/month for enzymes, 1/3 months for water.) (District/SJV)
10. Electrical costs are $0.10 Kw/hr, RR pumps run 2 hrs/day, aqueous pumps run 4 hrs/day, and heater operates 6 hrs/day.

Costs not included:

1. Water usage. (Filled 4-6 times/yr, plus make-up.)
2. Electrical costs of skimmer, turntable, other small items.
3. Electrical costs of dryer, if required.

APPENDIX B - Cost-Effectiveness of Switching From Solvent-based RR and Dip Tanks to Aqueous-based Spray Cabinets

Scenario Number	6			7			8			9			10		
Replacement Scenario (Assumes current unit is leased and replacement unit will be owned.)	**Switch from solvent RR to aqueous Spray Cabinet (16 gal)**			**Switch from solvent RR to aqueous Spray Cabinet (25 gal)**			**Switch from solvent RR to aqueous Spray Cabinet (35 gal)**			**Switch from Solvent Dip Tank to Aqueous Spray Cabinet (35 gal)**			**Switch from Solvent Dip Tank to Aqueous Spray Cabinet (50 gal)**		
Annual Operating Costs	Solvent	Aqueous	Ref.	Solvent	Aqueous	Ref.	Solvent	Aqueous	Ref.	Solvent	Aqueous	Ref.	Solvent	Aqueous	Ref.
Owned unit (Full cost)	-	$4,000	D,V	-	$3,500	D,V	-	$5,000	D,V	-	$5,000	D,V	-	$7,300	D,V
Owned unit (Annualized)	-	$656	C	-	$574	C	-	$820	C	-	$820	C	-	$1,197	C
Cleaning Materials	-	$100	D,V	-	$150	D,V	-	$200	D,V	-	$225	D,V	-	$350	D,V
Disposal	-	$280	D,V	-	$420	D,V	-	$420	D,V	-	$420	D,V	-	$560	D,V
Electrical	$23	$1,450	D,C	$23	$935	D,C	$23	$1,263	D,C	$47	$1,263	D,C	$47	$1,871	D,C
Leased unit (package)	$785	-		$785	-		$785	-	D,S	$1,759	-	D,S	$1,759	-	D,S
Labor	$3,391	$3,731	P,I	$3,391	$3,731	P,I	$3,391	$3,731	P,I	$6,783	$7,461	D,I	$6,783	$7,461	D,I
Total Annual Costs	$4,199	$6,217	C	$4,199	$5,810	C	$4,199	$6,434	C	$8,589	$10,189	C	$8,589	$11,439	C
Emissions (lb/yr)	118	0	D	118	0	D	118	0	D	402	0	D	402	0	D
Cost Effectiveness ($/lb)	$17.06			$13.62			$18.89			$3.99			$7.10		

Reference: D=District, P=PHB study, I=IRTA study, S=SK, V=Vendor, C= Calculated Value

Assumptions: (Based on District information unless noted.)

1. Emission Factors: Solvent RR = 0.324 #/day. Solvent Dip = 1.1 #/day. Aqueous = 0 #/day. EF's assume emission occur 365 days per year.
2. Labor costs assume a labor rate of $21.74/hr. (PHB)
3. Labor is estimated at 0.5 hr/day for solvent RRs, 1 hr/day for solvent dip tanks and 10% higher for aqueous units.
4. Leased unit includes cost of equipment, permit fees, solvent, maintenance, and disposal.
5. Change-outs average 5.2 times per year for RR and 5.7 times per year for dip tanks. (Once every 10 & 9 weeks, respectively.)
6. Annualized costs assume a 10-year life-cycle and a 10% interest rate. (capital recovery factor = 0.164)
7. Aqueous spray cabinet's are changed out 4 - 6 times per year depending on size and use.
8. Disposal rate is 3/yr for 16 gal unit, 4/yr for 25 & 35 gal unit & 6/yr for 50 gal unit. Cost $140/drum. (Allowable accumalation period varies.)
9. Electrical costs are $0.10 Kw/hr, RR pumps run 2 hrs/day, dip & spray cabinet pumps run 4 hrs/day, & aqueous heater operates 6 hrs/day.

Costs not included:

Water usage. (Filled 4-6 times/yr, plus make-up and rinsing usage.)

Electrical costs of skimmer, turntable, other small items.

Electrical costs of dryer, if required.

Appendix C

Summary of 1998 Safety-Kleen (SK) Emission Factor Calculations

SK provided the District with 1998 data on: the quantity of waste shipped, percent sludge in the waste, the number of customer "fills," the number of permitted and in-service units in San Diego County, the number of units serviced in Imperial County, and the number of customer-owned units serviced, all by model number. The amount of solvent issued to the San Diego SK facility is tracked by SK as the number of customer "fills" provided.

Two different methods were used to estimate solvent issuance to the San Diego SK facility. The two methods, one based on assigning the number of fills according to the percent of units each model represented, the other based on using the average service intervals for each model, provided excellent correlation. Solvent issuance rates of 327,180 and 325,084 gallons were determined. The higher value was used for the remaining emission calculations.

The weight of the solvent collected was determined by reviewing the hazardous waste manifest summaries for 1998. SK provided a sludge waste factor of 11%, based on typical values determined when the solvent is recycled at Reedly. The difference in the amount of solvent issued and the amount of waste solvent collected (corrected for sludge), represents the total gallons of SK solvent emitted in San Diego. This value was then corrected for the 200 cold solvent dip tanks operated by SK in San Diego, units operated in Imperial Valley, and customer-owned units. The remaining emissions were then divided by the total number of remote reservoir units operated by SK, and 365 days per year. These calculations resulted in a final average emission factor of 0.324 pounds/day/unit for remote reservoirs. This value is within the same order of magnitude as the factor determined for 1997 emissions.

Given two separate analyses which provided comparable emission factors, the District believes these factors are correct when applied on an average unit basis. For the cost-effectiveness portion of this feasibility assessment, the higher value of 0.324 pounds/day/unit will be used in all calculations. Assuming the same number of units were in operation in 1998, the new emission factor increases basin-wide emissions by 144 pounds/day and 26.3 tons per year.

ATTACHMENT III

Update of the Technical Feasibility Assessment and Cost-Effectiveness Analysis of Potentially Feasible Control Measures for Rule 67.6

The initial analysis of potentially feasible control measures for Rule 67.6 (Attachment II) was performed in the fall of 1999. Over the last year, the cost of electricity has risen significantly. As discussed in the initial analysis, the increased electrical usage required by aqueous-based cleaning systems had a significant impact on the overall cost-effectiveness of the control measure. Accordingly, an additional column of data has been added to Table 2 of Attachment II to reflect the revised cost-effectiveness of the 10 potential compliance options, based on an increased electrical cost of 0.23¢ per kilowatt-hr. This value reflects the combined costs of delivery and the higher electrical rates.

REVISED Table 2: Cost-Effectiveness of Switching to Aqueous-Based Cleaning Systems

Scenario Number	Existing Equipment (Leased)	Replacement Equipment (Owned, except as noted)	Unit Size Exist/Replace (gals)	Cost-effectiveness ($/lb VOC) (0.**10**/kw-hr)	Cost-effectiveness ($/lb VOC) (0.**23**/kw-hr)
1	Solvent Remote Reservoir (RR)	Aqueous RR (Leased)	17/20	5.31	7.61
2	Solvent RR	Aqueous RR (Enzyme)	17/20	6.13	8.44
3	Solvent RR	Aqueous RR	12/20	4.36	6.67
4	Solvent RR	Aqueous RR	17/20	4.91	7.22
5	Solvent RR	Aqueous RR	26.5/30	5.61	7.91
Average:				**5.26**	**7.57**
6	Solvent RR	Aqueous Spray Cabinet	17/16	17.06	31.38
7	Solvent RR	Aqueous Spray Cabinet	26.5/25	13.62	22.74
8	Solvent RR	Aqueous Spray Cabinet	26.5/35	18.89	31.15
Average:				**16.52**	**28.42**
9	Cold Solvent Dip Tank	Aqueous Spray Cabinet	34/35	3.99	7.53
10	Cold Solvent Dip Tank	Aqueous Spray Cabinet	34/50	7.10	12.47
Average:				**5.55**	**10.00**

ATTACHMENT IV

2001 TRIENNIAL DEMONSTRATION OF IMPACT OF STATE NO-NET-INCREASE PROGRAM REPEAL

BACKGROUND

On November 4, 1998, the San Diego Air Pollution Control Board revised District New Source Review Rules 20.1-20.4 to repeal state requirements to offset VOC and NOx emission increases at specified facilities. Offsets are emission reduction credits created by using more stringent emission controls than required on existing emission sources, or resulting from stationary sources that permanently cease emitting activities (shutdowns).[1] State law mandated that District rules require such offsets (at a one-to-one offset ratio) for emission increases from new or modified facilities with the potential to emit 15 tons or more per year of either VOC or NOx. (This requirement is referred to as the state no-net-increase program.) State law was subsequently amended[2] allowing a district to repeal its state no-net-increase program if the district board and the ARB meet stringent health-protective requirements. Other provisions of NSR rules remain in effect, including state requirements for Best Available Control Technology (BACT) on equipment emitting ten or more pounds per day, and federal requirements for Lowest Achievable Emission Rate (LAER) control technology and emission offsets for specified projects at major sources (facilities with a potential to emit 50 tons per year or more of VOC or NOx).

In 1998, the District conducted a required analysis pursuant to state law and ARB guidance to evaluate the emissions impact of repealing the no-net-increase program. The analyses indicated almost all available offsets are from equipment or plant shutdowns, occurring as a normal course of business activity, not from voluntary process or control technology improvements. Opportunities to create emission reduction credits from emission controls are very limited and expensive because of stringent state and federal control requirements. Consequently, shutdowns would remain the primary source of offsets for the foreseeable future. Further, the analysis indicated emission reductions due to unbanked shutdowns would continue exceeding emissions growth from new or modified sources that would have been offset if the no-net-increase provisions were in place. Since the air quality benefits resulting from shutdowns occur regardless of the offset requirements, there is no air quality benefit realized when emission reductions resulting from shutdowns are used for offsets. Thus, the no-net-increase program resulted in costly paper transfers of emission credits from one company to another with no air quality benefit. Even a worst-case analysis not required by state law nor ARB guidance, characterized by very conservative assumptions to purposely overstate potential impacts, indicated the emissions impact of repealing the program was negligible.

[1] Eligible emission reductions are approved and recorded (banked) in an offset bank and tracked by the District.

[2] California Health and Safety Code Sections 40918.5 and 40918.6.

On December 17, 1998, the ARB issued an Executive Order conditionally approving the repeal. The approval was conditioned on District tracking of emission increases associated with permitting actions that would otherwise have triggered state offset requirements. Secondly, pursuant to state law, the impact of repealing the program must be reviewed triennially to determine whether such a program remains unnecessary to achieve state clean air standards by the earliest practicable date. (ARB guidance states the critical test is ensuring program elimination would not halt or reverse an existing trend of decreasing total regionwide emissions.) ARB's Executive Order (attached) outlined the tracking and reporting requirements.

As demonstrated in the foregoing analysis prepared pursuant to state law and ARB guidance, repeal of the no-net-increase program is expected to continue having no adverse impact on regional emissions of VOC and NOx. The District concludes that state no-net-increase requirements are not necessary to achieve and maintain state ambient air quality standards in San Diego County by the earliest practicable date.

TRACKING REQUIREMENTS

Tracking requirements for demonstrating the impact of the no-net-increase program repeal are:

- Annual and cumulative emission increases of VOC and NOx from new and modified stationary sources with the potential to emit 15 or more tons per year that would have been offset if the no-net-increase provisions were in place.

- Annual and cumulative emission reductions of VOC and NOx that result from permanent equipment shutdowns that have not been banked, pursuant to District Rules 26.0-26.10, as emission reduction credits in the District credit bank.

- Tracking details include (1) the year in which the emission increase or decrease occurred, (2) the source of the emission increase or decrease, (3) the nature of the emission change (e.g., the equipment type, whether it is a new or modified source, whether it is a permanent shutdown), (4) the amount of emission increase or decrease in tons per year, (5) the pollutant type, (6) the amount of offsets, if any, provided for major sources or major modifications, (7) the adjustment made to the emission decrease for shutdowns,[1] and (8) any other pertinent information agreed upon by the District and ARB as needed to demonstrate the impact of repealing the no-net-increase program.

[1]Pursuant to Rule 26.0, Banking of Emission Reduction Credits, emission reductions from shutdowns for which credits are granted are discounted by the emission reductions that would have occurred had Reasonably Available Control Technology (RACT) requirements applied.

TRACKING RESULTS

The District instituted tracking procedures to identify and catalogue the required data and information for demonstrating the impact of the no-net-increase program repeal. The tracking information considered for this report (Tables 1 through 5) reflects the period January 1, 1998, through June 30, 2000.

Table 1 lists emission increases during the tracking period, and any associated offsets obtained in 1998 before the no-net-increase program repeal. The listed increases occurred at sources with actual emissions exceeding 10 tons per year of either VOC or NOx. As with the original 1998 No-Net-Increase Repeal Demonstration, 10 tons was used as a conservative indicator of sources with a potential to emit 15 tons per year, the threshold triggering offsets under the repealed no-net-increase program.[1]

Tables 2-5 were developed to estimate the future potential cumulative emissions impact of no-net-increase program repeal. Accordingly, these tables consider only increases expected to continue indefinitely. Table 2 lists those sources identified in Table 1 that are expected to continue operation indefinitely, and therefore conservatively estimates the amount of offsetting reductions "foregone" due to repeal of the no-net-increase program. Prior to the repeal, any of these sources with a potential to emit 15 tons or more per year would have been required to obtain offsets.

Table 3 lists unbanked emission reductions from equipment or plant shutdowns, adjusted for eligibility as offsets under the previous no-net-increase program. This information was collected by an extensive, though not exhaustive, examination of retired permits, inspection reports, and facility emission inventory reports. Undoubtedly, additional, unbanked shutdowns have occurred that are not identified in Table 3.[2]

Table 4 shows the adjustments to unbanked shutdowns (Table 3) to qualify the associated reductions for eligibility as Class A offsets under the previous New Source Review program. For example, any reductions from new Reasonably Available Control Technology or Best Available Retrofit Control Technology requirements which may be applicable to shutdown equipment would be assumed to apply, and the reduction discounted accordingly. Adjustments reduced total NOx offset value by 2.88 tons in 1998 and 10.03 tons in 1999.

Table 5 combines information from Table 2 (emission increases) with information from Table 3 (unbanked emission reductions) to show the resulting net emissions reduction for each year during the tracking period. Table 5 also addresses years 1993-1997 (as previously identified in the 1998 No-Net-Increase Repeal Demonstration). As expected, VOC and NOx emission increases from sources permanently emitting 10 tons or more per year were exceeded by

[1] In reality, most sources with actual emissions between 10 and 15 tons per year would not have been subject to state offset requirements because of permit conditions limiting their potential to emit.

[2] Considerable effort is required to accurately quantify unbanked emission reductions from shutdowns, including making adjustments for eligibility as offsets under the previous no-net-increase program. Consequently, not all unbanked emission reductions are identified in Table 3, particularly those from smaller emission sources.

emission reductions from unbanked shutdowns in each year.[1,2] Even though not all unbanked emission reductions from shutdowns were uncovered, and affected new sources were conservatively assumed to include sources between 10-15 tons per year, the average annual net emissions reduction since 1993, due to unbanked shutdowns exceeding new sources, was 86 tons per year of VOC and 15 tons per year of NOx.

Table 6 identifies the amount and source of available emission reduction credits registered in the District's offset bank as of November 1, 2000. (Despite repeal of the no-net-increase program, the offset bank remains in existence for purposes of federal emission offset requirements.) Although the credit bank has turned over completely since it was analyzed for the 1998 No-Net-Increase Repeal Demonstration,[3] previous trends hold. As indicated, 73% of VOC and 100% of NOx emission reductions were due to equipment or facility shutdowns rather than voluntary process or control technology improvements.

REQUIRED COMPARISONS

The ARB Executive Order also required five specific comparisons regarding emission increases, offsets foregone by the repeal, and the air basin emission inventory. The comparisons are designed to help evaluate whether the predicted minimal impacts of the repeal, projected into the future, continue to be minimal given updated emission inventory and emission increase and decrease data.

Four of the five comparisons require comparing the previously projected "worst-case"[4] and "expected-case"[5] repeal impacts identified in the 1998 No-Net-Increase Repeal Demonstration with both the tracking data and an updated projection of the future impact of the repeal. It is

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[1] In 1996 and 1999, net VOC emission decreases were more than double the net NOx emission increases. Since the no-net-increase program allowed NOx emission increases to be offset by VOC emission decreases on a 2:1 basis, the net NOx emission increases can be considered offset by the net VOC emission reductions.

[2] These data also show there is no danger during periods of robust economic growth (such as the late 1990's) of a surge of emission increases from sources previously subject to the no-net-increase program. As discussed in the 1998 EIR on the no-net-increase program repeal, there is no apparent correlation between emission increases from these sources (or shutdowns) and the state of the local economy.

[3] All banked credits identified in the 1998 Demonstration have since been surrendered as offsets, and the bank is now comprised of all new credits.

[4] The 1998 worst-case analysis utilized four overly conservative assumptions: (1) future yearly emission increases from businesses emitting over ten tons annually would equal the highest annual emissions increase occurring from such businesses over the previous five-year period (occurring in 1993); (2) no emission reductions from shutdowns were assumed to occur (although, in truth, shutdowns would continue occurring without the no-net-increase program); (3) emission increases were not discounted in future years to reflect increasingly stringent federal and state mandates (although, in truth, the increased emissions would likely be reduced due to future control requirements on affected equipment); and (4) emission increases from businesses were assumed to be above and beyond forecasted emissions growth (although, in truth, emission projections used in developing the air quality plan already account for anticipated emissions growth from all new and modified businesses).

[5] The 1998 expected-case analysis assumed future yearly emission increases from businesses emitting over ten tons annually would equal the historical average annual emission increases from all such sources. It further assumed shutdowns would continue occurring without the no-net-increase program, yet program repeal would result in foregoing the small percent of offsetting reductions from voluntary process or control technology improvements.

important to note that in updating the projected future impact, the worst-case and expected-case projection methodology does not bear repeating, for several reasons.

- The worst-case and expected-case scenarios were unrealistically conservative for purposes of completing required California Environmental Quality Act (CEQA) analyses of the 1998 program repeal. Updated analyses herein, based on tracking data, show resulting projected emissions impacts, although minor, were not realized.

- The worst-case analysis assumed no emission reductions from shutdowns would occur following program repeal. However, such emission reductions did occur (Table 3). In fact, accumulation of nearly eight years of data on emission increases from affected sources and unbanked emission reductions from shutdowns have established a persuasively consistent pattern of net emissions reductions, independent of economic conditions (Table 5).

- The worst-case annual emission increases projected to result from program repeal were based on peak-year 1993 emission increases from businesses emitting over ten tons annually. Updated information indicates the peak-year for emission increases from affected businesses remains 1993, and the projected emission inventory for San Diego County (against which the peak emission increases were compared) has increased for all years, making any impact even smaller by comparison. Consequently, repeating the worst-case analysis would not change the previous conclusion of negligible impacts.

- The expected-case annual emission increases projected to result from program repeal were based on an assumption that program repeal would result in foregoing the small percentage of VOC emission reduction credits derived from voluntary process or control technology improvements. However, analysis of the existing offset bank (Table 6) indicates a percentage of VOC credits registered subsequent to program repeal were derived from voluntary process improvements, confirming this assumption was highly conservative. Existing federal emission offset requirements have maintained the incentive to create surplus emission reductions from process improvements.

1. Comparison of Previous and Revised Projected Impacts of Future Foregone Offsets from Sources Exceeding ten tons/year of VOC or NOx.

Tables 7 and 8 provide updated projections of VOC and NOx emission impacts, respectively, of the no-net-increase program repeal. The projections are compared with the modest emission increases conservatively projected in the District's 1998 No-Net-Increase Repeal Demonstration.

The updated projections indicate no future emissions impact is anticipated due to no-net-increase program repeal. This projection is based on nearly eight years of data indicating emission reductions due to unbanked shutdowns exceed emissions growth from new or modified sources that would have been required to obtain offsets under the no-net-increase program (Table 5), with the exception of a temporary and relatively small NOx increase in 1998. (Short-term ocean dredging projects occurred in 1998 prior to program repeal, and the associated emission increases

were fully offset.) The emission benefits from shutdowns, which are the primary source of offsets (Table 6), occur regardless of no-net-increase requirements. Therefore, no cumulative VOC or NOx emissions impact is anticipated from program repeal. Temporary impacts, such as additional dredging projects, are infrequent and are not expected to constitute a significant percentage of the emission inventory, nor are they expected to halt or reverse an existing trend of decreasing total regionwide emissions. Further, such projects remain subject to federal offset requirements if they exceed 50 tons/year of NOx or VOC.

2. Revised Repeal Impact as a Percentage of Annual Total Emission Inventory, for VOC and NOx

Table 9 indicates the impact of the no-net-increase program repeal was 0% of the VOC total annual emission inventory during the 1998-2000 review period, and is expected to be 0% of the VOC future total inventory through 2010. Table 10 indicates the NOx impact of program repeal would have been 0.05% of the total inventory in 1998 but for offsets acquired prior to program repeal the same year. The 1999 and 2000 impacts were zero, as is the projected future impact through 2010. The zero values for future VOC and NOx impacts reflect tracking results (Table 5) and the updated projection of cumulative future impacts described in No. 1 above. As also described in No. 1, temporary increases are also possible, but are not expected to constitute a significant percentage of the total emission inventory, nor halt or reverse an existing trend of decreasing total regionwide emissions, and would be subject to federal offset requirements if federal major source project thresholds are exceeded.

3. Revised Repeal Impact as a Percentage of Annual Stationary Source Inventory, for VOC and NOx

Table 11 indicates the impact of the no-net-increase program repeal was 0% of the VOC total stationary source inventories during the 1998-2000 review period. Table 12 indicates the NOx impact of program repeal would have been 0.62% of the total stationary source inventory in 1998 but for offsets acquired prior to program repeal. Additionally, although a 0.06% net increase in 1999 NOx is indicated, under the no-net-increase program, this could have been offset on a 2:1 basis by excess VOC reductions, and therefore does not constitute an impact of program repeal.[1] Average net cumulative impact for both VOC and NOx is less than zero (Table 5). Therefore, the future cumulative impact of no-net-increase repeal is expected to be 0% of the VOC and NOx future stationary source inventories through 2010. Temporary increases could occur, but are not expected to constitute a significant percentage of the stationary source inventory, nor halt or reverse an existing trend of decreasing total regionwide emissions, and would be subject to federal offset requirements if federal major source project thresholds are exceeded.

[1] However, to be conservative, this net increase is depicted as a repeal impact in the accompanying tables.

4. Comparison of Revised and Previous ("Worst-Case" and "Expected-Case") Projections of Repeal Impact, Expressed as Percentage of Total Inventory and as Percentage of Stationary Source Inventory, for VOC and NOx

Tables 13 and 14 compare the previous worst-case and expected-case impacts of program repeal, as identified in the 1998 No-Net-Increase Repeal Demonstration, with actual 1998 and 1999 data, as well as projected 2000, 2005, and 2010 impacts. Regarding the 1998-2000 review period, no increase was previously predicted for 1998, and none occurred, although temporary (dredging) emissions, which were fully offset, could have resulted in a small net increase in 1998 NOx emissions if the projects had been undertaken following program repeal. The negligible worst-case VOC increases projected for 1999 did not come to pass, as there was a net VOC reduction regarding the affected sources that year. Although a four-ton net NOx increase occurred in 1999, this could have been offset on a 2:1 basis by excess VOC reductions, as described in No. 3 above. Regarding future years, the highest (worst-case) impact previously projected, 0.57% increase in the 2010 total VOC inventory and 1.25% increase in the 2010 total NOx inventory, have been revised to 0%, reflecting tracking results (Table 5) and the updated projection of future cumulative impacts described in No. 1 above.

Tables 15 and 16 show similar results were found in comparing previous and revised projections of no-net-increase program repeal impacts expressed as a percentage of stationary source inventories. The short-term 1998 NOx increase which would have occurred had temporary dredging projects not been fully offset, would have resulted in a short-term 0.62% increase in the stationary source NOx inventory. However, this would not reverse the trend of decreasing stationary source NOx emissions and would have no bearing on progress towards achieving state ambient air quality standards. Projected increases in 1999 VOC emissions were not realized. The net increase in NOx (0.06% of stationary source emissions) came close to matching the Expected-Case (0.07%). However, as explained previously, this could have occurred under the no-net-increase program as well, due to the availability of excess VOC reductions due to shutdowns. In addition, projected worst-case VOC impacts (1.5%) and the NOx impacts (16%) in 2010 have been revised to 0%, reflecting a net average reduction of both VOC and NOx over the years examined (Table 5) and the updated projection of future impacts described in No. 1 above.

5. Comparison of Emission Inventory Used in the Current RAQS Update and the Emission Inventory Used in the 1998 No-Net-Increase Repeal Demonstration

Tables 17-20 compare the two regionwide, average annual emission inventories for VOC and NOx. While the most recent projections provided by ARB show future expected mobile source and stationary source emissions are higher than previously thought, the total inventory continues to reflect dramatic decreases in future emissions, due to anticipated reductions in mobile source emissions. In San Diego County, mobile source emissions constitute the majority of current and future emissions of both VOC and NOx. For this reason, though not expected, even sizable emission impacts of the no-net-increase repeal would not affect the continued reduction in total regional emissions, which is the key criterion in assessing whether program repeal adversely impacts achieving and maintaining state ambient air quality standards by the earliest practicable date.

CONCLUSION

The emission benefits from shutdowns, the primary source of emission offsets, occur regardless of no-net-increase requirements. Data reflecting the 1993-2000 period indicate unbanked emission reductions from equipment shutdowns have consistently and substantially exceeded permanent emission increases from new or modified sources exceeding ten tons per year of VOC or NOx, with the exception of a negligible net increase in 1999 NOx. However, in that year, excess available VOC emission reductions from unbanked shutdowns could provide offsetting reductions on a 2:1 basis, as was done in the original 1998 No-Net-Increase Repeal Demonstration for 1996 data, and as provided by the repealed no-net-increase program. The short-term 1998 NOx increase which would have occurred had temporary ocean dredging projects not been fully offset, highlights the possibility of future temporary emission increases from ocean dredging projects. However, these are expected to be infrequent, and to constitute less than 0.1% of regional NOx emissions. In addition, any future dredging project exceeding 50 tons per year of NOx or VOC remains subject to federal offset requirements.

It is therefore concluded, as demonstrated in the preceding analysis prepared pursuant to state law and ARB guidance, that continued repeal of the no-net-increase program is not expected to halt or reverse an existing trend of decreasing total regionwide emissions of VOC and NOx. Accordingly, it is concluded that a state no-net-increase program remains unnecessary in San Diego County to maintain progress toward attaining and maintaining state ambient air quality standards by the earliest practicable date.

Table 1
Emission Increases and Offsets (Tons/Year) from
Permitted Sources Annually Emitting Over 10 Tons of VOC or NOx
January 1, 1998 – June 30, 2000

Name	Application Description	VOC Increase	VOC Offset	NOx Increase	NOx Offset
Stuyvesant Dredge	Increase dredge fuel limit (retired 1998)	--	31.68[1]	29.90	14.06[1]
Stuyvesant Dredge	Increase dredge fuel limit (retired 1998)	--	--	5.00	5.00[1]
Stuyvesant Dredge	Increase dredge fuel limit (retired 1998)	--	33.03[1]	30.81	27.44[1]
Dutra Construction	Dredge Antone (retired 1998)	--	--	15.50	15.50[1]
Teradyne Circuits	Hot air solder leveler w/ control	1.00	--	--	--
Watkins Manufacturing	Modify resin operation	1.00	--	--	--
Rohr Industries	Remote reservoir solvent cleaners	0.30	--	--	--
Southwest Marine	Portable marine coating	5.00	6.00[2]	--	--
CA Corrections Dept	Cold solvent degreaser	0.30	--	--	--
SD Metro Wastewater	Modify cold solvent degreaser	0.19	--	--	--
1998 Totals:		**7.79**	**70.71**	**81.21**	**62.00**
Surface Technologies	Portable marine coating	15.00	--	0.00	--
SD Metro Pump #2	Increase fuel use for engines	--	--	14.00	--
Cabrillo Power	Reel barge engine	2.03	--	1.49	--
Cabrillo Power	Anchor scow engine	0.12	--	1.46	--
SD Miramar Landfill	170hp diesel engine	0.11	--	3.38	--
Marriot Hotel	Modify dry cleaning facility	0.39	--	--	--
USN Air Station Miramar	Modify marine coating operation	3.60	--	--	--
San Diego State Univ.	Adhesive application station	5.00	--	--	--
Napp Systems	Photopolymer plate mfg line	3.60	--	--	--
Napp Systems	Modify coil coating line	0.30	0.30[3]	--	--
1999 Totals:		**30.15**	**0.30**	**20.33**	**0.00**
Bardon Enterprises	Wood products coating station	14.60	--	--	--
Bardon Enterprises	Cold solvent degreaser	1.80	--	--	--
ROHR Industries	Amend to add new coatings	1.80	--	--	--
ROHR Industries	Amend to add new coatings	1.80	--	--	--
2000 (Jan – Jun) Totals:		**20.00**	**--**	**--**	**0.00**

[1] Dredging project triggered federal and state emission offset requirements. (Project occurred before repeal of state offset requirements.)

[2] Project utilized a Type III Portable Emission Unit and, therefore, provided offsets at a 1.2 to 1.0 ratio, pursuant to Rule 20.4 (New Source Review – Portable Emission Units).

[3] Equipment modification resulted in increased emissions, necessitating a corresponding reduction in banked emission reduction credits, pursuant to Rule 26.0 (Banking of Emission Reduction Credits – General Requirements).

Table 2
Permanent Emission Increases (Tons/Year) from
Permitted Sources Annually Emitting Over 10 Tons of VOC or NOx
January 1, 1998 – June 30, 2000[1]

Name	Application Description	VOC Increase	NOx Increase
Teradyne Circuits	Hot air solder leveler w/ control	1.00	--
Watkins Manufacturing	Modify resin operation	1.00	--
Rohr Industries	Remote reservoir solvent cleaners	0.30	--
Southwest Marine	Portable marine coating	5.00	--
CA Corrections Dept	Cold solvent degreaser	0.30	--
SD Metro Wastewater	Modify cold solvent degreaser	0.19	--
1998 Totals:		**7.79**	**0.00**
Surface Technologies	Portable marine coating	15.00	--
SD Metro Pump #2	Increase fuel use for engines	--	14.00
Cabrillo Power	Reel barge engine	2.03	1.49
Cabrillo Power	Anchor scow engine	0.12	1.46
SD Miramar Landfill	170hp diesel engine	0.11	3.38
Marriot Hotel	Modify dry cleaning facility	0.39	--
USN Air Station Miramar	Modify marine coating operation	3.60	--
San Diego State Univ.	Adhesive application station	5.00	--
Napp Systems	Photopolymer plate mfg line	3.60	--
Napp Systems	Modify coil coating line	0.30	--
1999 Totals:		**30.15**	**20.33**
Bardon Enterprises	Wood products coating station	14.60	--
Bardon Enterprises	Cold solvent degreaser	1.80	--
ROHR Industries	Amend to add new coatings	1.80	--
ROHR Industries	Amend to add new coatings	1.80	--
2000 (Jan – Jun) Totals:		**20.00**	**0.00**

[1] Does not include temporary increases from Table 1 (dredging-related emissions totaling 81.21 tons NOx in 1998, which were fully offset).

Table 3
Unbanked VOC and NOx Emission Reductions (Tons/Year) from Equipment and Facility Shutdowns
January 1, 1998 – June 30, 2000

Name	Equipment Description	Unbanked Emission Reductions	
		VOC	NOx
Acme Iron Works	Metal parts/products coating	0.04	--
Adams B F Co	Polyester resin casting	0.64	--
Allan Co	Industrial coating application station	3.07	--
Allied Signal Ocean Systems	Paint spray booth	0.24	--
Apollo Golf Inc	Coating application station	1.99	--
Apollo Golf Inc	Graphic arts operation, silk screen machine	0.50	--
ASW Corp	Metal parts/products coating	0.11	--
Athens Corporation	Chemical reprocessor with distillation column	0.01	--
Athens Corporation	Isopropyl alcohol distillation purification system	0.01	--
CA Direct Services Inc	Graphic arts printing operation	1.22	--
CA Direct Services Inc	Graphic arts printing operation	1.22	--
CA Direct Services Inc	Graphic arts printing operation	1.22	--
Carpenter Special Products Corp	Maskant application station	0.12	--
Cascade Mechanical Inc	Metal parts/products coating	0.25	--
Charlotte Russe Inc	Wood products coating	0.17	--
Cold Solvent Degreasers	37 cold solvent degreasers (each <7 sq ft, 0.1 tpy VOC/unit)	3.70	--
Deutsch Co	Cold solvent degreaser (<5 sq ft)	0.82	--
Deutsch Co	Cold solvent cleaner	0.49	--
Gec Marconi Materials	Aerospace coating application station	3.85	--
GF Sheetmetal & Welding	Metal parts/products coating	0.18	--
Hanson Aggregates Pacific Southwest Inc	Diesel generator (665 hp)	0.03	0.87
Herzog Contracting Corp	Portable tub grinder for green waste	0.58	15.91
Honeywell Inc	Water evaporator	0.10	--
Image Signing & Graphics Inc	Coating application station	0.12	--
Mark Sensing Western Usa Inc	Paper coating operation station	0.39	--
Mark Sensing Western Usa Inc	Paper coating operation station	0.39	--
National Steel & Shipbuilding	Electric parts varnish coating	1.04	--
Pacific Bell	Gas turbine alternator (6 MMBTU/hr heat input)	0.00	0.01
Palomar Products Inc	Conformal coating spray	0.50	--
Palomar Products Inc	Conformal coating operation	0.33	--
Pow Con	Conformal coating station for printed circuit boards	0.26	--
Powerine Oil Co	Bulk fuel storage fac. Tank cap (gal). 178, 920; 420,000; 840,000	19.70	--
Ram Brant Marble	Paint spray booth, simulated marble manufacturing	3.40	--
Reprints Inc	Lithographic printing press	2.70	--
Rocking Horse The	Paint spray booth	0.40	--
Scripps Memorial Hospital	Natural gas fueled piston engine	5.85	2.92
Scripps Memorial Hospital	Natural gas fueled piston engine	5.85	1.25
Scripps Mercy Hospital	Gas turbine generator set (14 MMBTU/hr heat input)	0.05	3.60
SD City Metro Wastewater Dept (Fiesta Is.)	Diesel engines (six 58.5 hp engines)	0.60	6.67
Sharp Donald N Memorial Comm Hosp	Absorption chiller (13 MMBTU/hr)	0.03	1.72
Sony Electronics Inc	Conductive and anti-reflective coating application station	0.03	--
Southwest Marine Inc	Diesel engine generator set (375 hp)	0.29	2.29
Superior Spa Manufacturing	Reinforced polyester resin/foam application station	7.70	--
	1998 Totals:	**70.19**	**35.24**

Table 3 (continued)
Unbanked VOC and NOx Emission Reductions (Tons/Year) from Equipment and Facility Shutdowns

Name	Equipment Description	Unbanked Emission Reductions	
		VOC	NOx
Calmat	Asphalt batch plant, hot mix	1.12	3.35
Delta Airlines Inc	Diesel engine (156 hp)	0.71	4.32
Delta Airlines Inc	Diesel engine (156 hp)	0.71	4.32
Encina Wastewater Authority	Cold solvent degreaser (<8.3 sq ft)	0.25	--
Gamestands Inc	Wood coating (paint spray booth)	0.65	--
General Dynamics Properties	Aerospace coating application station	1.08	--
General Dynamics Properties	Aerospace coating application station	0.90	--
General Dynamics Properties	Aerospace coating application station	0.90	--
General Dynamics Properties	Aerospace coating application station	0.26	--
General Dynamics Properties	Aerospace coating application station	0.26	--
General Dynamics Properties	Aerospace coating application station	0.24	--
General Dynamics Properties	Adhesive application station	1.11	--
Hughes Microelectronics Center	Nat gas boilers (total 28.3 MMBTU/hr) & emerg. gen. (600 hp)	0.20	3.73
Knoxage Cuyamaca Water Co	Paint spray booth	0.01	--
Lakeside Furniture Manufacturing Inc.	Adhesive application station	7.90	--
Levitz Furniture Co of the Pacific	Wood/fabric coating application station	1.20	--
Maritime Usa Inc	Paint spray booth	1.12	--
Maritime Usa Inc	Paint spray booth	0.33	--
Mission Valley Cabinet	Wood coating application station	0.88	--
Northrup Grumman Corp Ryan Aeronautical	Aerospace coating application station	1.37	--
Omni Pacific	Wood coating application station	0.03	--
Parkhouse Tire Inc	Industrial coating application station	0.87	--
Pow Con	Transformer coating operation	0.01	--
Powerware	Industrial coating application station	0.89	--
R & F Steel Inc	Metal parts/products coating	1.25	--
Reprints Inc	Lithographic printing press	2.70	--
Rite Choice	100 remote reservoir cleaners (0.1 tpy VOC/unit)	10.00	--
SD Community College District	Wood coating application station	0.18	--
Southwest Golf Inc	Golf ball coating application operation	1.81	--
Tower Structures Inc	Outside application station	0.09	--
US Air	Engine generator set (72 KW generator)	0.02	0.13
USN Nav Sta 3 Shore Int Maint Act	Foundry curing (Core/Mold)	2.40	--
Van's Inc	Tennis shoe manufacturing line	9.85	0.70
1999 Totals:		**51.30**	**16.55**
Advanced Counter Tech	Spray booth for contact cement	2.70	--
ARB Inc	Diesel engines (175 hp, 50 hp, 110 hp)	0.05	0.70
ARB Inc	Diesel engines (200 hp, 50 hp)	0.04	0.62
Cobra Golf Inc II	Solvent application operation	0.20	--
Cohu Inc Electronics Div	Metal parts/products coating	0.30	--
Iseki Inc	Metal parts/products coating	0.08	--
Koch Fluid Systems	Reverse osmosis membrane manufacturing line	0.16	--
Napp Systems Inc	Commercial flexographic plate processor testing station	0.02	--
Northrup Grumman Corp Ryan Aeronautical	Aerospace coating application station	0.09	--
Remote Reservoir Cleaners	88 remote reservoirs (0.1 tpy VOC/unit)	8.80	--
Reyna Inc	Wood products coating	0.84	--
SD City Of Environmental Services Dept	Industrial coating application station	0.28	--
SD City Of Environmental Services Dept	Industrial coating application station	0.28	--
Soil Remediation Sites	39 soil remediation systems (0.2 tpy VOC/system)	7.80	--
Spec Built Systems Inc	Portable marine coating station	0.06	--
Titleist Golf Club Plant	Solvent cleaning and assembly stations	4.79	--
Valley Radiator	Metal parts and products coating station	0.02	--
2000 (Jan – Jun) Totals:		**26.51**	**1.32**

Table 4
Adjustment of Table 3 Unbanked Shutdowns (Tons/Year NOx)

Name	Equipment	Initial Reduction	Adjusted Reduction	Change	Adjustment Reason
Scripps Memorial Hospital	Natural gas engine	4.21	2.92	-1.29	Rule 69.4.1
Scripps Memorial Hospital	Natural gas engine	1.41	1.25	-0.16	Rule 69.4.1
SD City Metro Wastewater Dept	Diesel engines	8.10	6.67	-1.43	AP-42 adjusted to permit conditions
1998 Totals:		**38.12**	**35.24**	**-2.88**	
Delta Airlines	Diesel engine	8.81	4.32	-4.49	Rule 69.4.1
Delta Airlines	Diesel engine	8.81	4.32	-4.49	Rule 69.4.1
Hughes Micro-electronics Center	Natural gas boilers	4.70	3.73	-0.97	Rule 69.2
US Air	Engine generator set	0.21	0.13	-0.08	AP-42 adjusted to permit conditions
1999 Totals:		**26.58**	**16.55**	**-10.03**	

Table 5
Annual Net VOC and NOx Emissions Reduction (Tons):
Comparing Permanent Emission Increases from Sources > 10 Tons/Year
to Unbanked Emission Reductions from Shutdowns

Year	Pollutant	Increase from Sources >10 tons	Unbanked Reduction From Shutdowns	Net Emissions Change
1993	VOC	32.11	-207.61	-175.50
	NOx	54.57	-76.02	-21.45
1994	VOC	9.16	-196.84	-187.68
	NOx	46.59	-54.19	-7.60
1995	VOC	7.52	-98.75	-91.23
	NOx	6.67	-70.87	-64.20
1996	VOC	2.57	-65.57	-63.00
	NOx	34.14	-8.25	25.89
1997	VOC	17.2	-57.78	-40.58
	NOx	9.59	-19.49	-9.90
1998	VOC	7.79	-70.19	-62.40
	NOx	0	-35.24	-35.24
1999	VOC	30.15	-51.30	-21.15
	NOx	20.33	-16.55	3.78
2000 (Jan-Jun)	VOC	20.00	-26.51	-6.51
	NOx	0	-1.32	-1.32
Average	**VOC**	**16.87**	**-103.27**	**-86.41**
	NOx	**22.92**	**-37.59**	**-14.67**

Table 6
Banked Emission Reduction Credits, Source and Amount (Tons/Year)
(As of November 30, 2000)

Source	VOC	NOx	Reduction Source
Caspian	16.90	--	Process modification
General Dynamics	0.23	1.26	Shutdown (Equipment)
Hughes Aircraft	1.28	--	Shutdown (Equipment)
Muht-Hei, Inc.	9.09	--	Shutdown (Equipment)
National Offsets	3.20	--	Shutdown (Station)
National Steel & Shipbldg.	--	0.54	Shutdown (Equipment)
NAS North Island	--	30.00	Shutdown (Facility)
Naval Station, San Diego	1.33	5.50	Shutdown (Equipment)
Navy Region Southwest	--	12.02	Shutdown (Equipment)
Otay Mesa Generating Co.	--	6.91	Shutdown (Facility)
Otay Mesa Generating Co.	65.4	--	Shutdown (Facility)
Otay Mesa Generating Co.	17.05	--	Process modification
Rohr, Inc. (BFGoodrich)	5.30	--	Shutdown (Equipment)
SD Metro Wastewater	23.14	--	Process modification
SD Metro Wastewater	--	0.32	Shutdown (Equipment)
Sempra Energy	1.00	20.80	Shutdown (Equipment)
Sempra Energy Resources	0.30	17.50	Shutdown (Equipment)
Solar Turbines	--	21.90	Shutdown (Facility)
Solar Turbines	44.0	--	Shutdown (Facility)
Solar Turbines	8.8	--	Shutdown (Equipment)
Sony Electronics	0.54	--	Shutdown (Equipment)
South Coast Materials	0.93	2.19	Shutdown (Facility)
Southern California Edison	0.02	0.51	Shutdown (Equipment)
SW Division, Naval Facilities Eng. Com.	13.00	--	Shutdown (Station)
U.S. Navy, SW Div.	2.0	--	Process modification
U.S. Navy, SW Div.	9.00	--	Shutdown (Station)
USN Comm. Station	0.05	2.64	Shutdown (Equipment)
Totals:	**222.56**	**122.09**	
Shutdowns:	**163.47 (73%)**	**122.09 (100%)**	
Process Modifications:	**59.09 (27%)**	**0 (0%)**	

Table 7
Actual or Revised Projections of VOC Emission Impacts (Tons/Year)
Resulting from No-Net-Increase Program Repeal

Year	Actual Net Impact[1]	**Revised Projection**	**1998 Demonstration Projected Worst-Case[2]**	**1998 Demonstration Projected Expected-Case[3]**
1998	-62	--	0	0
1999	-21	--	32	2
2000	--	**<0**	64	4
2005	--	**<0**	224	12
2010	--	**<0**	385	25

[1] 1998 and 1999 data from Table 5.
[2] Worst-case did not consider shutdowns. Assumed annual increase of historic-high, 32.11 tons/yr starting in 1999.
[3] Expected-case assumed program repeal would result in foregoing offsetting reductions from voluntary process or control technology improvements. Assumed annual net increase of 1.78 tons/yr starting in 1999.

Table 8
Actual or Revised Projections of NOx Emission Impacts (Tons/Year)
Resulting from No-Net-Increase Program Repeal

Year	**Actual Net Impact[1]**	**Revised Projection**	**1998 Demonstration Projected Worst-Case[2]**	**1998 Demonstration Projected Expected-Case[3]**
1998	46	--	0	0
1999	4	--	55	3
2000	--	**<0**	109	6
2005	--	**<0**	382	21
2010	--	**<0**	655	36

[1] 1998 and 1999 data from Table 5 plus 1998 temporary (dredging) emission increases from Table 1. Note: 1998 "increase" is only illustrative. In reality, all dredging emission increases were fully offset. Although the 1999 impact was four tons, this could have been offset by excess available VOC reductions from unbanked shutdowns on a 2:1 basis, as provided by the repealed no-net-increase program.
[2] Worst-case did not consider shutdowns. Assumed annual increase of historic-high, 54.57 tons/yr starting in 1999.
[3] Expected-case assumed program repeal would result in foregoing offsetting reductions from voluntary process or control technology improvements. Assumed annual net increase of 3.03 tons/yr starting in 1999.

Table 9
Actual or Projected VOC Impact of the No-Net-Increase Program Repeal
As a Percentage of Total Inventory (Tons/Year)

Year	Total Inventory[1]	Actual Net Impact[2] (% of Total Inventory)	Projected Net Impact (% of Total Inventory)
1998	97,875	-62 (0%)[3]	--
1999	94,608	-21 (0%)[3]	--
2000	91,682	--	<0 (0%)
2005	77,052	--	<0 (0%)
2010	72,599	--	<0 (0%)

[1] Average annual tons/day estimates from ARB (March 1, 2001), multiplied by 365.
[2] From Table 5.
[3] Since program repeal has not likely "caused" emission reductions, zero was used instead of a negative percentage.

Table 10
Actual or Projected NOx Impact of the No-Net-Increase Program Repeal
As a Percentage of Total Inventory (Tons/Year)

Year	Total Inventory[1]	Actual Net Impact[2] (% of Total Inventory)	Projected Net Impact (% of Total Inventory)
1998	91,250	46 (0.05%)[3]	--
1999	89,097	4 (0%)	--
2000	85,819	--	<0 (0%)
2005	69,423	--	<0 (0%)
2010	57,342	--	<0 (0%)

[1] Average annual tons/day estimates from ARB (March 1, 2001), multiplied by 365.
[2] From Table 5. Although the 1999 impact was four tons, this could have been offset by excess available VOC reductions from unbanked shutdowns on a 2:1 basis, as provided by the repealed no-net-increase program.
[3] Since program repeal has not likely "caused" emission reductions, zero was used instead of a negative percentage.

Table 11
Actual or Projected VOC Impact of the No-Net-Increase Program Repeal
As a Percentage of Stationary Source Inventory (Tons/Year)

Year	Stationary-Source Inventory[1]	Actual Net Impact[2] (% of Sta-Source Inventory)	Projected Net Impact (% of Total Inventory)
1998	17,392	-62 (0%)[3]	--
1999	18,031	-21 (0%)[3]	--
2000	18,536	--	<0 (0%)
2005	21,061	--	<0 (0%)
2010	24,601	--	<0 (0%)

[1] Average annual tons/day estimates from ARB (March 1, 2001), multiplied by 365.
[2] From Table 5.
[3] Since program repeal has not likely "caused" emission reductions, zero was used instead of a negative percentage.

Table 12
Actual or Projected NOx Impact of the No-Net-Increase Program Repeal
As a Percentage of Stationary Source Inventory (Tons/Year)

Year	Total Inventory[1]	Actual Net Impact[2] (% of Total Inventory)	Projected Net Impact (% of Total Inventory)
1998	7,373	46 (0.62%)	--
1999	7,264	4 (0.06%)	--
2000	7,402	--	<0 (0%)
2005	8,103	--	<0 (0%)
2010	8,943	--	<0 (0%)

[1] Average annual tons/day estimates from ARB (March 1, 2001), multiplied by 365.
[2] From Table 5. Although the 1999 "impact" was four tons, this could have been offset by excess available VOC reductions from unbanked shutdowns on a 2:1 basis, as provided by the repealed no-net-increase program.

Table 13
Revised and Previous Projections of VOC Impact of Program Repeal
As a Percentage of Total Inventory

Year	*Actual* or Projected Impact	1998 Worst-Case Demonstration	1998 Expected-Case Demonstration
1998	*<0%*	0.00%	0.00%
1999	*<0%*	0.04%	0.00%
2000	<0%	0.08%	0.01%
2005	<0%	0.32%	0.02%
2010	<0%	0.57%	0.03%

Table 14
Revised and Previous Projections of NOx Impact of Program Repeal
As a Percentage of Total Inventory

Year	*Actual* or Projected Impact	1998 Worst-Case Demonstration	1998 Expected-Case Demonstration
1998	*0.05%*	0.00%	0.00%
1999	*0.00%*	0.08%	0.00%
2000	<0%	0.16%	0.01%
2005	<0%	0.68%	0.04%
2010	<0%	1.25%	0.07%

Table 15
Revised and Previous Projections of VOC Impact of Program Repeal
As a Percentage of Stationary Source Inventory

Year	*Actual* or Projected Impact	1998 Worst-Case Demonstration	1998 Expected-Case Demonstration
1998	*<0%*	0.00%	0.00%
1999	*<0%*	0.17%	0.01%
2000	<0%	0.34%	0.02%
2005	<0%	1.07%	0.05%
2010	<0%	1.49%	0.08%

Table 16
Revised and Previous Projections of NOx Impact of Program Repeal
As a Percentage of Stationary Source Inventory

Year	*Actual* or Projected Impact	1998 Worst-Case Demonstration	1998 Expected-Case Demonstration
1998	*0.62%*[1]	0.00%	0.00%
1999	*0.06%*[2]	1.19%	0.07%
2000	<0%	2.51%	0.14%
2005	<0%	10.5%	0.58%
2010	<0%	16.02%	0.88%

[1] 1998 "impact" is only illustrative. In reality, all NOx (dredging) emission increases were fully offset.
[2] Although net 1999 emissions totaled 4 tons (0.06%), this could have been offset by excess available VOC reductions from unbanked shutdowns on a 2:1 basis under the repealed no-net-increase program. It is depicted here as an "impact" to be conservative.

Table 17
Annual VOC Emission Inventory for San Diego County (Tons)
For the 2001 Triennial Regional Air Quality Strategy Revision[1]

Year	Stationary	Area	Mobile	Total Inventory
1998	17,392	15,403	65,080	97,875
1999	18,031	15,549	61,028	94,608
2000	18,536	15,518	57,634	91,682
2005	21,061	15,367	40,661	77,052
2010	24,601	16,462	31,536	72,599

[1] From ARB (March 1, 2001). 1998 interpolated from 1997-1999.

Table 18
Annual VOC Emission Inventory for San Diego County (Tons)
For the 1998 Demonstration Supporting No-Net-Increase Program Repeal[1]

Year	Stationary	Area	Mobile	Total Inventory
1998	18,710	17,155	49,246	85,111
1999	18,900	16,863	44,771	80,534
2000	19,090	16,571	40,296	75,957
2005	20,973	17,411	30,003	68,387
2010	25,769	17,958	23,360	67,087

[1] 1998 and 1999 interpolated from 1995-2000.

Table 19
Annual NOx Emission Inventory for San Diego County (Tons)
For the 2001 Regional Air Quality Strategy Triennial Update[1]

Year	Stationary	Area	Mobile	Total Inventory
1998	7,373	1,077	82,818	91,250
1999	7,264	1,095	80,775	89,097
2000	7,402	1,113	77,325	85,819
2005	8,103	1,205	60,079	69,423
2010	8,943	1,351	47,049	57,342

[1] From ARB (March 1, 2001). 1998 interpolated from 1997-1999.

Table 20
Annual NOx Emission Inventory for San Diego County (Tons)
For the 1998 Demonstration Supporting No-Net-Increase Program Repeal[1]

Year	Stationary	Area	Mobile	Total Inventory
1998	4,855	2,139	66,766	73,760
1999	4,599	2,183	62,729	69,511
2000	4,344	2,227	58,692	65,262
2005	3,614	2,409	50,042	56,064
2010	4,088	2,519	45,114	51,721

[1] 1998 and 1999 interpolated from 1995-2000.

Air Resources Board

Barbara Riordan, Chairman
2020 L Street · P.O. Box 2815 · Sacramento, California 95812 · www.arb.ca.gov

Pete Wilson
Governor

[illegible] M. Rooney
Secretary for
Environmental
Protection

December 17, 1998

Mr. Richard J. Sommerville
Director
San Diego County Air Pollution Control District
9150 Chesapeake Drive
San Diego, California 92123-1096

Dear Mr. Sommerville:

On November 6, 1998, the San Diego County Air Pollution Control District (District) submitted to the Air Resources Board (ARB) its finding proposing repeal of its no-net-increase permitting program on the basis that the program is not necessary to attain and maintain the State ambient air quality standards by the earliest practicable date. Enclosed is a copy of Executive Order G-97-007-2, which grants conditional ARB approval of that repeal.

The District's finding for repeal of its no-net-increase permitting program was made pursuant to provisions added to State law in 1996 (Health and Safety Code sections 40918.5 and 40918.6). Those provisions allow a district that does not have extreme air pollution to repeal its no-net-increase permitting program for new and modified stationary sources if a district and ARB take specified steps. Those steps include that a district board make the finding that the no-net-increase permitting program is not necessary to achieve and maintain State ambient air quality standards, and that ARB affirm the district's finding based on "quantifiable and substantial evidence." Additionally, State law (Health and Safety Code 40918.6) provides for periodic ARB reevaluation of the need for a district's no-net-increase permitting program after its repeal, and program reinstatement under specified circumstances.

We reviewed the District's finding and supporting documentation following specific guidelines that were developed with input from private industry and local air districts. Because the District has been designated as an attainment area for the State ambient air quality standards for carbon monoxide, sulfur dioxide, and nitrogen dioxide, the focus of our review was on the potential impact of the repeal on the District's progress toward attaining and maintaining the State ambient air quality standard for ozone, for which the District has been classified as a serious nonattainment area. Our review indicates that there is quantifiable and substantial evidence that the District is in compliance with the statutory requirements specified in section 40918.5 of the Health and Safety Code.

The enclosed Executive Order contains several conditions that require the District to track and assess the emissions impact of the repeal and to report this information to the ARB in conjunction with the District's triennial plan updates. Those conditions were included to assure that, once implemented, the repeal of the no-net-increase permitting program does not have a greater impact than what was originally anticipated by the District. Under the conditions in the

Executive Order, the District is required to track all the emission increases from new and modified stationary sources with the potential to emit of 15 or more tons per year that would have been mitigated had the no-net-increase program been in place. Also, since the District's projected impacts under the "expected case" scenario depend on the occurrence of sufficient permanent equipment shutdowns to balance the bulk of predicted growth, the District is required to track the unbanked equipment shutdowns which, had they been banked as emission reduction credits, would have been eligible under the District's New Source Review rules to mitigate emissions growth. Further, the conditions require the District to include in its triennial plan updates a detailed report on the information collected in its tracking system, comparisons of actual emissions growth with the growth predicted at the time of the original repeal, and a comparison of the overall rates of emission reductions as reflected in the emission inventories with the rates predicted at the time of the original repeal.

A critical requirement under this approval is for the District to continue to comply with the requirements regarding scheduling and adopting "all feasible measures." As reflected in the Executive Order, what constitutes "feasible" is dynamic, and the District needs to be cognizant of new and emerging technologies that can be incorporated into future plan updates to further progress toward meeting the health-protective State ambient air quality standard for ozone. If the District falls short in implementing all feasible measures, a future reevaluation of the repeal may conclude that reinstatement of the no-net-increase program is necessary.

Several key State and federal requirements will remain in place in the District's programs and will not be affected by the repeal of the no-net-increase program. First, the State requirement for the application of best available control technology to any new or modified stationary source that has the potential to emit of 10 pounds per day or more of any nonattainment pollutant or its precursors will remain in place. Second, federal offset requirements that apply to major sources (sources that emit 50 tons per year or more of VOCs or NOx, or 100 tons per year or more of other criteria pollutants) or major modifications to such sources will remain in place.

If you have any questions regarding any of the conditions and requirements contained in the Executive Order, please call Mr. Peter D. Venturini, Chief, Stationary Source Division, at (916) 445-0650.

Sincerely,

Michael P. Kenny
Executive Officer

Enclosure

cc: Mr. Peter D. Venturini, Chief
Stationary Source Division

bcc: Lynn Terry, Assistant Executive Officer
Ray Menebroker, SSD
Beverly Werner, SSD
Liz Ota, SSD
Judy Yee, SSD
Dean Saito, PTSD
Peggy Taricco, PTSD
Leslie Krinsk, OLA

State of California
AIR RESOURCES BOARD

Executive Order G-97-007-2

Conditional Determination that San Diego County Air Pollution Control District's No-Net-Increase Permitting Program Is Not Necessary to Achieve and Maintain the State Ambient Air Quality Standards by the Earliest Practicable Date

WHEREAS, the Legislature has declared in section 39001 of the Health and Safety Code that the public interest shall be safeguarded by an intensive and coordinated state, regional, and local effort to protect and enhance the ambient air quality of the state;

WHEREAS, section 39606 of the Health and Safety Code requires the Air Resources Board (ARB) to adopt ambient air quality standards and sections 39003 and 41500 direct the ARB to coordinate efforts throughout the state to attain and maintain these standards;

WHEREAS, the Legislature enacted the California Clean Air Act of 1988 (the "Act"; Stats. 1988, ch. 1568) and declared that it is necessary that the state ambient air quality standards be attained by the earliest practicable date to protect public health, particularly the health of children, older people, and those with respiratory diseases;

WHEREAS, in order to attain these standards, the Act in Health and Safety Code sections 40910 et seq. mandates a comprehensive program of emission reduction measures and planning requirements for the state and local air pollution control districts ("districts") in areas where the standards are not attained for ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide;

WHEREAS, sections 40911 and 40913 of the Health and Safety Code require that each district which has been designated a nonattainment area for state ambient air quality standards for ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide adopt a plan which is designed to achieve and maintain the state standards by the earliest practicable date;

WHEREAS, section 40914 of the Health and Safety Code requires each district plan to achieve a five percent annual reduction in nonattainment pollutants and their precursors, or, if not possible, to include all feasible control measures and an expeditious adoption schedule;

WHEREAS, pursuant to designation criteria established in accordance with sections 39607 and 40921.5 of the Health and Safety Code, the San Diego County Air Pollution Control District (District) is classified as a serious nonattainment area for ozone, precursors of which are oxides of nitrogen (NOx) and volatile organic compounds (VOCs), and is designated as an attainment area for carbon monoxide, sulfur dioxide, and nitrogen dioxide;

WHEREAS, section 40919 of the Health and Safety Code requires each district classified as a serious nonattainment area to include the following components in its attainment plan to the extent necessary to meet the requirements of the Act:

(1) a stationary source control program designed to achieve no net increase in emissions of nonattainment pollutants or their precursors ("no-net-increase" program) from new or modified stationary sources which emit, or have the potential to emit, 15 tons per year or more of nonattainment pollutants or their precursors; the program shall require the use of best available control technology for any new or modified stationary source which has the potential to emit 10 pounds per day or more of any nonattainment pollutant or its precursors;

(2) the use of best available retrofit control technology (BARCT) for all existing permitted stationary sources;

(3) measures to achieve the use of a significant number of low-emission motor vehicles by operators of motor vehicle fleets;

(4) reasonably available transportation control measures sufficient to substantially reduce the rate of increase in passenger vehicle trips and miles traveled per trip if the district contains an urbanized area with a population of 50,000 or more;

(5) provisions to develop areawide source and indirect source control programs;

(6) provisions to develop and maintain an emissions inventory system to enable analysis and progress reporting and a commitment to develop other analytical techniques to carry out its responsibilities pursuant to subdivision (b) of section 40924; and

(7) provisions for public education programs to promote actions to reduce emissions from transportation and areawide sources.

WHEREAS, on May 17, 1994, the San Diego County Air Pollution Control District Governing Board adopted a no-net-increase permitting program for new or modified stationary sources which emit, or have the potential to emit, 15 tons per year or more of nonattainment pollutants or their precursors;

WHEREAS, on June 17, 1998, the San Diego County Air Pollution Control District Governing Board adopted a revision to its plan to attain the ozone standard entitled "1998 Triennial Regional Air Quality Strategy Revision for the San Diego Air Basin;"

WHEREAS, in the 1998 Triennial Regional Air Quality Strategy Revision, the District, which was unable to achieve the required five percent annual reduction in ozone and its precursors, committed to adopt and implement specific feasible control measures to reduce emissions of NOx and VOCs by specified dates;

WHEREAS, the ARB determined that the District's 1998 Triennial Regional Air Quality Strategy Revision contained every feasible measure within the time frame of that plan (1998-2000) and that the District should proceed expeditiously with adoption of the local controls specified to ensure progress toward attainment of the state ambient air quality standard for ozone and, on August 27, 1998, approved the plan as required by sections 41503 and 41503.1 of the Health and Safety Code;

WHEREAS, section 40918.5(a) of the Health and Safety Code provides that, notwithstanding sections 40918, 40919, and 40920, a district that does not have extreme air pollution may elect to not include a no-net-increase permitting program in its attainment plan if specified actions are taken and if the ARB determines, based upon quantifiable and substantial evidence, that the no-net-increase permitting program is not necessary to achieve and maintain the state ambient air quality standards by the earliest practicable date or to comply with the mitigation requirements of section 39610;

WHEREAS, section 40918.6 of the Health and Safety Code provides for reevaluation of the need for a district's no-net-increase permitting program at the time the district's revised attainment plan is reviewed by the ARB and its reinstatement under specified circumstances;

WHEREAS, section 40925 of the Health and Safety Code requires the district to review and revise its attainment plan at least every three years, and the next triennial plan update is due to the ARB no later than December 31, 2000;

WHEREAS, at a public hearing on November 4, 1998, the District Governing Board considered and adopted Resolution No. 98-297, finding that due to the minimal effect that stationary source growth is expected to have on the total emission inventory trends for San Diego County as described in the document entitled "Analysis Demonstrating that State No-Net-Increase Requirements are Not Necessary to Achieve and Maintain State Ambient Air Quality Standards in San Diego County by the Earliest Practicable Date," the no-net-increase permitting provisions found in Sections (d)(5) and (e)(1) of District Rule 20.1, "New Source Review - General Provisions," Sections (b)(3), (d)(5) and (d)(6) of District Rule 20.2, "New Source Review - Non-Major Stationary Sources," Section (d)(5) of District Rule 20.3, "New Source Review - Major Stationary Sources and Prevention of Significant Deterioration (PSD) Stationary Sources," and Sections (c)(3), (c)(4), (d)(2) and (d)(5) of District Rule 20.4, "New Source Review - Portable Emission Units" are not necessary at this time to achieve and maintain the state ambient air quality standards by the earliest practicable date;

WHEREAS, Resolution 98-297 states that the District Governing Board has taken the following actions:

(1) reviewed an estimate of the growth in emissions, if any, that is likely to occur as a result of the elimination of a no-net-increase permitting program; and

(2) adopted or scheduled for adoption all feasible measures to achieve and maintain state ambient air quality standards;

WHEREAS, at a public hearing on November 4, 1998, the District Governing Board adopted Resolution No. 98-296 certifying a Final Environmental Impact Report in accordance with the California Environmental Quality Act (CEQA) with respect to this action after finding that there will be no significant adverse effects on the environment;

WHEREAS, at a public hearing on November 4, 1998, the District Governing Board adopted Resolution No. 98-298 which states that the District Governing Board conducted public hearings to receive and consider public comments regarding the elimination of the current District no-net-increase permitting program as described in District New Source Review Rules 20.1, 20.2, 20.3 and 20.4, and which amends the District New Source Review Rules 20.1, 20.2, 20.3 and 20.4 to delete the state no-net-increase requirements effective upon the date of this Executive Order;

WHEREAS, on November 6, 1998, the District Governing Board submitted to the Executive Officer of the ARB Resolution No. 98-296, Resolution No. 98-297, Resolution No. 98-298, the Final Environmental Impact Report, the document entitled "Analysis Demonstrating that State No-Net-Increase Requirements are Not Necessary to Achieve and Maintain State Ambient Air Quality Standards in San Diego County by the Earliest Practicable Date," and other supporting documentation;

WHEREAS, as a responsible agency under CEQA, the ARB must consider the environmental documents prepared by the District, as lead agency, prior to reaching a decision on this matter;

WHEREAS, sections 39515 and 39516 of the Health and Safety Code allow the Executive Officer of the ARB to act for the Board;

WHEREAS, based upon quantifiable and substantial evidence provided by the District, including the District Governing Board's Resolution No. 98-296, Resolution No. 98-297, Resolution No. 98-298, The Final Environmental Impact Report, and the document entitled "Analysis Demonstrating that State No-Net-Increase Requirements are Not Necessary to Achieve and Maintain State Ambient Air Quality Standards in San Diego County by the Earliest Practicable Date," the Executive Officer finds as follows:

(1) as approved by the ARB under Resolution 98-36 on August 27, 1998, the District's 1998 Triennial Regional Air Quality Strategy Revision includes every

feasible measure within the time frame of that plan and an expeditious adoption schedule to ensure progress toward attainment of the state ambient air quality standard for ozone;

(2) the District's 1998 Triennial Regional Air Quality Strategy Revision scheduled rules for adoption in 1998 to implement the following feasible measures: Low-NOx Furnaces, Low-NOx Water Heaters, Adhesives Operations, and Stationary Combustion Turbines BARCT. On June 17, 1998, the District Governing Board adopted Rule 69.5, "Natural Gas-Fired Water Heaters" and Rule 69.6, "Natural Gas-Fired Fan-Type Central Furnaces." On December 16, 1998, the District Governing Board adopted Rule 67.21, "Adhesive Material Application Operations," Rule 69.3, "Stationary Gas Turbine Engines - Reasonably Available Control Technology," and Rule 69.3.1, "Stationary Gas Turbine Engines - Best Available Retrofit Control Technology." By scheduling and adopting the aforementioned rules as planned, the District currently demonstrates continued compliance with the requirements of Health and Safety Code section 40914 for the expeditious adoption of all feasible measures;

(3) the District's 1998 Triennial Regional Air Quality Strategy Revision has scheduled rules for adoption (in the year specified in parentheses) to implement the following feasible measures: Stationary Reciprocating Internal Combustion Engines BARCT (1999), Further Control of Solvent Cleaning Operations (1999), Plastic, Rubber, Composite, and Glass Coating (2000), Further Control of Bakery Ovens (2000), Further Control of Wood Products Coating (when feasible - year unspecified), and Commercial Charbroiling (when feasible - year unspecified);

(4) the requirement to include every feasible measure is dynamic and at each triennial update the District must update the control measure adoption schedule in the Regional Air Quality Strategy Revision to incorporate new and emerging technologies that offer additional emission reductions; this is a critical basic component of the plan; if the District does not continue to comply with Health and Safety Code section 40914, which requires the District's plan to include every feasible measure and an expeditious adoption schedule to ensure progress toward attainment of the state ambient air quality standards, reevaluation of the repeal of the no-net-increase program during the triennial review of the District's attainment plan and progress reports may result in a determination by the ARB that the no-net-increase program is necessary and shall be reinstated by the District;

(5) as presented in the document entitled "Analysis Demonstrating that State No-Net-Increase Requirements are Not Necessary to Achieve and Maintain State Ambient Air Quality Standards in San Diego County by the Earliest Practicable Date," the District's "expected case" estimate of the growth in emissions that is likely to occur as a result of the elimination of its no-net-increase permitting program,

approximately 2 tons per year of VOCs and 3 tons per year of NOx, assumes that the average annual level of emission increases experienced in five years of historical permitting would continue into future years without the program, that about 90 percent of such emission increases would be balanced in effect by emission decreases due to equipment shutdowns, and that such shutdowns would continue at levels sufficient to balance about 90 percent of such growth into future years without the no-net-increase program. The "expected case" emission increases estimated by the District represent approximately 0.03 percent and 0.07 percent of the District's projected 2010 total emission inventories for VOCs and NOx, respectively, and are of a magnitude that is not likely to impede, in the near term, the District's progress toward achieving the state ambient air quality standard for ozone;

(6) as presented in the document entitled "Analysis Demonstrating that State No-Net-Increase Requirements are Not Necessary to Achieve and Maintain State Ambient Air Quality Standards in San Diego County by the Earliest Practicable Date," the District's "worst-case" estimate of the growth in emissions that is likely to occur as a result of the elimination of its no-net-increase permitting program, approximately 32 tons per year of VOCs and 55 tons per year of NOx, assumes that the highest annual level of emission increases experienced in five years of historical permitting would continue into future years without the program, and that there would not be sufficient emission decreases from equipment shutdowns available to balance in effect the increases. The "worst case" emission increases estimated by the District represent approximately 0.57 percent and 1.3 percent of the District's projected 2010 total emission inventories for VOCs and NOx, respectively, and are of a magnitude that is not likely to impede, in the near term, the District's progress toward achieving the state ambient air quality standard for ozone;

(7) if emissions growth from new or modified stationary sources exceeds the District's estimates as presented in the document entitled "Analysis Demonstrating that State No-Net-Increase Requirements are Not Necessary to Achieve and Maintain State Ambient Air Quality Standards in San Diego County by the Earliest Practicable Date" and jeopardizes progress toward achieving the state ozone standard by the earliest practicable date, reevaluation of the repeal of the no-net-increase program during the triennial review of the District's attainment plan and progress reports may result in a determination by ARB that the no-net-increase program is necessary and shall be reinstated by the District;

(8) graphical representations of total annual VOC and NOx emissions projected to 2010 show overall trends of downward slopes with time, which indicate the District is making progress toward achieving the state ambient air quality standard for ozone primarily through emission reductions resulting from the statewide

mobile source program. The additional emissions estimated by the District under the "expected case" and "worst case" scenarios likely to occur as a result of the elimination of the no-net-increase program do not significantly affect the overall emission trends;

(9) if emission trends show less rapid progress than predicted toward achieving the state ambient air quality standard for ozone by the earliest practicable date, reevaluation of the repeal of the no-net-increase program during the triennial review of the District's attainment plan and progress reports may result in a determination by the ARB that the no-net-increase program is necessary and shall be reinstated by the District; and

(10) to date, the District has not been identified as an area of origin of transported air pollution within California and is therefore not subject to the mitigation requirements established for districts within the areas of origin of transported air pollutants pursuant to section 39610 of the Health and Safety Code; in the event a Border Environmental Plan is developed that addresses pollution at the Mexico/U.S. border, the District may be required to consider additional local controls that will mitigate the impacts of transported emissions on cross-border regions.

WHEREAS, the Executive Officer has considered the environmental documents prepared by the District and finds that any approval of the District's action must be conditioned to ensure that the finding of no significant adverse effects on the environment in the Final Environmental Impact Report is true and correct;

WHEREAS, the Executive Officer finds, based on quantifiable and substantial evidence provided by the District as described above, that the District's no-net-increase permitting program is not necessary to comply with the mitigation requirements of section 39610 and that the no-net-increase permitting program is not necessary to achieve and maintain the state ambient air quality standards by the earliest practicable date, provided specified conditions are met.

NOW, THEREFORE, IT IS ORDERED that the District's repeal of the no-net-increase permitting provisions set forth in Sections (d)(5) and (e)(1) of District Rule 20.1, "New Source Review - General Provisions," Sections (b)(3), (d)(5) and (d)(6) of District Rule 20.2, "New Source Review - Non-Major Stationary Sources," Section (d)(5) of District Rule 20.3, "New Source Review - Major Stationary Sources and Prevention of Significant Deterioration (PSD) Stationary Sources," and Sections (c)(3), (c)(4), (d)(2) and (d)(5) of District Rule 20.4, "New Source Review - Portable Emission Units" is approved by the ARB effective upon the date of this Executive Order.

BE IT FURTHER ORDERED, commencing on and continuing after the effective date of the repeal of the no-net-increase permitting provisions of District New Source Review Rules 20.1,

20.2, 20.3 and 20.4 cited above, the District shall implement a tracking system to collect information to evaluate the impact of the repeal of these provisions on its ability to meet the state ambient air quality standards by the earliest practicable date. The District shall track all the annual and cumulative emission increases of NOx and VOCs that would have been mitigated by new and modified stationary sources with the potential to emit of 15 or more tons per year if the no-net-increase provisions were in place. The District shall also separately track the annual and cumulative emission reductions of NOx and VOCs that result from permanent equipment shutdowns that have not been banked as emission reduction credits in the District bank. Such emission reductions shall only include reductions from such sources and in such amounts that, if banked and adjusted pursuant to District Rules 26.0 through 26.10, would have qualified as "Class A ERCs" and would have been eligible for use as offsets under the District's New Source Review program. The tracking system shall, at a minimum, record the following information, as applicable: 1) the year in which the emission increase or decrease occurred, 2) the source of the emission increase or decrease, 3) the nature of the emission change (e.g. the equipment type, whether it is a new or modified source, whether it is a permanent shutdown), 4) the amount of emission increase or decrease in tons per year, 5) the pollutant, 6) the amount of offsets, if any, provided for major sources or major modifications, 7) the adjustment made to the emission decrease for shutdowns, and 8) any other pertinent information agreed upon by the District and ARB that is needed to perform a complete evaluation of the impact of the repeal on the District's ability to meet the state ambient air quality standards by the earliest practicable date.

BE IT FURTHER ORDERED, the District shall submit to the ARB with each triennial update to its attainment plan pursuant to subdivision (a) of section 41500 of the Health and Safety Code a report including a detailed and comprehensive listing of all the information collected through the tracking system required above and all of the following additional information:

(1) a comparison of the following, done separately for NOx and VOCs and expressed as tons per year:

(a) for the time frame used in the triennial update and for any future dates projected by the District, the annual and cumulative amount of emission increases that would have been mitigated by new and modified stationary sources if the no-net-increase program was in place;

(b) the annual and cumulative increases predicted for the same time frame for the "expected case" and "worst case" estimates of growth in the document entitled "Analysis Demonstrating that State No-Net-Increase Requirements are Not Necessary to Achieve and Maintain State Ambient Air Quality Standards in San Diego County by the Earliest Practicable Date," and

(2) a comparison of the following, done separately for NOx and VOCs and expressed as percent of the appropriate annual total emissions inventory:

(a) for the time frame used in the triennial update and for any future dates projected by the District, the cumulative amount of emission increases that would have been mitigated by new and modified stationary sources if the no-net-increase program was in place;

(b) the most recent annual total emissions inventory and inventory projections available at the time of the triennial update; and

(3) a comparison of the following, done separately for NOx and VOCs and expressed as percent of the appropriate annual stationary source inventory:

(a) for the time frame used in the triennial update and any future dates projected by the District, the cumulative amount of emission increases that would have been mitigated by new and modified stationary sources if the no-net-increase program was in place;

(b) the most recent annual stationary source emissions inventory and inventory projections available at the time of the triennial update; and

(4) a comparison of the following, done separately for NOx and VOCs:

(a) the percent of the annual total emissions inventory calculated in (2) above and the percent of the annual stationary source inventory calculated in (3) above;

(b) the corresponding percentages of the annual total and stationary source emission inventories presented for the "expected case" and "worst case" estimates of growth in the document entitled "Analysis Demonstrating that State No-Net-Increase Requirements are Not Necessary to Achieve and Maintain State Ambient Air Quality Standards in San Diego County by the Earliest Practicable Date;" and

(5) a comparison of the following, done separately for NOx and VOCs:

(a) for the time frame used in the triennial update and any future dates projected by the District, the most recent annual stationary source, area source, mobile source, and total emission inventories and inventory projections available at the time of the triennial update;

(b) the annual stationary source, area source, mobile source, and total emission inventories and inventory projections used by the District for its original finding as described in the document entitled "Analysis Demonstrating that State No-Net-Increase Requirements are Not

Necessary to Achieve and Maintain State Ambient Air Quality Standards in San Diego County by the Earliest Practicable Date;" and

(6) if the Executive Officer determines that the report is inadequate for evaluating the District's compliance with the requirements of sections 41500, 40918.5 and 40918.6 of the Health and Safety Code, the District shall prepare and submit such additional information as requested by the Executive Officer and agreed upon by the District and ARB.

BE IT FURTHER ORDERED, pursuant to section 40918.6 of the Health and Safety Code, if the ARB determines, during any subsequent review of the District's attainment plan pursuant to subdivision (a) of section 41500, that a no-net-increase permitting program is necessary to comply with the mitigation requirements established pursuant to section 39610 or to achieve and maintain state ambient air quality standards by the earliest practicable date, the District shall then adopt and implement a no-net-increase permitting program pursuant to section 40918, 40919, or 40920 of the Health and Safety Code.

Executed this 17th day of December, 1998, at Sacramento, California.

CALIFORNIA AIR RESOURCES BOARD

Michael P. Kenny
Executive Officer